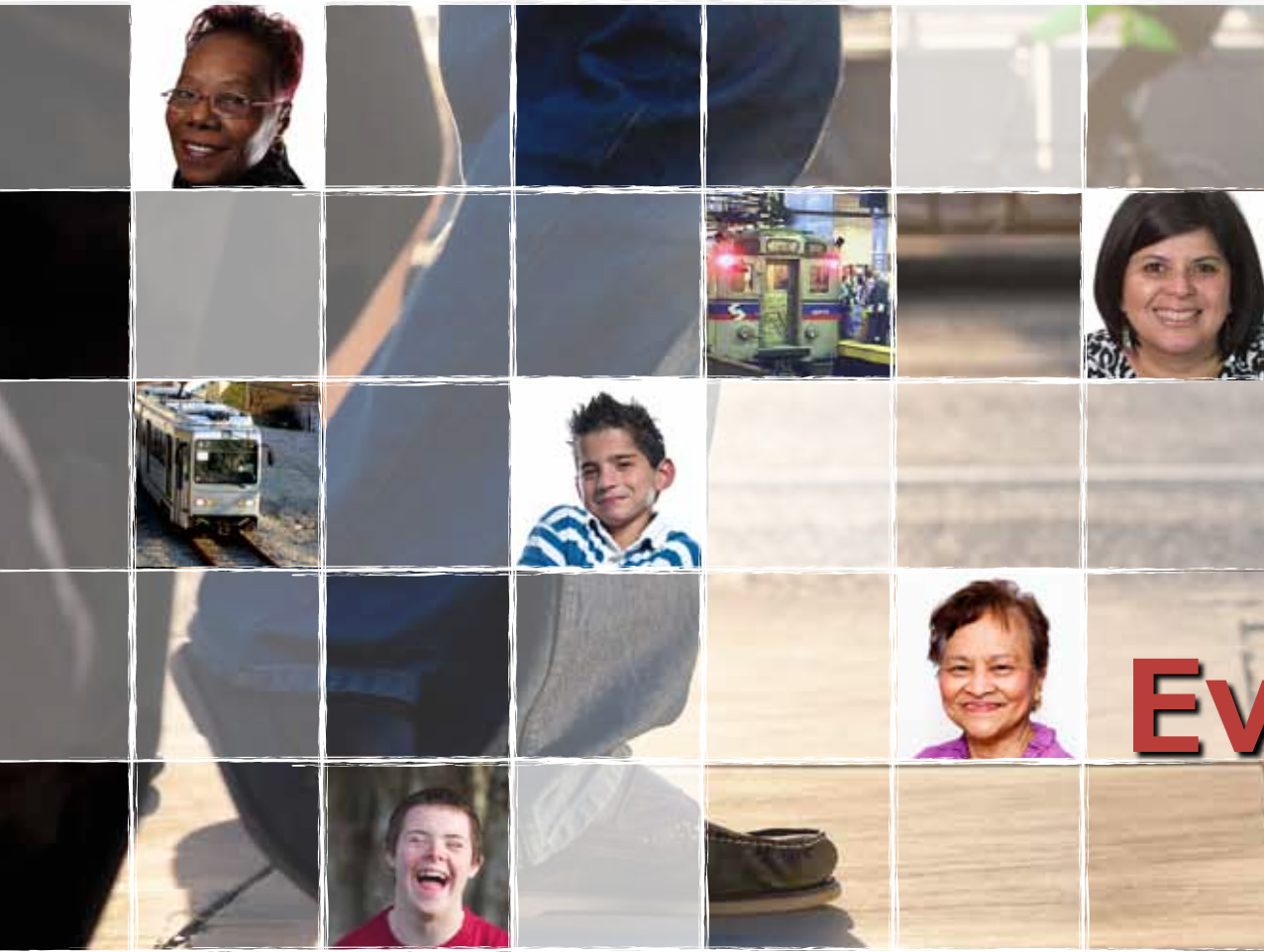


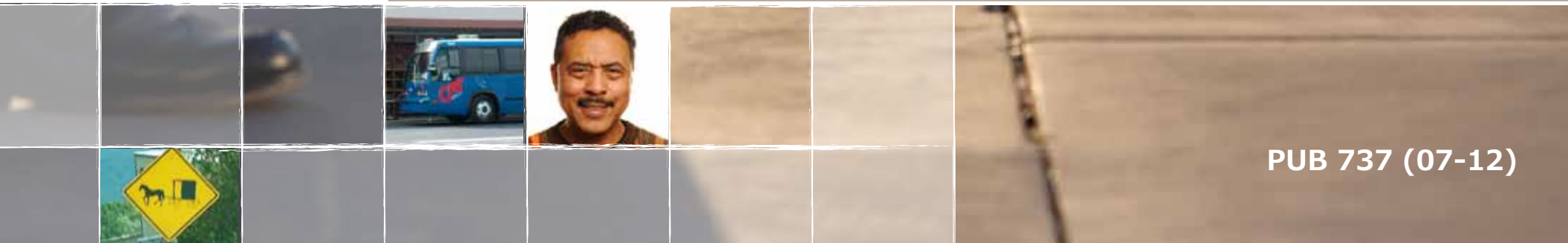
EXECUTIVE SUMMARY



Every Voice Counts



Environmental Justice Moving Forward





INTRODUCTION

PennDOT recognizes that the identification of traditionally underserved, low-income, minority, and otherwise vulnerable populations is important because these populations often have specific and unique transportation needs to be considered, planned for, built, and maintained. Underserved populations may be found in urban, suburban, and rural areas and are commonly referred to as “Environmental Justice” (EJ) populations. They are protected under Title VI of the Civil Rights Act as amended, as well as under executive orders and other legislation.

This executive summary provides an overview of many of the sections covered in the full guidance document, *Every Voice Counts*, including the definition of EJ and techniques for identification, outreach, and analysis of effects.

The Legal Framework for Environmental Justice (EJ)

EJ refers to the implementation of **Title VI of the Civil Rights Act of 1964**. The landmark civil rights legislation directs all recipients of federal funding to eliminate discrimination on the basis of race, color, or national origin. Title VI states:

No person in the United States shall, on the ground of race, color or national origin, be excluded from participation in, be denied the benefits of, or subjected to discrimination under any program or activity receiving Federal financial assistance, (Title VI, Civil Rights Act of 1964, U.S.C. 42, Sec 2000d et seq).

Language addressing Title VI requirements appears in a wide range of laws governing transportation. For example, the **Federal-Aid Highway Act of 1970**, 23 USC 109 (h), establishes a basis for equitable treatment of communities being affected by transportation projects. It requires consideration of the anticipated effects of proposed transportation projects on the accessibility of residences, businesses, farms, public facilities, other community resources, and the tax base. Additionally, **the National Environmental Policy Act of 1969 (NEPA)**, which addresses the environmental impacts of transportation and other federally funded infrastructure projects, stresses the importance of providing for “all Americans (a) safe, healthful, productive, and aesthetically pleasing surrounding,” and requires a “systematic, interdisciplinary approach” to aid in considering environmental and community factors in decision-making. The Federal Highway Administration and Federal Transit Administration **Statewide Planning and Metropolitan Planning Rule, 23 CFR Part 450**, calls for actions to prevent discrimination early in the planning process, which affects long-range planning and project programming at the state and local levels. These regulations establish performance expectations of public involvement to include “a process for seeking out and considering the needs of those traditionally underserved by existing transportation systems, such as low-income and minority households, which may face challenges accessing employment and other amenities.”



Language addressing Title VI requirements appears in a wide range of laws governing transportation.



Persistent problems with discrimination concerns led to the issuance of **Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations: Executive Order 12898 (E.O. 12898)**. E.O. 12898 promotes nondiscrimination in federal programs affecting human health and the environment, and provides minority and low-income communities with access to public information and an opportunity to participate in matters relating to the environment. The Executive Order stipulates that each federal agency shall, to the greatest extent allowed by law, administer and implement its programs, policies, and activities that affect human health or the environment so as to identify and avoid “disproportionately high and adverse” effects on minority and low-income populations.

On August 4, 2011, the Secretary of Transportation, along with heads of other federal agencies, signed a Memorandum of Understanding on EJ (EJ MOU), confirming the continued importance of identifying and addressing EJ considerations in agency programs, policies, and activities. Most recently, on March 2, 2012, the U. S. Department of Transportation (USDOT) released a revised EJ Strategy that reiterates DOT’s commitment to EJ principles and to integrating those principles into DOT programs, policies, and activities. This was followed by an update to Order 5610.2(a) on May 2, 2012. The updated Order reaffirms DOT’s commitment to EJ and clarifies certain aspects of the original Order, including the definitions of “minority” populations. The revisions clarify the distinction between a Title VI analysis and an EJ analysis conducted as part of a NEPA review, and affirm the importance of considering EJ principles as part of early planning activities in order to avoid disproportionately high and adverse impacts.

In accordance with the revised Order 5610.2(a), EJ populations are defined below:

- Black – a person having origins in any of the black racial groups of Africa
- Hispanic or Latino – a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race
- Asian American – a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent
- American Indian and Alaskan Native – a person having origins in any of the original people of North America or South America (including Central America) who maintains cultural identification through tribal affiliation or community recognition
- Native Hawaiian and Other Pacific Islander – people having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific islands
- Low-Income – any readily identifiable group of low-income persons who live in geographic proximity, and, if circumstances warrant, geographically dispersed/transient persons (such as migrant workers or Native Americans) who would be similarly affected by a proposed DOT program, policy, or activity.
- Minority Population – any readily identifiable group of minority persons who live in geographic proximity, and if circumstances warrant, geographically dispersed/transient persons (such as migrant workers or Native Americans) who would be similarly affected by a proposed DOT program, policy, or activity.

PennDOT's Every Voice Counts

In 2004, PennDOT developed a comprehensive EJ guidance document called *Every Voice Counts* to assist PennDOT and its planning partners in addressing EJ during the planning and programming processes for all aspects of transportation-related services. This document provides updates that have taken place since 2004. For this updated guidance, PennDOT once again enlisted the assistance of an appointed Environmental Justice Advisory Committee (EJAC), revised to include new members and agencies. The group helped PennDOT develop guidance that provides instructional yet flexible tools that can meet the diverse needs of planning organizations.

2012 Environmental Justice Advisory Committee

- Center for Rural Pennsylvania
- Clean Air Council
- Delaware Valley Regional Planning Commission
- Federal Highway Administration Pennsylvania Division
- Lancaster County Planning Commission
- Pennsylvania Department of Environmental Protection
- PennDOT Bureau of Equal Opportunity, Bureau of Public Transportation, and Program Center
- Southwestern Pennsylvania Commission
- Tri-County OIC Adult Learning Center
- Uptown Entertainment and Development
- Corporation
- Office of Senator Vincent Hughes

Principles to Incorporate into GIS

- Use reliable data. The outputs from GIS are only as reliable as their source data.
- Use the most disaggregated (locally-detailed) data level possible.
- Use indices to convey multiple pieces of information. EJ analyses typically require examining numerous sets of demographic attributes. Therefore, planners combine information into indices that permit combining large or complex sets of information into one map.
- The availability of reliable and workable data should be a consideration, though not a determining factor, in how EJ populations are identified. Since planning partners have limited resources, a balance needs to be struck between the availability of information and the criteria by which EJ communities are defined.
- Use primary information that captures the most critical characteristics of the group one intends to identify, rather than using proxies.

IDENTIFYING ENVIRONMENTAL JUSTICE COMMUNITIES

There are three primary reasons for identifying EJ populations:

1. To better engage EJ populations for inclusion in the public involvement process.
2. To identify and integrate the transportation needs and priorities of these populations in plans and programs.
3. To assess the effects of alternative transportation planning policies, investments, and programs on EJ populations.

Using Geographic Information Systems (GIS) to Identify EJ Populations

GIS is a computer software package that permits a user to graphically manipulate, analyze, and represent spatial data. Its value to environmental justice is that, when combined with quality data sources, it permits planners to map and layer the locations of groups based on attributes including race, ethnicity, and income characteristics. A variety of sources provide data that facilitate identifying EJ populations for a given jurisdiction. The most commonly used and comprehensive source of data comes from the U.S. Census Bureau, which collects socioeconomic and demographic data in 10-year cycles. Some census data packages, such as the Census Transportation Planning Package and Journey-to-Work data, can provide information on transportation behaviors and needs by demographic group. There is also data available from the American Community Survey in this format. Table 1 provides a summary of data sources.

Table 1: Data Sources for Identification of EJ Populations

Data Source	Applicability
U.S. Census Bureau http://www.census.gov	Population data pertaining to low-income and minority populations
American Community Survey http://www.census.gov/acs	Provides statistical summary for planning and evaluating public programs. Updated annually for statistical accuracy
EPA EJ View http://epamap14.epa.gov/EJ-map/entry.html	Demographic, health, environmental, and facility-level data. Summaries of the data can also be obtained for a particular area
U.S. Department of Education Office of Civil Rights http://www2.ed.gov/about/offices/list/ocr/index.html	Race/Ethnicity and children with disability data based on five racial categories and the Individuals with Disabilities Education Act (IDEA)
U.S. Department of Housing and Urban Development Data Sets http://www.huduser.org/portal/datasets/pdrdatas.html	Family and housing income limits and metropolitan area information
Modern Language Association mla.org http://www.mla.org/	Languages spoken at home
Pennsylvania Americans with Disabilities Data Sets http://www.disabilitystatistics.org/	Provides information on persons in need of special transportation

Identifying EJ Populations Process Checklist

- Decide on the level of detail required for identifying groups spatially and identify data sources to use to conduct a spatial demographic profile.
- Conduct a GIS demographic inventory to identify the distribution and concentrations of targeted groups identified above.
- Engage leaders and representatives of demographic groups to help identify target populations, spatially and non-spatially.
- Verify results through field visits and community consultation, as appropriate and feasible.



Thresholds and graduated scales have strengths and weaknesses—and each can paint a very different picture of EJ areas.

Considerations in Structuring the Definition of “EJ Communities”

Two common means of illustrating location and concentration of EJ populations are the use of thresholds and graduated scales. The *threshold approach* entails identifying whether a census tract, block group, or other geospatial sample meets or exceeds an established threshold for a specific demographic attribute, in which case that area is defined as an “EJ community” with respect to that attribute. EJ communities are often defined by many attributes, so it is possible for an area or community to exceed thresholds in more than one category. In contrast, a *graduated*, or scaled, approach permits one to factor intensity of EJ populations into the formula. In a graduated approach, one might use a 100-point scale (corresponding to the percentage of population that fits the attribute) for each of four categories, as an example. This formula would then assign scores ranging from zero (for communities that have 0 percent of the population in any of these categories) up to 400 points (if every person in this community falls into every category).

Once You Identify, Verify!

Concurrently and following identification of EJ communities using traditional data, agencies should be reaching out into the community to test the validity of their data and assumptions with a field review and direct public involvement.

Visiting the community through a “windshield” or walking tour, as feasible, can determine the actual physical boundaries of what are considered to be low-income and minority communities. Staff needs to look for “clues” for evidence that indicates a clear presence of specific demographic groups. For example, signage in multiple languages or restaurants and shops that contain items of interest to specific cultures are important clues of a predominant presence of those groups. Coordination with community leaders, statewide or regional representatives of demographic groups, local politicians, social service agencies, and schools with intimate knowledge of the communities is strongly recommended for verifying the results of the demographic data and mapping software.

Table 2 categorizes possible identification techniques that can be used depending on the size and capabilities of the agency.

Table 2: Population Identification Techniques Summary

Planning Organization Data Analysis Capability	Identification Techniques
Limited GIS Capability	<ul style="list-style-type: none"> • GIS mapping/census data at county or census tract level; analyze using threshold methodology • Google Earth
Proficient GIS Capability	All the above, plus: <ul style="list-style-type: none"> • Community field view • Interviews with community leaders/elected officials
TDM—Travel Demand Modeling Capability	All the above, plus: <ul style="list-style-type: none"> • GIS mapping/census data at TAZ level



Figure 1: Field views can help identify EJ populations

PUBLIC INVOLVEMENT



Public involvement is the fundamental tool by which minority and low-income populations have a voice in the process.

Public involvement and outreach is the cornerstone of an effective EJ strategy for transportation planning and programming. It is the fundamental tool by which minority and low-income populations have representation and a voice in the process. As such, public involvement should be meaningful and measurable. Public involvement should be ongoing throughout the planning process, and should be designed to get all of the stakeholders actively involved at the following stages. Table 3 outlines a strategy for building and implementing an effective public involvement program that incorporates outreach to identify and engage EJ target communities.

Table 3: EJ Needs during Plan and Program Development	
Plan Development Step	EJ Implication
Problem Assessment	<ul style="list-style-type: none"> • Confirm socioeconomic, land use and community context analysis with community residents
Problem Assessment	<ul style="list-style-type: none"> • Identify transportation needs and priorities of EJ populations through data analysis and community outreach
Problem Assessment	<ul style="list-style-type: none"> • Define plan goals, objectives and other major elements with community input
Proposal Identification	<ul style="list-style-type: none"> • Discuss alternatives with EJ populations, to ensure that all reasonable alternatives will be evaluated
Proposal Identification	<ul style="list-style-type: none"> • Identify performance measures and evaluate alternatives with public input, to ensure that all reasonable alternatives will be evaluated
The Long-Range Transportation Plan Documentation	<ul style="list-style-type: none"> • In addition to the technical analysis, the plan should document how EJ communities were identified, their specific transportation needs, the public involvement used to engage these communities, and how alternatives were developed, analyzed and selected in consideration of EJ issues
Program Development	<ul style="list-style-type: none"> • Call for projects from EJ communities for inclusion in the TIP, TYP

The Public Participation Plan

A critical step in implementing effective public involvement is to develop a specific public participation plan (PPP), which serves as an action plan for the planning or programming process. A project-specific PPP is required for a long-range transportation plan, TIP, STIP, and TYP; minor TIP updates do not require a PPP. A good place to start in developing the PPP is to establish how public involvement supports the planning process, and structure specific methods for soliciting public input at the correct times.

The PPP should offer many different opportunities to encourage participation by EJ and non-EJ populations alike. The strategies shown in Table 4 can be considered in order to encourage EJ participation. Interactive websites and social media offer opportunities for non-meeting participants to give comments. Throughout the process, all efforts undertaken and those intentionally not undertaken should be clearly documented.

Public Participation Plan Checklist	
✓	Describe the plan or program being undertaken.
✓	Begin networking to get the word out on the upcoming process, identify key stakeholders, transportation issues, and public involvement strategies and techniques.
✓	Develop a purpose statement and list of goals and/or objectives for the public involvement process that can be used to evaluate and modify the PPP mid-stream and again after implementation.
✓	Identify a broad list of stakeholders, including agencies, citizens, communities and community groups, transit users, freight groups, and EJ and other groups.
✓	Identify issues and barriers related to involving specific groups that need to be addressed in the PPP.
✓	Compile a mix of strategies and techniques that provide a range of opportunities for outreach and education as well as solicitation of ideas or concerns during the process. <i>This is the most important element of the PPP.</i> It should include a specific strategy for involving EJ groups.
✓	Develop a milestone chart of the plan or program development chart with identified public involvement activities for each.
✓	Begin implementation.
✓	Evaluate and modify PPP as needed.

Table 4: Potential Solutions to Address Common Barriers to Public Involvement

Possible Barrier	Potential Strategies
Individuals holding multiple jobs/unusual job hours	<ul style="list-style-type: none"> • Adjust location and time of outreach to accommodate schedules of community members • Hold multiple meetings at varying locations, times, and days. • Post information online
Low levels of education/ literacy issues	<ul style="list-style-type: none"> • Maximize the use of photos, graphics, and icons • Text should be in a common language • Staff may need to fill in written responses/comments dictated by participants • Educate participants on their rights in the transportation planning process • Use Braille/sign language as required
Family responsibilities	<ul style="list-style-type: none"> • Adjust location and time of outreach to accommodate schedules of community members • Consider providing refreshments to encourage participation • Consider providing activities for children
Transit dependent	<ul style="list-style-type: none"> • Make community outreach activities transit accessible • Consider providing shuttle service to outreach activity as required • Meet at a community center or transit stop • Post information online • Advertise on transit
Less access to internet/technology/ computer literacy issues	<ul style="list-style-type: none"> • Provide information and host meetings in community facilities • Use photos, graphics, and icons where possible instead of words • Text should be in a common language
Language barriers	<ul style="list-style-type: none"> • Use I-Speak Cards (see Figure 3) • Provide interpretive services/bilingual handouts and presentation materials • Advertise community outreach activities in local language newspaper

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Table 4: Potential Solutions to Address Common Barriers to Public Involvement

Possible Barrier	Potential Strategies
Distrust of government agencies /cultural differences	<ul style="list-style-type: none"> • Use local organizations to provide “introductions” or sponsor events • Provide information at local businesses/ organizations /religious institutions • Build relationships with respected leaders of the EJ community, and partner with these leaders through the community’s communication networks—their religious institutions, newsletters, barbershops, restaurants, etc. to generate participation in the planning process
Fearful of participation in large meeting	<ul style="list-style-type: none"> • Provide an opportunity for meeting participants to speak one-on-one to project team members

Meeting Time and Location

To actively engage EJ populations, staff needs to seek out the public in places where they are already gathering. This will likely involve presentations and briefings in locations other than government offices, distribution of printed information, or staffing an information booth. By going to community gatherings, agencies can engage people who would never come to a formal public meeting about a transportation decision.

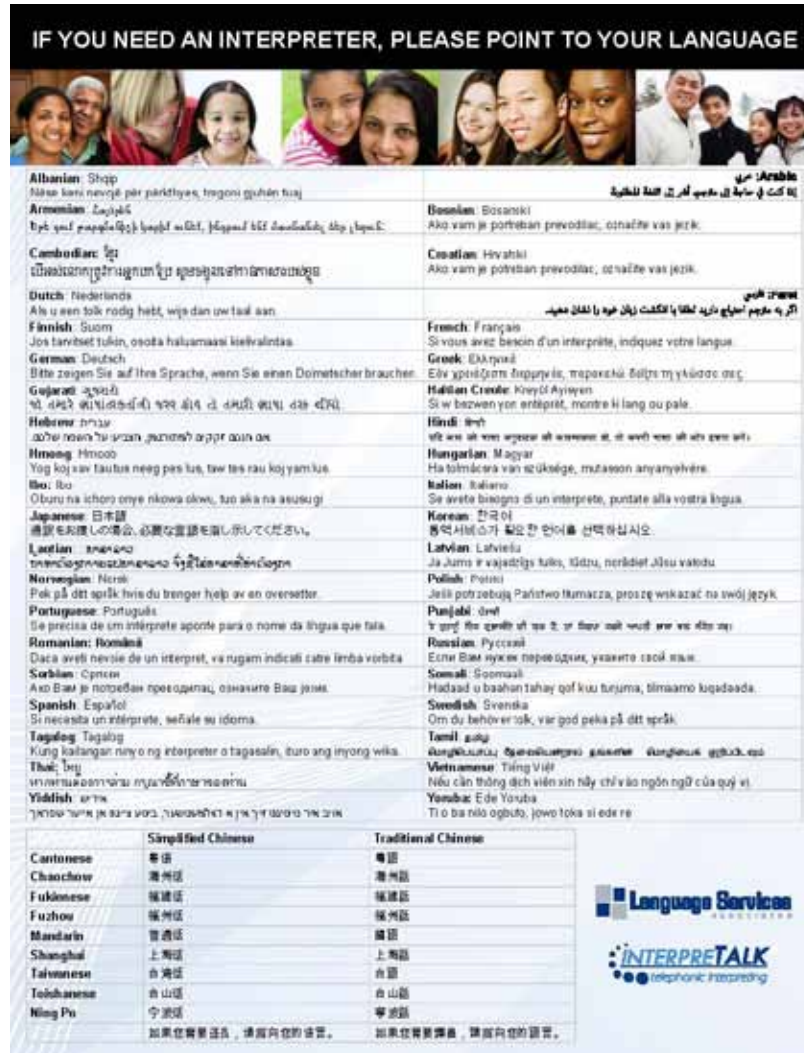
Public Information Materials

Public information materials serve to inform the public about upcoming outreach events, to provide an update on plan or project status, and/or to gather public input. To reach EJ communities, staff should seek assistance from community-based organizations and ask the public directly for suggestions on the most effective communication channels for reaching different groups.



Figure 2: Visualizations are effective in communicating with EJ Populations

Figure 3: I-Speak Card



Language

While Limited English Proficient (LEP) populations are not always EJ, this indicator is highly correlated with minority populations. If the demographic analysis reveals minority or low income populations that do not speak English well or at all, public involvement materials should be prepared in the languages spoken by the communities being addressed. According to the 2010 American Community Survey 1-Year Estimates, 10 percent of Pennsylvania residents speak a language other than English at home, and 4 percent do not speak English well or do not speak it at all. Appropriate techniques should be utilized to ensure effective communication with non-English speakers.

While census data can be used to determine languages spoken at home, another resource is the Modern Language Association website, which provides information about languages spoken broken down by state, county, municipality, and zip code. <http://www.mla.org/>

As shown in Figure 3, I-Speak Cards present a phrase in numerous languages, and the non-English speaker is instructed to check which language he/she recognizes. Once the language is known, interpretive services may be arranged for by phone. After that, interpretive services could be planned for at the next outreach event.

The Commonwealth has a statewide contract with INTERPRETALK for interpretive services, which is managed by PennDOT’s Bureau of Equal Opportunity. Agents of PennDOT and its planning partners are able to access these services at no cost to them.

Effective Meeting Formats

A critical component of public involvement is actually meeting with the public. Table 5 illustrates the many ways of contacting and meeting with the public. Each of these alone would not constitute sufficient public involvement. Planning how, when, and where to meet with the public should be determined based on the specific outcomes desired, the public involvement budget and resources, and the stage in the transportation planning and program development process. Regardless of the strategy chosen, providing timely and meaningful follow-up on issues and concerns raised is a crucial part of the process.

Table 5: Potential Techniques for Outreach to EJ Populations

Potential Technique	Operational Details
Develop Contacts and Partners	<ul style="list-style-type: none"> • Use local contacts to identify minority, low-income, and Limited English Proficient communities in your area • Locate community groups to conduct outreach, identify meeting spots, and sponsor meetings • Conduct one-on-one meetings with low-income and minority community leaders, such as local officials, clergy, and neighborhood associations • Use the group and leadership to help you identify other relevant groups
Outreach Booth	<ul style="list-style-type: none"> • Set up stands at popular locations within the community such as street fairs, community centers, or commercial facilities • Provide information and get to know community members in an informal setting
Community Advisory Committee	<ul style="list-style-type: none"> • Establish regular consultation with a representative cross section of the area population, including minority, limited-English proficiency, and low-income populations • Helps to inform and involve community members • Can lead to community focus groups and informal discussions

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Table 5: Potential Techniques for Outreach to EJ Populations	
Potential Technique	Operational Details
Community-Based Public Meeting/Briefings/Presentations (Speaker's Bureau)	<ul style="list-style-type: none"> • Participate in regularly scheduled recreational or religious institution activities, community or school events • Hold multiple meetings on different days and times and in different locations • Make certain that meeting locations are accessible by public transportation (if available) • Provide refreshments or children's activities
School Programs	<ul style="list-style-type: none"> • Programs educate the students and then parents receive information from students • Parents attend a school event where children present information and parents participate
Publicity	<ul style="list-style-type: none"> • Advertise events/information about the project using the most popular media sources in area for particular community—newspaper, radio, TV, Facebook, community news boards, websites, newsletters • Publicize in public transit stations or on vehicles • Use radio and television stations that target minority and non-English-speaking populations • Run public service announcements • Participate in interview programs/talk shows on ethnic stations • Use community newspapers and newsletters
Field Review/Canvassing	<ul style="list-style-type: none"> • Door-to-door canvassing of neighborhoods • Inform and involve residents • Opportunities for surveys/interviews • Opportunities to distribute flyers
Informational Interviews	<ul style="list-style-type: none"> • Interview stakeholders in community facility (project staff may glean more useful information in a private, informal setting)

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Table 5: Potential Techniques for Outreach to EJ Populations

Potential Technique	Operational Details
Personalized Letters	<ul style="list-style-type: none"> • Send letters addressed to specific individuals • Send personal invitations to events • Send personal informative letters
Open House	<ul style="list-style-type: none"> • Many visual aids • Planning staff speaks to attendees one-on-one • Opportunities to do surveys/interviews
Design Workshop	<ul style="list-style-type: none"> • Large meeting broken into facilitated small groups to identify needs, values, etc. • Work with designers to develop solutions to identified needs • Sometimes done with computer program
Social Media	<ul style="list-style-type: none"> • Facebook, Twitter, YouTube, Crowdsourcing • Smart Phone-friendly websites

A summary of public involvement techniques based on resources available to the agency follows in Table 6.



Table 6: Public Involvement Summary

Planning Organization Resources	Outreach Techniques
Limited	<ul style="list-style-type: none"> • Project website, e-mail blasts • Social media • Meet at different times and places • Contact EJ service providers and community leaders/elected officials to review and comment on plan and TIP • Use ethnic media, translate information as needed • I-Speak Cards, 800 number translation, e.g., INTERPRETALK • Help non-English speakers and less educated attendees with sign-in and with comment cards • Provide videos, visualizations, use non-technical language
Moderate	<p>All the above, plus:</p> <ul style="list-style-type: none"> • Conduct outreach at community events, neighborhood meetings • EJ task force meets and advises throughout planning process • Web-based survey • Use interactive exercises at meetings • Provide transportation to meetings • School outreach • Provide coloring books, refreshments at meetings
Substantial	<p>All the above, plus:</p> <ul style="list-style-type: none"> • Interactive web-based games • Telephone surveys

EVALUATION OF PLANS OR PROGRAMS

The culmination of identifying and communicating with EJ populations is the administration and implementation of federally-funded programs, policies, and activities that affect human health or the environment so as to identify and avoid “disproportionately high and adverse” effects on minority and low-income populations.

A disproportionately high and adverse effect on minority and low-income populations means an adverse effect that:

1. Is predominately borne by a minority population and/or a low-income population, or
2. Will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority population and/or non-low-income population.

This evaluation requires that planning-level analysis be conducted on the packages of improvements, or scenarios, being considered and evaluated for the LRTP or TIP. To accomplish this analysis, planning partners need to understand and address the transportation needs and concerns of the EJ populations in the plan or program. However, scenario analysis is not done in a vacuum, but is part of a process that begins with the identification of EJ communities as part of the existing conditions inventory, proceeds through definition of the goals and objectives of the plan, develops a long list of projects, and ends with the LRTP and TIP.

Scenario analysis is done relative to performance measures, which are developed with community input and are generally based on the plan’s goals and objectives. A community wishing to increase non-motorized transportation may have a measure such as, “increase multi-use trail mileage by X percent or X miles.” One measure of transportation facility quality may be to use PennDOT’s asset management data or age of transit vehicles servicing different routes across neighborhoods. Performance measures can be applied at several levels—statewide, or by an MPO or RPO, county, township, or municipality.

How are Performance Measures Chosen?

Performance measures are:

- A function of the specific needs of the area
- A measureable extension of goals and objectives
- Dependent upon the data that the agency currently collects and analyzes or will begin to collect and analyze.

Table 7 shows a long list of possible performance measures agencies may select by area of transportation performance and whether they are a “benefit or a burden,” and likely sources of information. When choosing which performance measures to evaluate relative to EJ, it may be prudent to consider the emphasis areas mentioned in DOT’s EJ strategy of March 2, 2012:

- Transportation access to jobs, particularly for non-driving segments of the population.
- Quality of transportation systems near minority and low-income communities.
- Impacts and benefits from commercial transportation and supporting infrastructure.
- Impacts from climate change.

Benefits and burdens analysis with respect to environmental justice is aimed at ensuring that the benefits of transportation investments are being shared equally and that the burdens created by new projects are not being borne by one section of the public over another.

In order to fully understand the results of the benefits and burdens analysis for both the TIP and the LRTP, planning organizations should map the outcomes of the benefits and burdens analysis using GIS to compare results between EJ and non-EJ population centers. Any or all of the following questions may be appropriate as the basis for a comprehensive alternatives impact assessment:

- Under which plan or program alternative are EJ communities better off?
- How much do EJ communities benefit relative to other (non-EJ) communities?
- Which scenario of policies or projects offers the most benefits to EJ communities, regardless of other beneficiaries?
- Which scenario offers the least benefits and/or the most impacts (costs) to the EJ communities relative to other (non-EJ) communities?



Table 7: Benefits and Burdens Performance Measures

Possible Performance Measure (to be evaluated in EJ versus non-EJ areas)	Data Sources
Accessibility <ul style="list-style-type: none"> • Number of jobs within X minutes by mode or within X miles • Average number of defined destinations (college, hospital, retail centers) within X minutes travel time or within X miles • Households with <1 mile access to bike paths, marked bike routes • Access to transit facilities by type – rail, bus, express services, etc. (i.e., distance to major facilities by type) 	<ul style="list-style-type: none"> • TDM or GIS • TDM or GIS • GIS • GIS
Travel times/congestion or delay <ul style="list-style-type: none"> • Average or distribution of travel times for work trips by mode • Average travel times to regional activity centers by mode • Travel time savings by population group by mode • Percentage of congested to uncongested travel time between select origin-destination (OD) pairs 	<ul style="list-style-type: none"> • TDM • TDM • TDM • TDM
Safety <ul style="list-style-type: none"> • Crash rates by modal category for road users • High-accident locations for both vehicles and pedestrians • Reported criminal incidents at various facilities, such as rest areas, transit stations, and parking lots. 	<ul style="list-style-type: none"> • PennDOT or municipality • Local municipality • Local police
Equity of distribution of transportation investments <ul style="list-style-type: none"> • Distribution of programmed new or improved transportation facilities, including new roads, bridges, trails, sidewalks, etc. Analysis can include number of projects, dollar value of projects, etc., per person • Identity of users benefitting from new project or program 	<ul style="list-style-type: none"> • GIS • TDM
Infrastructure conditions <ul style="list-style-type: none"> • Quality of pavements/bridges serving areas (Surface Roughness Indices, for example) • Quality of pedestrian facilities including access to/connectivity of sidewalks 	<ul style="list-style-type: none"> • PennDOT asset management database • Local municipality or county data

This is a long list of possible performance measures, organized by area of transportation performance. Selecting which performance measures to evaluate is based the specific demographic and transportation characteristics of the area, data collected, and analytical tools available.

The value of “X” is dependent on the context

Data Sources:

TDM=Travel Demand Model
GIS=Geographic Information System
L RTP= Long-Range Transportation Plan

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**While PennDOT and its planning partners have limited influence over programming decisions made by the local transit agency, a well-developed multimodal transportation system is known to serve the needs of identified EJ populations. Planning partners and transit agencies should collaborate throughout the transit planning and programming process so that the needs of these populations can be met.*

Data Sources:

TDM=Travel Demand Model
GIS=Geographic Information System
LRTP= Long-Range Transportation Plan

Table 7: Benefits and Burdens Performance Measures	
Possible Performance Measure (to be evaluated in EJ versus non-EJ areas)	Data Sources
<p>Transit service*</p> <ul style="list-style-type: none"> • Percentage of population within X miles of bus route or transit station • Number of transfers required for transit trips between select OD pairs • Percentage of population with quality of transit service X (such as rail or bus/ cost of service/travel times or frequencies of service) 	<ul style="list-style-type: none"> • GIS • Transit Agency • Transit Agency, GIS
<p>Fees and expenditures</p> <ul style="list-style-type: none"> • Share of user fees, taxes or fares compared to modal use or income (ability to pay) • Distribution of alternative plan/program expenditures by mode (compared against needs or access, stated preferences, or usage data) 	<ul style="list-style-type: none"> • Local tax rates, transit agency fares, economic impact analysis • Costs of programs or projects by mode from LRTP or TIP
<p>Environmental quality</p> <ul style="list-style-type: none"> • Air quality conformity • Distribution of environmental mitigation • Distribution of transportation enhancements 	<ul style="list-style-type: none"> • TDM • LRTP • LRTP

Table 8 categorizes possible evaluation techniques that can be used depending on the size and capabilities of the agency.

Table 8: Plan Evaluation Summary	
Planning Organization Data Analysis Capability	Potential Evaluation Techniques
Limited GIS capability	<ul style="list-style-type: none"> • “Equity” evaluation of project distribution • Infrastructure conditions in EJ versus non-EJ areas • Conditions of road quality versus transit equipment • Transportation costs by group
Proficient GIS capability	<p>All the above, plus:</p> <ul style="list-style-type: none"> • GIS based measures of accessibility to transportation and transit facilities • GIS measures of access to employment centers, mobility and safety
TDM—Travel Demand Modeling capability	<p>All the above, plus:</p> <ul style="list-style-type: none"> • TDM-based measures of accessibility, mobility, safety, air quality

Limitations of GIS in Benefits and Burdens Analysis

While GIS can facilitate an evaluation of environmental justice, it should not be used in a vacuum. GIS cannot provide any definitive conclusions about the comprehensive benefits, impacts, or burdens of planned transportation projects or sets of projects. Rather, GIS can only identify or illustrate the potential for impact. Agencies must be committed to an EJ program that dovetails technology and public involvement elements to ensure that the interests of a community are adequately considered in the assessment process to the extent possible.

An additional limitation is using current demographic information for identifying EJ communities across the 20-year planning horizon. It is suggested that agencies forecast demographic, transportation, and land use data to the extent possible.

GIS also cannot evaluate the quality of access. Showing distance from major facilities, such as a transit station, can help assess access to transportation modes and services. However, it doesn’t assess the quality of those services. For example, transit access may be restricted at night, limiting transit dependent populations’ mobility. Therefore, the frequency or mode of service can be must be separately factored into an EJ evaluation of access.

Mitigation

One of the three basic principles of environmental justice is to avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations. However, there are no established legal standards or guidance for deciding how to measure the proportionality of the distribution of benefits and burdens for a plan or project. DOT Order 5610.2(a) clarifies, under Actions to Address Disproportionately High and Adverse Effects:

- a. In making determinations regarding disproportionately high and adverse effects on minority and low-income populations, mitigation and enhancements measures that will be implemented and all offsetting benefits to the affected minority and low-income populations may be taken into account, as well as the design, comparative impacts, and the relevant number of similar existing system elements in non-minority and non-low-income areas.
- b. The Operating Administrators and other responsible DOT officials will ensure that any of their respective programs, policies or activities that will have a disproportionately high and adverse effect on minority populations or low-income populations will only be carried out if:
 - Further mitigation measures or alternatives that would avoid or reduce the disproportionately high and adverse effect are not practicable

In determining whether a mitigation measure or an alternative is “practicable,” the social, economic (including costs), and environmental effects of avoiding or mitigating the adverse effects will be taken into account.

If needed, mitigation measures should be developed and discussed with community input. If undue burdens are identified, the assessment should take these into account and seek to minimize or eliminate them through planning modifications or implementation of mitigation measures, as shown in Table 9.

Table 9: Potential Mitigation Measures to Address EJ

Typical Mitigation Measures to address when EJ service/benefit found “less” than non-EJ population	
Accessibility	<ul style="list-style-type: none"> • Concentrate investments in EJ areas or modes frequented by EJ populations
Travel times/ Congestion or Delay	<ul style="list-style-type: none"> • Concentrate investments in EJ areas or modes frequented by EJ populations that improve the travel times for those communities
Transit Service	<ul style="list-style-type: none"> • Express service, longer service hours
Equity of Distribution	<ul style="list-style-type: none"> • More transportation investment to serve EJ population’s transportation needs
Infrastructure Conditions	<ul style="list-style-type: none"> • More maintenance investment in EJ areas
Safety	<ul style="list-style-type: none"> • Lighting and signage • Traffic calming and routing • Pedestrian crossings, markings and signage • Marked or barrier-separated bike lanes
Fees and Expenditures	<ul style="list-style-type: none"> • Subsidized transit fares
Environmental Quality	<ul style="list-style-type: none"> • Transportation enhancement investments in EJ communities • Multimodal transportation service

What is EJ Success?

The intent of *Every Voice Counts* is the development over time of a more equitable and fair transportation planning process. Nonetheless, in actually applying the techniques, some uncertainties may remain, such as: “What have we really accomplished?” or “Have our EJ efforts been successful?” Ultimately, agencies should feel comfortable if they have achieved the following list of EJ accomplishments:

✓	EJ groups and communities have been identified for the study area. Agencies should feel familiar with the demographic composition of the study area and which groups they intend to target for compliance with EJ. These groups should be identified area-wide (non-spatially) as well as spatially. Any assumptions made about community demographics should be verified through meetings with community leaders/elected officials and visual tours, as appropriate.
✓	Planning organization staff has identified and met with community leaders/elected officials representing targeted EJ communities. Establishing relationships with community leaders and other elected officials representing targeted EJ communities can go a long way in building trust with members of those communities and drawing their participation into the planning process. Community leaders and elected officials can assist an agency by identifying EJ communities in the study area; by using public involvement techniques, by recommending venues and forums that draw participation by community members; by raising transportation needs and issues important to their constituency; and by participating on a community advisory committee.
✓	The public participation program includes a strategy for engaging all present EJ populations in transportation decision-making. The public participation program should include multiple approaches for all EJ populations in the planning and programming process, such as conducting leadership interviews, holding meetings in the communities, participating in community events, producing targeted mailings and publications, providing translation services, using visualizations and icons, and advertising in ethnic TV, radio, and print media.

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✓	<p>The transportation needs of EJ populations and any potential system performance imbalances have been identified. A system-wide analysis of the transportation needs has identified the needs of EJ targeted communities and groups. Additionally, imbalances in system performance among demographic groups, such as differences in mobility, accessibility, or quality of services, have been identified and flagged for response through the planning and programming process. Needs have been identified both through a technical review of system performance as well as through involvement of targeted groups and citizens.</p>
✓	<p>The process has an established procedure for evaluating and selecting among proposed plan or program alternatives. Performance measures have been used to assess the effects of proposed plan or program alternatives on EJ-targeted communities and groups. Different agencies will utilize different tools and measures for evaluating their plan or program alternatives, depending on the content of the plan or program, the size and character of their jurisdiction (rural, suburban, urban), and available resources. A planning organization should feel comfortable that plan and program alternatives have been evaluated in consideration of the needs and preferences of EJ communities and groups. Additionally, the organization has established criteria for selecting among scenarios that includes consideration of EJ issues and concerns. And finally, the evaluation and selection process has actively involved the public in decision-making.</p>

