



# City of Seattle

## Office of City Auditor

Susan Cohen, City Auditor

DATE: January 15, 2009

TO: Councilmember Jan Drago

CC: Mayor Greg Nickels  
Grace Crunican, Director SDOT  
Stella Chao, Director DON  
City Councilmembers

FROM: Susan Cohen *Susan Cohen*

SUBJECT: Review of Costs of Neighborhood Traffic Calming Projects

For this project, we evaluated the Seattle Department of Transportation's (SDOT's) cost estimating process for neighborhood traffic calming projects funded through three funding sources: the Department of Neighborhood's (DON) Neighborhood Matching Fund (NMF), the Neighborhood Street Fund (NSF), and the SDOT Neighborhood Traffic Control Program (NTCP). To conduct our review, we interviewed officials from SDOT and DON whose work is related to Seattle's neighborhood traffic calming programs; reviewed neighborhood traffic calming program documentation with an emphasis on projects completed in 2005-2007 such as the Alki Speed Cushions<sup>1</sup>; and conducted a telephone survey of seven jurisdictions about construction costs for typical traffic calming devices. In addition we looked at SDOT cost estimating for the 51<sup>st</sup> Avenue South Roundabout project. We limited our review to looking at:

1. Does the matching requirement for NMF projects discourage some neighborhoods from seeking needed/desired improvements?
2. Does SDOT inflate costs to avoid the possibility of embarrassing cost overruns?
3. Are there ways SDOT can improve its cost management for neighborhood traffic calming projects?
4. How do Seattle's costs for these types of projects compare with those of other jurisdictions?
5. Can neighborhoods who can afford to pay more have access to getting what they want?
6. Why were the first estimates for a new traffic roundabout in southeast Seattle very high and then lower in subsequent estimates?

## BACKGROUND

<sup>1</sup> In this memorandum, we use the term "speed cushion" as a generic term for raised road surfaces designed to slow traffic, including speed cushions, speed bumps and speed humps.

Since 1978, the City has fully or partially funded over 1,000 neighborhood traffic calming projects through three programs. Each program is briefly described here. See Appendix A for additional information about these programs.

The DON NMF program, started funding street calming projects in 1990 with a total of over 100 projects to date. When a community wants to apply for a small neighborhood traffic calming project via the NMF, they are sent to SDOT to obtain a feasibility assessment, a project cost estimate, and guidance in securing neighborhood petitions. The SDOT project cost estimate typically provides only about 8-12 lump sum line items for design and construction costs. The neighborhood group uses the SDOT estimate to create their budget and establish the required match. They include the estimate and other supporting documentation in their application. For funded projects, SDOT provides the design work and the Seattle Conservation Corps, a City-funded work training program housed in the Parks Department, often constructs the project. An Associate Transportation Planner who resides within SDOT but is half-funded by DON is available to assist NMF applicants through this process.

Traffic calming devices are sometimes funded by the SDOT NSF program, which is available for a variety of transportation projects requested by neighborhoods. Rough estimates are provided by SDOT. Project lists are narrowed and prioritized through a public involvement process. Final selection is made by a committee that includes City staff. If a project is selected for this program, full funding is provided by the NSF.

The NTCP program also takes requests from neighborhoods for traffic calming devices. SDOT scores these applications based on traffic data such as reported collisions, speed, and volume. If the project scores high on these factors and SDOT judges the project feasible, the requesting neighborhood must obtain signed consent for the project from 60% of adjoining neighbors. A project that makes it through this process is fully funded by the NTCP program. An estimate is generally not developed for these projects. They are constructed by SDOT crews, with the available budget determining how many are completed in any year.

## **RESULTS OF OUR REVIEW**

### **Does the project matching fund requirement discourage some neighborhoods from seeking needed/desired improvements?**

According to DON officials, they have received feedback at their outreach workshops that it is difficult for some neighborhoods to come up with the match<sup>2</sup> for neighborhood traffic calming projects, but since DON does not track this type of information it is hard to gauge how widespread this sentiment is among the neighborhoods. DON reported however, that they have rarely rejected a traffic calming project. This is because by the time DON receives a project proposal from a neighborhood group, the proposal has been reviewed and approved by SDOT, the neighborhood group has secured petitions, and obtained pledges for the neighborhood match.

### **Does SDOT inflate costs to avoid the possibility of embarrassing cost overruns?**

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<sup>2</sup> Although neighborhoods can match with labor and materials, the nature of neighborhood traffic calming projects leaves limited opportunities for volunteer labor and ultimately heavily relies on cash donations from the neighborhood.

It does not appear that SDOT cost estimates are inflated. SDOT's methodology for estimating small traffic calming project costs, such as traffic circles and speed cushions, is to develop "planning level estimates" using plug numbers based on historical cost data based on a number of similar, completed projects, with a 10% added contingency for construction (see Appendix B for a typical sample SDOT NMF cost estimate). Adjustments are then made to the estimate to account for specific site considerations such as the necessity to relocate survey monuments, make sewer manhole adjustments, and account for larger or smaller intersections. This type of approach is a widely used estimating methodology for repeat projects.

During 2005-2007, SDOT's estimated costs for design, construction, 10% construction contingency, and "add-ons"<sup>3</sup> for a non-random sample of typical 16 foot diameter traffic circles constructed by the Seattle Conservation Corps for NMF projects was \$8,900. In comparison, SDOT uses an estimate of \$15,000 (including design, construction, construction contingency, and "add-ons") for the same size and type of traffic circle built by SDOT in-house crews<sup>4</sup> through the Neighborhood Traffic Control Program (NTCP), or about 69 percent more than for projects constructed by the Seattle Conservation Corps<sup>5</sup>.

Neighborhood groups are free to select a private contractor to provide the construction for their NMF project, however SDOT reported anecdotally that neighborhood groups rarely do so because the Seattle Conservation Corps construction costs are very favorable. SDOT informed us that based on a recent request from the Seattle Conservation Corps, the construction cost plug number for a "typical" traffic circle in 2008 has been updated from \$5,000 to \$7,000<sup>6</sup> due to increased construction costs, which raises the typical design and construction cost of a NMF traffic circle to \$11,100.

### **Are there ways SDOT can improve its project cost management for neighborhood traffic calming projects?**

SDOT does not track actual design and construction costs for most individual traffic calming projects<sup>7</sup> and can only provide an approximation of estimated average costs. SDOT should keep accurate records so that it can periodically review traffic calming project design and construction costs and know what these projects cost. SDOT reported that a new work management system it plans to implement in two years will make it easier to track project costs.

### **How do Seattle's costs for these types of projects compare with those of other jurisdictions?**

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<sup>3</sup> These are site specific adjustments that may be necessary such as survey monument relocations and adjustments of manholes by Seattle Public Utilities.

<sup>4</sup> SDOT in-house crews rarely construct NMF projects; they construct NTCP projects which are 100% City funded. SDOT NTCP estimates \$15,000 (including design and contingency) for a typical 16' traffic circle construction by SDOT in-house crews. This NTCP estimate is consistent with the SDOT Pavement Engineering and Management group (which houses the crews that build the NTCP projects) which indicated that the historical cost is in the \$12,000-\$16,000 range.

<sup>5</sup> This cost difference between construction by SCC and SDOT crews is significant because SCC has much lower labor rates (entry/intern level personnel) while SDOT Street Maintenance crews consist of more highly skilled and paid personnel.

<sup>6</sup> This updated \$7,000 plug number does not include construction contingency and site specific adjustments that may be required such as monument relocations and adjustments of manholes by SPU.

<sup>7</sup> SDOT explained that they have not tracked individual project costs because they are small, routine, repeat projects and that it has been cost effective to manage these small projects at the program level instead of at the project level. However, beginning in 2008, the management of the NSF program has started to document actual costs for traffic calming projects.

We contacted a number of local jurisdictions with traffic calming programs and obtained the following informal cost estimates from them for constructing a typical 16 foot traffic circle; the estimates do not reflect detailed information about what is included in these costs:

Jurisdiction	Traffic Calming Program?	Typical (16') Traffic Circle Construction Cost Estimate, each, as a free-standing project
Seattle	Yes	\$5,500 (NMF by SCC); \$13,300 (by SDOT crews)
Kirkland	Yes	\$6,500
King County	No	N/A
Bellevue	Yes	\$25,000** (2008 anecdotal estimate)
Portland	Yes	\$20,000*
Bellingham	Yes	\$20,000-\$25,000 each*
Snohomish County	Formal program discontinued in 2002	\$12,500
Olympia	Yes	No typical cost; too site-specific

\*Portland and Bellingham's numbers are very high because they include items such as drainage and full street reconstruction work.

\*\*Bellevue does not have in-house construction crews and their traffic circles are bid out to private contractors. Also, their traffic circles are typically constructed as part of a larger neighborhood or street plan and not as individual, free-standing project. This is an anecdotal estimate.

Although most jurisdictions we contacted were able to provide an informal budget estimate for a typical traffic circle, the City of Portland was able to provide budget figures for a wide variety of traffic calming devices, as follows: \$2,200 for each speed cushion, \$3,200 for a raised crosswalk, \$1,000 for curb ramps, \$4,000 to reconstruct a corner, \$6,000-\$10,000 for a mini-roundabout, \$12,000 for curb extensions unless they provide a storm water quality function which raises the estimate to \$20,000, and \$12,000-\$30,000 for pedestrian refuge islands.

Our survey results indicate that Seattle's cost estimate used for traffic circles is relatively low.

### **Can neighborhoods who can afford to pay more have access to getting what they want?**

A neighborhood group could decide not to pursue City funding for a neighborhood traffic calming project and, at its own expense, develop a design, apply for a permit, and construct a neighborhood traffic calming project. We checked with SDOT's Right-of-Way (ROW) permitting section and SDOT's Neighborhood Traffic Control Group regarding such cases. Officials from the Street Use Division, which provides ROW use permits, recalled that several neighborhood groups have tried this approach. The groups were referred to the Neighborhood Traffic Control Program (NTCP) for their plan review, and ultimately did not get permits for their projects.

According to officials from SDOT's Neighborhood Traffic Control Program, during 2005-2007, there were two projects that were partially or fully paid with private funds: 1) a neighborhood speed cushion project located on 59<sup>th</sup> Avenue SW near Alki Avenue SW was partially paid for by a neighborhood group, and 2) speed cushions on 49<sup>th</sup> Avenue SW near SW Brandon Street which were damaged and subsequently reconstructed by a private developer. SDOT officials indicated that the speed cushion project did not rank high enough to qualify for 100% funding through the NTCP program and the City determined that the neighborhood needed to pay part of the project's cost. The neighborhood was informed that the City was willing to go ahead with the project if the neighborhood paid for the installation cost (\$6,000 out of total cost of \$13,200). SDOT standard procedures also required that the

neighborhood gather signatures for a petition showing that 60% of the neighborhood residents supported the project. The neighborhood was informed about the other possible City funding sources for the project (through the NSF and NMF programs) but did not apply for those programs. The neighborhood was successful in raising the necessary \$6,000.

SDOT's Neighborhood Traffic Control Program officials indicated that they don't have a clear policy on privately funded traffic calming projects at this time. They stated that it's not a question that arises often, although they are beginning to get more frequent questions from customers about this. SDOT anticipates developing more formalized operating procedures and guidelines on privately funded traffic calming projects later this year.

### **Why were the first estimates for a new traffic roundabout in southeast Seattle very high and then lower in subsequent estimates?**

The 51<sup>st</sup> Avenue South Roundabout Project<sup>8</sup> was developed as a separate major CIP project, not as part of the Neighborhood Traffic Calming Program. SDOT uses very different project cost estimating processes for these projects than for the small traffic calming projects described earlier. Major transportation projects of this scope are typically estimated in their very early design stages (1-2% design level) in order to submit grant applications and funding proposals. Early cost estimates include a high project contingency because of the high level of project unknowns. As the project proceeds through scoping, environmental review and design, these cost estimates often change. This was the case with the 51<sup>st</sup> Avenue South Roundabout project.

SDOT includes these high contingencies to try to ensure they can do the project for the stated amount and not have to go back to the City Council for more money because they did not estimate enough. We asked SDOT officials whether they could improve their project estimating on large CIP projects. SDOT responded that this would require them to proceed to a higher level of design at the City's cost prior to submitting grant applications and funding requests. The level of accuracy of early cost estimates is relative to the level of design and environmental review completed. SDOT typically does value engineering at around 60% design level. (Value engineering is a process used to reduce the cost of a project by refining its design.) Taking all the projects to a higher level of design development prior to obtaining funding commitments would enable SDOT to obtain more accurate cost estimates. However, according to SDOT officials, this is beyond the limits of SDOT's resources.

### **Conclusions**

SDOT's neighborhood traffic calming project cost estimating process does not make it difficult for neighborhoods to obtain needed or desired improvements. Although SDOT's project cost tracking system for these projects are not tracked as individual projects, the cost and number of projects are low. We identified that the highest risk for the City is any level of real or perceived inequity or favoritism in the distribution of City funds for these projects. Hence, the City needs to establish clear policies and procedures to better ensure a fair, adequately documented process for distributing project funding. These policies and procedures should also include whether and how privately paid projects will be permitted.

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<sup>8</sup> The project was included in the 2008-2013 Adopted Capital Improvement Program with a total project cost of \$2,094,000. The 2009-2014 Proposed Capital Improvement Program listed the project with a total project cost of \$4,766,000. During the budget process for 2009, the City Council eliminated this project and all funding for it from the Adopted 2009-2014 CIP.

We would like to offer the following recommendations based on our work:

1. SDOT should improve its records for neighborhood traffic calming project design and construction costs. Since SDOT does not currently track small project design and construction costs by project, it is difficult to assess the accuracy of project costs and the extent to which cost estimates vary from actual project costs.
2. The City Council should work with SDOT to establish clear policies and procedures regarding if and how privately paid neighborhood traffic calming projects will be permitted. These policies and procedures should help ensure that privately funded projects do not conflict or are coordinated with the intended functions and charters of established City programs for such projects.

Please let us know if you have any comments or additional questions regarding neighborhood traffic calming projects.

## Appendix A: City Programs for Traffic Calming Projects

The City has three programs that fully or partially fund neighborhood traffic calming projects: 1) the Seattle Department of Transportation’s Neighborhood Traffic Control Program (SDOT-NTCP), 2) Neighborhood Street Fund (NSF) Program, and 3) the Department of Neighborhoods’ Neighborhood Matching Fund (DON-NMF) Program. Additionally, it is hypothetically possible for neighborhood groups to privately fund and construct traffic calming elements by obtaining an SDOT Street Use Right-of-Way permit. Each of these four ways for citizens to obtain a traffic calming device is briefly described below.

Administering City Department	Program	Sub-Program (if applicable)	Funding Source	City Funding Threshold	City Project Funding Level	Project Selection Process
SDOT	Neighborhood Traffic Control/Circle Program		State Gas Taxes - Arterial City Street Fund	Not explicitly stated but appears to be limited to traffic circles and proposals/solutions for other small traffic calming devices	100% project cost	Citizen request, 60% support of affected neighbors, and NTCP project selection and prioritization (primarily a point system according to collision history, traffic speeds, and traffic volume)
DON/SDOT <sup>9</sup>	Neighborhood Street Fund	Neighborhood Street Fund/Cumulative Reserve Subfund (NSF/CRS) aka “Small Projects”	State Gas Tax and Real Estate Excise Tax (REET)	<\$100,000	100%	District Council selection process after SDOT review <sup>10</sup>
		Large Projects Fund	Bridging the Gap Transportation Levy	>\$100,000	100%	Large Project Review Team selection process <sup>11</sup>
DON	Neighborhood Matching Fund	Small and Simple Projects Fund	City General Subfund	Up to \$15,000	One to one match up to \$15,000 for physical improvement projects such as traffic circles; the City pays up to \$15,000 for planning projects, with a community matching up to \$7,500.	Neighborhood application and 60% support of affected neighbors after SDOT review. Must also meet certain other technical criteria.
		Large Projects Fund	City General Subfund	Up to \$100,000	One to one match up to \$100,000 for physical	Review by Citywide Review Team and District Council volunteers.

<sup>9</sup> DON manages the public process for soliciting and selecting projects, but SDOT then manages the selected projects through construction.

<sup>10</sup> Not all of these projects are traffic calming projects. 1) DON compiles all the applications and sends them to the 13 District Councils. 2) Each District Councils is asked to identify its top five projects. 3) City staff then review the top 65 projects to determine the cost and feasibility. 4) Based on City input, the District Councils then prioritize the projects within their respective districts. 5) Staff from DON, SDOT, Parks, and the Department of Finance, using the priority list and total available budget, make project funding recommendations to the Mayor for inclusion in the following year’s budget. 6) The NSF/CRS budget is allocated among the 13 District Councils, each receiving approximately the same allocation.

<sup>11</sup> Large Project proposals are divided into sectors, North, Central and South, to ensure geographic equity by distributing funds roughly evenly among the three sectors. The review process includes the following: 1) An initial review is completed by SDOT to determine feasibility and cost estimates. 2) Projects that are deemed viable by SDOT are displayed at public open houses. In September 2007, two open houses were conducted in each sector, with over 400 residents attending. 3) Using the public prioritization from the open houses and SDOT analysis, the Large Project Review Team recommends projects for funding to SDOT, the Mayor and the City Council. This Large Project Review Team includes one representative from each of the 13 districts, plus two at-large members. This Review Team convenes annually to receive updates on the large projects.

					improvement projects; the City pays up to \$100,000 for non-physical project, with a community matching up to \$50,000.	
SDOT	Privately Funded Projects – obtain Street Use Permit		Private funding		0%-varies	No current policies regarding conflict/coordination with above City programs.

**Appendix B: Typical Cost Estimate for NMF Traffic Circle Project**



**Gregory J. Nickels, Mayor**  
Grace Crunican, Director

Cost Estimates for Designing, Constructing, and Landscaping  
Traffic Circle (Concrete)  
2nd Avenue Northeast and Northeast 91st Street

**Seattle Department of Transportation:**

Design, Review, and Coordination	\$ 600
Provide traffic signing and markings	\$ 1,100
Layout	\$ 150
Review and Approval of Landscape Plan (Includes follow-up inspection after installation)	\$ 100
<b>Total Cost - Seattle Transportation</b>	<b><u>\$ 1,950</u></b>

**Seattle Conservation Corps:**

Construction - 16' Diameter Landscaped Concrete TC (Includes labor, materials, and topsoil)	\$ 5,000
10% Contingency Fee	\$500
<b>Total Cost - Seattle Conservation Corps</b>	<b><u>\$ 5,500</u></b>

**Seattle Public Utilities:**

Relocate Monument (1) @ \$1,500/each	\$ 1,500
Raise Manhole (1) @ \$500/each	\$ 500
<b>Total Cost - Seattle Public Utilities</b>	<b><u>\$ 2,000</u></b>

**FINAL COST** **\$ 9,450**

Prepared by: Theresa Cayetano Smith, P.E.  
August 22, 2005

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## Appendix C: Department of Neighborhood's Response



Gregory J. Nickels, Mayor  
Stella Chao, Director

### MEMORANDUM

DATE: December 23, 2008

TO: Susan Cohen, City Auditor  
Office of City Auditor

FROM: Stella Chao, Department Director

SUBJECT: Comments on Draft City Auditor's Traffic Calming Project Cost Report

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Thank you for allowing us to comment on the Draft Traffic Calming Project Cost Report. The followings are comments from the Department of Neighborhoods (DON)'s Neighborhood District Coordinator Program for your references.

- 1) The City's system of three or four funding sources for neighborhood traffic calming projects, each with its own application process, is confusing for the public, especially while working to create better access for community members with little experience working with government systems. Perhaps a simplified standard system of applying for traffic calming projects would be beneficial for both the City and community groups. Even if the City continues to rely on various funding sources, it may be possible to somewhat streamline the application process.
- 2) Some community groups would like to see greater communication from the City about project status (e.g., quarterly project updates). If these project updates included cost reports, then there might be greater opportunity to add in incremental improvements such as landscaping and signage.
- 3) There is a perception by some community groups that the City uses a generic approach for cost estimation that relies on estimates with a generous contingency. For example, that the City uses estimates (\$5,000) for speed bumps/humps/cushions that may not be reflective of current market options, or include specifications that are not fully communicated to increase understanding.
- 4) The City should take into account equity considerations relating to low-income or racial disparities in the distribution of resources. Historically, the NSF/CRF small projects program

has relied on a relatively even allocation of project dollars across the City's neighborhood districts, though some neighborhoods may have greater needs to support the infrastructure. This may not be as true of the other funding sources for neighborhood traffic calming projects. Some neighborhoods may have a greater need for traffic calming projects than others. How this need can best be assessed may be challenging but is important to consider.

5) Development of City policies and procedures for privately funded traffic calming projects will be reviewed and approved by Seattle Department of Transportation (SDOT), the appropriate City Departments. Example, if a local improvement district (LID) or individual developer is willing to pay for curb bulbs, raised crosswalks and or improvements that enhance pedestrian safety, SDOT shall apply the good neighbor policy by checking with the surrounding neighborhood and businesses.

Again, thank you for the opportunity to comment on this audit. If you have any further questions, please feel free to contact our office.