Cost-Effective High Performance Local Mobility Study using Structured Public Involvement: Case Study Versailles, KY

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ABSTRACT

Cities are facing hard choices regarding transportation options. Mobility and access alternatives entail financial, environmental and other costs that impact different groups in different ways. Environmental Justice (EJ) is mandated. Public involvement is essential, and, in the face of tight budgets, public involvement protocols must be as efficient as possible and they must offer maximum documented performance. The Structured Public Involvement or SPI protocol developed by the authors has been applied successfully to a wide range of infrastructure planning and design questions. These protocols have demonstrated high performance across four criteria including C, clarity of design guidance and Q, anonymous real-time stakeholder process evaluations.

This research reports on the cost-effective adaptation of an SPI protocol for a local-scale mobility study for Versailles, KY. The integration of public input data into a rational decision framework is explained. This research demonstrates a practical, efficient and high-performance method of involving citizens cost-effectively in local scale mobility option development and evaluation. Using a performance Q-metric of anonymous, real-time participant evaluation at open public meetings to measure process quality encourages more sustainable outcomes, both in terms of engineering outcomes and process legitimacy. Land use decisionmakers found the data useful. This study demonstrates (a) that high performance public involvement is not diametrically opposed to small-scale questions or local budgets and (b) that certain EJ aims are supported by such high performance public involvement delivery. The need for complementary EJ process and limits to the overall process design are considered.
INTRODUCTION

Both higher quality public involvement in transportation decision making and the delivery of Environmental Justice (EJ) in transportation are systemwide priorities [1]. According to the 1994 Executive Order 12898 concerning EJ, disproportionate impacts on under-privileged groups must be avoided [2]. This requires that EJ considerations must be defined, measured, documented and comparative project impacts must be analyzed pre-build to avoid such impacts [3]. At the same time, public involvement must be executed effectively at local scales and under conditions of constrained resources both in support of specific EJ aims with target populations and independently in pursuit of project goals and to satisfy public involvement mandates including those specified in Final Environmental Impact Statements, for example [4]. Attention must be paid to sustainability for reasons of environmental and social equity as well as technological limitations. The rather gray area defined by the intersection between public involvement and EJ methods, (i.e. stakeholder involvement process) and the delivery of sustainable transportation solutions (i.e. outcomes), is a key focus area for authorities and project sponsors.

However, integrating public input effectively into sustainable transportation decision making, and then measuring performance, is challenging for many reasons. For one thing, stakeholders often perceive that officials and project sponsors have already made decisions behind the scenes. This phenomenon is termed D.A.D., or “Decide, Announce, and Defend” [5]. The authors have conducted a long-term, large-scale investigation of public perception of the level of stakeholder involvement in transportation decision making using anonymous electronic polling conducted at open public meetings dealing with real issues. This shows that the public believes they are being included at level 3.6 on the famous Arnstein Ladder of Citizen Participation [6], but that they would like to be included at level 6.0, or “partnership” [7]. These findings are consistent across states. One consequence of this “Arnstein Gap” [8] between what the public believes is happening, and what they would like to happen, is what the media calls “civic disengagement.” [9] i.e. citizens exhibit the rational response of not participating in forums that they regard as overly controlled, manipulated towards specific pre-determined outcomes, or simply not a useful way to spend their time.

This unfortunately leads to public meetings becoming adversarial contests between small factions with relatively extreme views and the time and resources to outlast others with differing views [10]. This is neither useful to the broad range of stakeholders, sometimes termed the “silent majority,” nor is it helpful to project sponsors, planners and designers. In cases where potential solutions are perceived as highly controversial, these concerns are amplified [11]. Disengagement and/or unreliable data also call into question the relationship between data obtained through EJ processes.

Other typical problems with public involvement include the difficulty in generating clarity of output from a potential cacophony of voices at a large meeting, even if participation can be encouraged on a larger scale, and the question of how to ensure that the participants view the outcomes with more legitimacy even if their individually preferred scenarios are not implemented. Law scholars find this is a particularly important and challenging problem when EJ processes are involved, because the historical separation and/or segmentation of public involvement efforts into “EJ” and all other, “non-EJ” components entails the generation of separate, and not always logically compatible data [12]. It may also entail the creation of separate communities of opinion within the geographic region, and over time, such differential processes can augment perceived differences among citizens and exacerbate conflicts over the
value of transportation alternatives. At best, reconciling these diverse preferences in an equitable manner can undermine the most well-intentioned EJ compliance efforts by agencies and contractors as well as their broader public involvement plans [13].

Beyond these current operational issues with public involvement and their EJ ramifications, the lack of performance metrics for public involvement is particularly problematic. In the longer term, this is likely to change for several reasons. First, other expenditures of public money are already subject to audit at Federal and State levels. Second, stakeholders are growing increasingly aware of the need and desirability for audit measures that respond to their concerns about how taxpayer money is to be spent. Moreover, performance measures for public involvement must also address the need to improve EJ outcomes and more broadly, sustainability. As Bailey and Grossardt have argued e.g. [14,15] these apparently diverse objectives can be achieved by defining metrics that drive the innovation, selection and adoption of high performance public involvement methods, evaluated using objective data from a range of stakeholders. Such performance data can support the process claim to higher legitimacy, enhance sustainability in decision making, and thereby ultimately address the observed “Arnstein Gap.” These public involvement problems cannot be – and in the view of some, including the authors, should not be - held separate from EJ concerns [16, p.103]. Indeed, the second objective quoted by the FHWA’s Office of Planning, Environment and Realty [1] in their definition of EJ is: “To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.”

In light of the need for a theoretical basis for the design of public involvement that better addresses some or all of the EJ goals, and for data to evaluate how such an approach works in practice, this paper examines how a high-performance public involvement method, SPI, was employed in a local mobility study in a small Kentucky town. The case study data demonstrates how SPI can support EJ goals, and assist the delivery of sustainable solutions in a cost-effective manner for local projects. It also points towards how more sustainable solutions can be delivered at similar cost to current, unstructured methods.

**STRUCTURED PUBLIC INVOLVEMENT or SPI**

In recent years, work has been undertaken to understand better how classic EJ processes and higher performance public involvement methods can be designed, delivered, and their results measured [16]. One method is

Structured Public Involvement or SPI. SPI is a protocol for public involvement originally developed by authors Bailey and Grossardt in 1999 [17]. SPI uses philosopher John Rawls’ theories of Procedural Justice and Access to Justice to frame effective public involvement around legal, financial, and engineering constraints [7]. Within this domain, public involvement can be conducted efficiently according to established ethical principles [18] using visualization, GIS and electronic polling technologies, decision theoretic methods, in ways that maximize stakeholder input and minimize wasted time. SPI protocols are designed according to Rawlsian justice principles to deliver high satisfaction without the need to force consensus. The operation of the meetings, in accord with Jeffersonian principles, flattens out the power structure and does not permit organized interest groups to dominate discussions and influence outcomes disproportionately. Each participant can individually and anonymously contribute data to the evaluative process. This overt efficiency and equity is noted by participating stakeholders and it is a major factor in the documented high performance of SPI protocols nationally and internationally [7].
SPI has been applied to a wide range of transportation infrastructure and design questions since then e.g. transit-oriented development [19]; large context-sensitive bridge design [20]; integrated transportation and land use planning [21]; collaborative electric power transmission line placement [22]; collaborative visioning for nuclear plant site use [23]; and others. SPI has gained a national and international reputation as a leading methodology for high performance public involvement in transportation planning and design and other public goods allocation decisions [e.g. 7]. Although SPI protocols have demonstrated high performance in all of these applications, a perception still exists that such analytic methods of public involvement are more costly than existing, unstructured methods. It has been assumed that protocols such as SPI are resource-intensive compared to existing methods of public involvement and this perception has functioned as a barrier to adoption and adaptation by authorities. Moreover, mobility studies have often been conducted with respect to single dimensions of access, and case studies dealing with smaller-scale towns, under 50,000 inhabitants, are sparse [24].

This research reports on the adaptation of an SPI protocol, in collaboration with partners from STANTEC to the question of local mobility in a small city in central Kentucky. The objective was to investigate how mobility might be improved, and to incorporate citizen valuations meaningfully and effectively into these choices. A second objective was to evaluate the performance of SPI within this local application.

**PROBLEM AND CONTEXT**

Versailles, KY, is located approximately eighteen miles to the west of Lexington. It is the seat of Woodford County. The county has a population of about 23,000, approximately half of whom live in Versailles [25]. The town lies fifteen miles to the south of I-64, and about twenty miles to the west of I-75. The Bluegrass Parkway, an important corridor for central and western KY, branches from US 60 three miles east of downtown Versailles. This strategic location near major Interstate routes, and a number of industrial producers and suppliers involving significant origination and trans-shipment of goods, results in considerable vehicular and particularly truck traffic through the town. Moderate population and traffic growth is predicted in the county through the year 2030.
THE ADAPTED STRUCTURED PUBLIC INVOLVEMENT FRAMEWORK

In previous applications, SPI has been paired with other methodologies such as CAVE for visual evaluation [17], or AMIS for corridor routing investigations [26]. In this case, the attributes of mobility and the options did not possess visual amenity or routing quality. However, the key dimensions of the mobility problem required parameterization, and these parameters required performance metrics to be assigned to permit quantitative evaluation during public meetings and for team purposes. Therefore, a logical framework was developed to elicit and incorporate public valuations into a set of engineering options that were technically, financially, legally and logistically feasible. The objective of the SPI framework was to engage the public in ways that would allow options to be publicly explored without polarizing the debate further. In such potentially contentious cases, this is not always an easy task.

SCOPING OF MOBILITY OPTIONS

A key issue dominating the conversation in Versailles was the possibility of a bypass route, one common method of allowing truck and high-volume vehicle traffic to connect from the Bluegrass Parkway to the dual-lane US 60 and bypass the historic downtown zone. Because of the long and contentious history of this discussion, the state transportation department was unwilling to pursue the planning study, and instead made the study funding available to the city or the county if they chose to pursue it. The City of Versailles made the decision to move ahead with the planning study, but to find a more innovative way to accommodate the anticipated
disagreements among the various affected parties. Consequently the authors were incorporated into the project and asked to specifically address these process issues.

Because the build/no build question had dominated public and official thinking about this issue for some time prior, the project team wished to avoid the problematic and polarizing (and ultimately unhelpful) strategy of presenting lines on the map and asking for a vote on them. This technique, characteristic of what the authors term “unstructured public involvement,” almost always creates more problems than it solves. For instance, it prematurely focuses and factionalizes groups who coalesce around scenarios that might not even be feasible build options. The reasons for strong views on the part of stakeholders, however, should be investigated and quantified using non place-specific valuation mechanisms without initially attaching these to lines or points on the ground [22, 26]. Further, such unstructured public involvement prematurely focuses attention on supposed solutions without adequately measuring the scope of the problem and the values of the affected parties regarding their community. Thus, the team wanted to go beyond merely using technical measurements to evaluate various solutions against technical criteria, such as traffic counts and driver delay. While such information is necessary to help make an informed decision, it is, in the authors’ opinion, insufficient to assure that the most satisfactory solution is identified.

Accordingly, a matrix of goals and objectives were elicited and discussed by the Steering Committee and the project team prior to undertaking any public involvement. Table 1 shows the five goals and twelve objectives that were defined by the steering committee for the study. These goals were the result of extensive discussions between the project sponsors, the consulting engineers within the framework of NEPA and Environmental Justice.

Table 1. Goals and Objectives developed for sustainable mobility analysis

<table>
<thead>
<tr>
<th>Goal 1. Improve multimodal mobility within the community</th>
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<tr>
<td>– Objective 1.1 Reduce travel times</td>
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<td>– Objective 1.2 Reduce delays and congestion</td>
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<td>– Objective 1.3 Reduce truck volumes through downtown Versailles</td>
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<td>– Objective 1.4 Enhance pedestrian/bicycle travel opportunities</td>
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<td>• Goal 2. Provide for efficient and equitable allocation of public resources for transportation infrastructure</td>
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<td>Improvements</td>
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<td>– Objective 2.1 Maximize benefits of projects and strategies in relation to costs</td>
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<td>– Objective 2.2 Strive for a geographic distribution of projects and strategies</td>
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<td>• Goal 3. Improve safety of the transportation system</td>
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<td>– Objective 3.1 Reduce crash frequencies and rates</td>
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<td>– Objective 3.2 Reduce vehicular (auto and truck), pedestrian and bicycle conflicts</td>
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<td>• Goal 4. Minimize the impacts of transportation improvements and strategies on the environment</td>
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<td>– Objective 4.1 Avoid/minimize the impact on cultural historic resources, natural resources, farmland and existing neighborhoods</td>
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<tr>
<td>– Objective 4.2 Preserve the small-town character of Versailles and Midway and the rural landscape and character of Woodford County</td>
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<td>• Goal 5. Recognize the sensitivity both locally and regionally of the transportation/land use relationship</td>
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</table>
– Objective 5.1 Develop projects and strategies consistent with local and regional plans
– Objective 5.2 Develop projects and strategies compatible with the regional transportation system

During the technical feasibility study, ten candidate solutions were identified and developed. These included the following options: a bypass connector; a roundabout at a key intersection; different signal timing regimes to optimize flow in specific directions at specified times; intersection improvements; three different extensions of existing streets, each treated as a separate solution; and increased neighborhood connectivity, permitting percolation of local traffic through the area without the need to use the main highway. These solutions were, in many cases, potentially combinatorial, so that citizens were not asked to choose among them. Rather the goal was to assess the benefits to be derived from each one.

Where feasible, performance measures were developed for each solution and graphically presented for public assessment. These performance measures including traffic flow and potential environmental issues were identified and mapped, or data was presented. These measures were used to determine effectiveness and compare with Goals and Objectives, with the proviso that factors other than performance measures (e.g. cost) could affect the final recommendations. Not all solutions could be evaluated using the same criteria, and the data was not always strictly comparable. For example, the impact of signal timing adjustments on traffic flow could be modeled with confidence and some precision based on traffic count data and calibrated flow model performance [27]. However, the impact of the connector on potential traffic flow and volume is harder to estimate accurately because the domain of uncertainty is larger. Both future traffic flow and the relative distribution of that modeled traffic flow arise from professional estimates using established models of county demographic growth, on the one hand, and driver choice behavior, on the other. Nevertheless, at least one performance criterion, or more, were developed and presented with each of the options.

For example, the impact of various signal optimization routines was evaluated with respect to flow criteria using the software. Bar charts showing flow impacts were presented to the public. Their evaluation was elicited on a scale of 1 through 9 with respect to the question: “How well do you think that this solution will accomplish the goals and objectives?” A score of 1 meant that the respondent believed the proposed solution did not accomplish the goals and objectives at all, and 9 represented complete fulfillment, with other numerical responses indicating degrees of intermediate fulfillment. This strategy moved debate away from what could be considered proxy analysis of mode of solution delivery, i.e. thinking of mobility first in terms of solutions such as car vs. truck vs. pedestrian mobility, rather than beginning with valuation of mobility solutions for each respondent, and then moving forwards to attach mobility parameter values to candidate solutions, and finally evaluating the known methods of achieving this mobility.

Two series of public meetings were conducted. These were designed and hosted in accord with established SPI practice [14-17, 20-23]. The project manager explained the context of the meeting, the agenda was explained and the audience members were invited to participate using their electronic polling system. In the first public meetings, the audience was asked to help develop the project goals and objectives in Table 1 through their agreement with a series of statements regarding the importance of mobility, the value of greenspace, and so forth. In the second round, these Goals and Objectives were posed as the criteria against which to evaluate the
performance of the mobility options. At the second set of meetings, the protocol was repeated with the additional presentation of the results of the first meeting. Each meeting lasted 60 minutes, but was repeated at the same location sequentially, and was held at a local theatre facility that could accommodate up to 200 participants. Attendance for the meetings ranged from 50 to 70 participants each time.

RESULTS

The results of the study can be broken into two components. The first is the stakeholder valuation of the technical solutions. The second is the performance of the SPI protocol itself, as evaluated by the stakeholders and used by decision makers. These data are then connected to broader EJ considerations.

Figure 2 shows the participant evaluations gathered in the second round of the public meetings. Note that certain solutions exhibit good acceptance with broad support, while others, such as the bypass (Northwest Connector) continue to exhibit a broader range of opinions. Stakeholder evaluations were re-evaluated in light of more specific performance data in a subsequent round of meetings.

Figure 2. Stakeholder Evaluations of Mobility Options in Light of Project Goals and Objectives

A notable effect of the SPI protocol was the defusing of the anticipated conflict over the issue of build/no build for the bypass during the meetings. Because citizens saw clearly that the project team did not enter the public involvement phase with a secret commitment to one or other solution, and that other options were being presented and evaluated fairly, openly, transparently and promptly, with respect to objective criteria, a key conflict incentive, contest over routings, was diminished. Participants felt more confident that the process was not being “steered” in any way and the meetings moved along smoothly and with little conflict. An effective sample size was generated by repeating the meetings and keeping them short with a highly structured agenda.
Appreciation for these qualities was demonstrated by the citizen satisfaction data and unsolicited testimonials from participants.

**PROCESS PERFORMANCE DISCUSSION**

To measure stakeholder perception of process quality (the Q-metric), the performance of the protocol was gauged directly in accord with established SPI practice by conducting an anonymous stakeholder process satisfaction poll at the open public meetings [14-17, 20-23]. This evaluation methodology is rare, not only in transportation planning, but in public goods management more generally. The results from the Versailles case are shown in Figure 3.

Figure 3. Participant Satisfaction with SPI Process in Versailles, KY

Reasons for the specific high satisfaction score were also volunteered by meeting attendees as they left. These reasons included:

a. “A level playing field. We all had our views heard.” This indicates an appreciation of the one-person, one vote system designed and used at the public meetings.

b. “Thanks for a timely meeting.” By using electronic polling to gather the data simultaneously, transparently, the data gathering was rapid.

c. “The blowhards were quiet!” This comment indicates one participant’s satisfaction with the gaming resistance of the process. It is hard for one person or interest group to dominate, influence or steer such a meeting towards a specific solution or goal simply by investing more time, knowledge, and/or other resources into the process. Attendees do not know how other attendees feel. By reducing conflict during the meeting, the SPI method allowed the numerical data gathering to proceed without interruption.

The Versailles study should not be viewed in isolation. Data consistency across time and location is important in the systematic evaluation of public involvement processes. The high Q-metric evaluation scores for this project are consistent with results obtained from numerous other SPI protocols in the transportation field across the U.S., including context-sensitive large bridge design, rural highway improvement and noise wall design questions [14-17, 20-23]. Figure 4 shows a Q-metric comparison for this project with a range of other SPI projects.
These extensive data clearly demonstrate that, with a carefully structured approach to public involvement that treats citizens as responsible and conscientious contributors, they can work together in a democratic, efficient, and even satisfactory manner to contribute to preferred plans of action. This obtains even in cases like the Versailles mobility study where the questions are controversial, or potentially polarizing, and citizens have differing values and opinions about significant public infrastructure questions. For instance, those who were strongly opposed to one of the candidate solutions, the Northwest Connector, participated here in a cooperative and open-minded manner. They did not attempt to derail the process, undermine the local project sponsors, or the consulting engineers during explanations of option performance, nor did they attempt to shout one another down during meetings, or contest the validity of each other’s opinions in non-constructive ways.

C-metric: How useful is the data?

It is often hard for transportation researchers to determine the value of the public involvement data in decisionmaking. In their QICE performance framework for public involvement, Bailey, Grossardt and Ripy [16, p.107] defined C, or “clarity,” as how effectively public process data can be converted into useful decision support for managers, engineers, and
designers. One method of measuring this C is to infer utility from the uses of the meeting data in subsequent formal project proceedings at which the study authors were not present.

A year later, a meeting of the Woodford County Planning and Zoning Board discussed the study including the various routing options. During these discussions, especially the Northwest Connector, extensive reference to the data was made by people with divergent views [28, p.10]:

“When the [company] study came out and they talked about options, one was the northwest connector with a high cost and it did not rank numerically as high with the people as going east through a number of connecting roads. Chairman W. questioned if he has the statistics on that? Mr. B. stated that he has the [company] study and he printed some pages of it. For example: How effective is the northwest connector in meeting project goals and objectives and the numerical score was 5.667. Mr. T. stated that they were both extremes. Mr. B. stated that it was actually an upside down bell curve. Mr.T. joked that he is keeping his vote on the study a secret. Mr. B. stated that he is an engineer so he does have a bit of a split mind on this. Part of him says that he does not want stuff built up in the rural part of the county, but on the other hand you can’t ask him if this is good for traffic because his engineer brain would say it is. Mr. B. stated that he did not say that the northwest connector is a zero option; he just felt that in his mind it is not the only best option. There was the Marsailles Drive through Edmonds Cross and that is planned. Numerically that was a 7.246 score. Cedar Ridge to Huntertown Road was a 7.299 score. Crossfield Drive thru to Laval Heights is planned and scored 7.306. Mr. B. stated that all he is saying is that there was more interest in going to the east.”

The views of a member of the public in attendance were also recorded [28, p.12]

“Mrs. K. stated that she is in no way saying that opinions don’t matter, but that she is much more comfortable if there is some sort of process to get there. Mrs. K. stated that she does not think the EDA survey was a failure but there were questions that needed to be asked in addition to what was asked. If you put it with the restaurant survey you would see a great consistency across the board that is valuable. Mrs. K. stated that there is information beyond that which should be qualified and quantified by the Planning Commission to support the decision that they make. If that is done, then whatever decision that is made is fine. Mrs. K. stated that she is not against the northwest corridor and she understands that the traffic is inhibiting to a lot of things that need to happen here; however, all the alternatives need to be explored when making decisions.”

The third-party documentary evidence from the local land use authority demonstrates that:

1. SPI data is useful in focusing decision-makers discussions and in establishing a factual basis for various opinions. The performance data disembeds specific options from specific interest group positions and thereby depoliticizes the discussions.
2. P&Z Committee members and citizens attending the meeting recognize how the process asks them to balance the competing values they possess as individuals and they are able to recognize similar thought given to the problem by the meeting attendees. They see this by viewing the option mean scores and score distributions in the SPI data set. This engenders stronger respect for the data and therefore, for views that may be divergent from theirs.
3. Such data cannot form an exclusive decision support mechanism. However, as a component of an integrated decision support system, the SPI data augments existing knowledge, for example, earlier traffic studies and phone surveys.

**How is EJ achieved?**

Returning to the EJ definition provided by the FHWA, the SPI process for the mobility study addressed two of the FHWA’s EJ goals [1]. Focusing on the properties of solutions and their values to stakeholders, rather than grouping stakeholders and then developing preferences based on such groupings, or simply lining up corridor or option alternatives and inviting factions to battle over their technical superiority, reduced the incidence of certain unproductive conflicts. This conclusion is supported by objective Q-metric data from all participants, the sample citizen comments following the meetings, and the subsequent discussion of the P&Z Committee at which the study authors were not present but the data was used as discussion focus.

The SPI process moved this project one step closer to the second EJ goal of “full and fair” participation of “all communities” [1] and, importantly, these data document how citizens themselves view the meeting achievement with respect to this aim. Most often, this data is not captured by project sponsors or contractors. The lack of such data diminishes the legitimacy of the final selection, because inevitably in transport investments, there are conflicting valuations and priorities and the final selection will not be favored by some participants. If the sponsor cannot document as much “full and fair” participation as possible, using stakeholder-sourced data as opposed to summaries produced by observers who are not regarded as impartial, then the result is the Arnstein Gap documented above – i.e. a persistent and universally low level of trust in the planning/design process and perhaps the sponsoring agency. This systemwide quality deficit is not specifically the product of existing EJ processes, however, this pervasive and deeply-held belief negatively impacts EJ achievement and contaminates further efforts at public involvement and participation in EJ processes.

The authors use a four-axis Q, I, C and E (Quality; Inclusion; Clarity; Efficiency) framework as design criteria for high performance public involvement [16]. SPI is one method of achieving high performance across multiple performance dimensions. Whichever method is used, higher performance across all of these dimensions inherently satisfies two of the stated EJ goals.

Nevertheless, it is important to understand and acknowledge that such a process cannot and should not replace a more focused EJ process. There are minority constituents and other disadvantaged groups whose interests must be safeguarded and whose values must be solicited and included in decision making using more targeted processes. There will be occasions when such views diverge irrevocably from the majority of non-EJ views. However, by evaluating candidate options with a diverse range of stakeholders in the meeting and using data segmentation to understand why, attendees are not labeled or called out as members of, or representatives of, a specific viewpoint nor is their data input diminished – or privileged - because it belongs to a separate class.

The authors emphasize that this performance delivery requires substantial thought and close project team collaboration prior to develop the protocol prior to public engagement. Public meetings cannot be designed the evening before, in a hurried mashup-type way, otherwise project sponsors, public involvement consultants and/or steering committee members will be at loggerheads with each other, and the citizens, about goals, objectives, structure and flow of the meeting. In this respect, SPI has been likened to an iceberg, in which the majority of team effort and cost is directed at structuring the meetings some time prior to contact with the public. In this...
way, the public sees and participates in a transparent, equitable, efficient and more often than not an enjoyable process, absent much of the manipulation, gaming and wastage of time that can characterize unstructured public involvement.

Sustainable transportation solutions

Realizing more sustainable transportation solutions is a problematic undertaking, and not only because sustainability lacks a widely-agreed definition beyond that offered by the 1987 Brundtland Report [29]. For example, with respect to sustainable transportation, Litman and Burwell [30, p.331] note:

“A narrow definition of sustainable transport tends to favour individual technological solutions, while a broader definition tends to favour more integrated solutions, including improved travel choices, economic incentives, institutional reforms, land use changes as well as technological innovation.”

Along with dimensions of sustainability such as environmental equity, including noise pollution and vehicular emissions, as well as resource requirements entailed by new and/or modified infrastructure, another key dimension of sustainability is legitimacy in decision making [31]. High quality public involvement is critical in identifying and realizing more sustainable transportation solutions [32]. At the local level, without citizens seeing and knowing that their voices have been heard and their values have been respected, to the degree technically feasible, no solution can claim to be truly sustainable. This understanding leads Litman and Burwell [30, p.331] to the conclusion that: “Sustainability planning may require changing the way people think about and solve transportation problems.” Transportation agencies agree. As is now recognized by FHWA, sustainable mobility solutions require early elicitation and incorporation of public values in order to avoid maldesigned solutions that are ultimately rejected by stakeholders [20].

CONCLUSIONS

The Versailles sustainable mobility case study demonstrates how an adapted SPI protocol can cost-effectively and usefully incorporate citizen valuations into mobility questions at the local scale. The project was awarded as the result of a competitive bid process at a total cost the same as competitive proposals that did not include an SPI protocol. Although the project described here cost no more than competing unstructured protocols, it delivered high performance in terms of meeting efficiency, data utility, and stakeholder performance evaluation.

This project encouraged citizens with widely differing values and opinions about significant public infrastructure questions to work together in a respectful, democratic, efficient, and satisfactory manner to make collective decisions about public resources. The mean stakeholder satisfaction ratings of 9.0 points on a 10-point scale obtained here are consistent with and in this case, slightly (but statistically insignificantly) greater than the results obtained nationally and internationally by SPI protocols in various applications. This high performance was obtained as the result of close collaboration with consulting engineers familiar with SPI applications and process design, who were able to work to parameterize the problem effectively in ways that maximized citizen input. It also shows cost-effectiveness, in that smaller cities and localities can benefit from the conjunction of SPI protocols and state-of-the-art engineering analyses conducted as part of an integrated solution delivery system. Using SPI instead of
unstructured public involvement offers strong QICE performance. It costs the same as unstructured public involvement. Public meetings must be hosted in response to mandate, and in the future, performance criteria are likely to be imposed on such efforts. Maximum performance per dollar spent on public involvement is important and is likely to become essential. The SPI methodology and the QICE performance framework have been in use for over a decade and offer a proven and efficient high-performance alternative to unstructured public involvement.

In relation to process design for EJ analysis, although the authors agree that certain EJ considerations must be addressed separately, standard public involvement processes can support EJ aims more effectively. They can function to evaluate the significance of EJ concerns in the broader community and can help to achieve more of the EJ-mandated “full and fair participation.” In useful ways for citizens, project managers, and decision makers, SPI can support the achievement of better EJ when integrated into a well-designed program of public involvement. We argue here for a more careful consideration of this program; much as engineers use systems design and analysis techniques to evaluate the technical aspects of transportation project delivery, a more analytic and objective framework is required to allow high-performance public involvement to be conducted, and for their aims to further ongoing EJ processes.
REFERENCES


STANTEC is the current affiliation for author T. Creasey. This work was undertaken before this author’s previous employer was acquired by STANTEC.

The published Planning and Zoning Minutes are quoted here but without the names of the individuals participating in the meeting or the company performing the study.