

**ACTION TRANSMITTAL No. 2018-10**

**DATE:** January 12, 2018

**TO:** TAC Funding and Programming Committee

**PREPARED BY:** Joe Barbeau, Senior Planner (651-602-1705)

**SUBJECT:** Scope Change Request for Minneapolis's 6th Street Overhead Signal Additions Project

**REQUESTED ACTION:** The City of Minneapolis requests a scope change to its 6th Street Overhead Signal Additions Project (SP # 141-030-036) to remove several elements and add two curb extensions.

**POSSIBLE ACTIONS:** The Committee can recommend approval or denial of the request and recommend a federal award amount.

**BACKGROUND AND PURPOSE OF ACTION:** The City of Minneapolis was awarded \$1,049,400 in Highway Safety Improvement Program (HSIP) funds in the 2014 HSIP Solicitation to install overhead signal amenities along 6<sup>th</sup> St. in Downtown Minneapolis. The project is scheduled for fiscal year 2018. The City requests removal of several elements in order to avoid conflict with future downtown projects that will construct pedestrian curb ramps with accessible pedestrian signals (APS). Shown below are the elements that were included in the original application, sorted by those that the City wishes to retain and those that it wishes to remove:

- Elements to Retain:
  - Nine overhead signals
  - Three pedestrian curb ramps
  - Three APSs
  - Three pedestrian countdown timers
  - One curb extension
- Elements to add:
  - Two curb extensions
- Elements to Remove:
  - Two pedestrian curb ramps
  - Two APSs
  - Two pedestrian countdown timers

**RELATIONSHIP TO REGIONAL POLICY:** Projects that receive funding through the Regional Solicitation process are subject to the regional scope change policy. The purpose of this policy is to ensure that the project is designed and constructed according to the plans and intent described in the original application. Additionally, federal rules require that any federally-funded project scope change must go through a formal review and TIP amendment process if the project description or total project cost changes substantially. The scope change policy and process allow project sponsors to adjust their projects as needed while still providing substantially the same benefits described in their original project applications. The HSIP solicitation process and list of funded projects are approved by TAB. However, MnDOT Metro District manages the region's HSIP solicitation scoring and project ranking process on behalf of TAB and the Metropolitan Council.

A TIP amendment request accompanies this request.

**STAFF ANALYSIS:** Because MnDOT administers the scoring for the HSIP Solicitation, staff did not reach out to any project scorers regarding this request. MnDOT’s Metro District staff reviewed the request and believes that the project is still worthy of being funded. The original application had a benefit/cost ratio of 15.30, which was the highest among the reactive project applications. Due to this proposal, the ratio in this proposal drops to 12.07, still the highest benefit/cost ratio among the reactive project applications.

The City is stating that this project will now cost \$1,155,000, \$11,000 less than the inflation-adjusted original project amount. The City is requesting 90% funding (the maximum for HSIP and the standard for projects funded through the HSIP solicitation) of \$1,039,500, \$9,900 less than the original award (\$1,049,400). Assuming the scope change request is approved, options for federal funding allocations include the following as described below and shown in Table 1.

1. **Option 1-Applicant Proposal:** Decrease the funding by X from \$1,049,400 to **\$1,039,500**, as proposed by the applicant.
2. **Option 2-Applicant Proposal Adjusted:** Decrease the funding by X from \$1,049,400 to **\$1,028,292**. The revised cost estimate on page 5 shows a small increase (1.08%) from the already inflation-adjusted amount for the un-changing Portland Avenue intersection. Assuming that proportion was added throughout for inflation, removal of that amount would bring the total pre-inflation cost to \$1,142,547 and the 90% federal contribution to \$1,028,292. Along with Option 1 above, this option allows the City to essentially transfer HSIP funding from the items being removed to the items being added.
3. **Option 3-No Credit for New Elements:** Decrease the funding by X from \$1,049,400 to **\$944,444**. Two project elements (curb extensions) are added and the Committee may prefer not to use federal funds on elements not in the original scope. Removal of those elements, in addition to reversing the inflation adjustment, would bring the total cost to \$1,049,383, 90% of which is \$944,444. This assumes the \$50,000 gaps in 3<sup>rd</sup> Avenue and 5<sup>th</sup> Avenue rows in the revised cost estimate are due to inflation and the addition of curb extensions.
4. **Option 4-Focus on Safety Benefits:** Decrease the funding by X from \$1,049,400 to **\$869,256**. Both the original application and the scope change request application show amortized crash benefits by year for 2015 through 2034. The application shows a reduction of 17.17% in each year. Interpreting that as a 17.17 benefit reduction, the federal contribution could be dropped by the same percent to \$869,256.

Table 1: Funding Options

<b>Options</b>	<b>Original HSIP Award</b>	<b>Decrease in Funding</b>	<b>New HSIP Award</b>
Option 1-Applicant Proposal	\$1,049,400	\$9,900	\$1,039,500
Option 2-Applicant Proposal Adjusted	\$1,049,400	\$21,108	\$1,028,292
Option 3-Focus on Element Removal	\$1,049,400	\$104,956	\$944,444
Option 4-% Decrease in Safety Benefits	\$1,049,400	\$180,144	\$869,256

**ROUTING**

<b>TO</b>	<b>ACTION REQUESTED</b>	<b>COMPLETION DATE</b>
TAC Funding & Programming Committee	Review & Recommend	
Technical Advisory Committee	Review & Recommend	
Transportation Advisory Board	Review & Approve	

## Notes on options

Option 2:

Portland Ave TIP amount	<b>\$371,000</b>
Portland Avenue Current	<b>\$375,000</b>
Difference	<b>\$4,000 (1.078%)</b>
Cost without inflation (Revised cost of \$1,155,000 / 1.078%)	<b>\$1,142,547</b>
Federal contribution (90%)	<b>\$1,028,292</b>

Option 3:

<b>Intersection</b>	<b>Revised Cost</b>	<b>New TIP Amount</b>
1st Ave N & 6th St N #	\$75,000	\$74,191
Hennepin Ave S & 6th St S #	\$75,000	\$74,191
3rd Ave S & 6th St S *	\$265,000	\$265,000
5th Ave S & 6th St S *	\$265,000	\$265,000
Portland Ave S & 6th St S *	\$371,000	\$371,000
<b>TOTAL</b>		<b>\$1,049,383</b>
90%		<b>\$944,444</b>

# Revised cost – (TIP Amount \* 1.078%)

\* TIP Amount

December 18, 2017

Mr. Timothy Mayasich  
Funding and Programming Chair  
Metropolitan Council  
390 Robert St. North  
St Paul, MN 55101-1805

SUBJECT: 6<sup>TH</sup> STREET OVERHEAD SIGNAL ADDITIONS  
SCOPE CHANGE REQUEST  
S.P. 141-030-036

Dear Mr. Mayasich:

The City of Minneapolis was successful in the 2015 federal funding solicitation for the Highway Safety Improvements Program (HSIP) for overhead signal additions at five signal systems along 6<sup>th</sup> Street S. The funding is in the 2018-2021 State Transportation Improvement Program (STIP) in the amount of \$1,166,000 (\$1,049,400 federal). The purpose of this letter is to request a scope change for the project.

The scope change is the removal of pedestrian curb ramp upgrades, accessible pedestrian signals (APS), and pedestrian countdown timers at 1<sup>st</sup> Ave N & 6<sup>th</sup> St N and Hennepin Ave S & 6<sup>th</sup> St S. Due to future projects in Downtown Minneapolis, it is recommended that the above mentioned items be removed from SP 141-030-036. Hennepin Ave is scheduled for reconstruction in 2020-2021 and 1<sup>st</sup> Ave N is scheduled for reconstruction in 2023. These projects will construct new pedestrian curb ramps with APS. Since applying for the grant, city crews have installed pedestrian countdown timers so SP 141-030-036 will not replace them at these two intersections. The project will keep in the scope the installation of overhead signal indications for the 6<sup>th</sup> St approach at these two intersections to be consistent with safety countermeasure identified in the original HSIP application.

Thank you for awarding these funds to the City of Minneapolis and for considering this scope change. If you have any questions or need additional information, I can be reached at 612-673-3986 or by email at [Ryan.Anderson@minneapolismn.gov](mailto:Ryan.Anderson@minneapolismn.gov).

Sincerely,



Ryan Anderson, P.E.  
Minneapolis Public Works – Traffic & Parking Services

**SCOPE CHANGE REQUEST**  
6<sup>th</sup> Street Overhead Signal Additions  
SP 141-030-036

**Location Map**

A map showing the location of the project is attached.

**Revised Project Scope**

Since the time of the application, the City has added two paving projects to its five year capital improvement program. Hennepin Ave is scheduled for reconstruction in 2020-2021 and 1<sup>st</sup> Ave N is scheduled for reconstruction in 2023. To best coordinate construction, new pedestrian curb ramps and APS will be included in the reconstruction projects and not in SP 141-030-036 at the intersections of 1<sup>st</sup> Ave N & 6<sup>th</sup> St N and Hennepin Ave S & 6<sup>th</sup> St S. City crews have already installed pedestrian countdown timers so SP 141-030-036 will not replace them at these two intersections. Remaining in the project scope is the installation of overhead signal indications for the 6<sup>th</sup> St approach at these two intersections which is consistent with the safety countermeasure identified in the original HSIP application. Below is a summary of the changes.

<b>Intersection</b>	<b>Original Scope</b>	<b>Proposed Scope</b>
1 <sup>st</sup> Ave N & 6 <sup>th</sup> St N	OH(1), PR, APS, CT	OH(1)
Hennepin Ave S & 6 <sup>th</sup> St S	OH(1), PR, APS, CT	OH(1)
3 <sup>rd</sup> Ave S & 6 <sup>th</sup> St S	OH(3), PR, APS, CT	OH(3), PR, APS, CT, CE
5 <sup>th</sup> Ave S & 6 <sup>th</sup> St S	OH(2), PR, APS, CT	OH(2), PR, APS, CT, CE
Portland Ave S & 6 <sup>th</sup> St S	OH(2), PR, APS, CT, CE	OH(2), PR, APS, CT, CE
OH(#) Overhead Signal (quantity) PR Pedestrian Curb Ramp APS Accessible Pedestrian Signal (APS) CT Pedestrian Countdown Timer CE Curb Extension		

**Project Schedule**

The project is currently around 30% design and revised cost estimate was prepared for this Scope Change Request. Plans will be submitted to State Aid in spring 2018. Once authorized, advertisement for bids is anticipated in summer 2018. Construction would start in fall 2018 and completion in summer 2019.

**Revised Cost Estimate**

The table below summarizes the original and revised cost estimate. The STIP added 6% for inflation after the original application was submitted.

<b>Intersection</b>	<b>Original Cost</b>	<b>Original +6%</b>	<b>Revised Cost</b>
1 <sup>st</sup> Ave N & 6 <sup>th</sup> St N	\$125,000	\$132,500	\$75,000
Hennepin Ave S & 6 <sup>th</sup> St S	\$125,000	\$132,500	\$75,000
3 <sup>rd</sup> Ave S & 6 <sup>th</sup> St S	\$250,000	\$265,000	\$315,000
5 <sup>th</sup> Ave S & 6 <sup>th</sup> St S	\$250,000	\$265,000	\$315,000
Portland Ave S & 6 <sup>th</sup> St S	\$350,000	\$371,000	\$375,000
<b>Total</b>	<b>\$1,100,000</b>	<b>\$1,166,000</b>	<b>\$1,155,000</b>

The original cost estimate reflected the scope of work outlined above. When the grant was written, overhead signal indications were already installed for north-south approaches at 1<sup>st</sup> Ave N & 6<sup>th</sup> St N and Hennepin Ave S & 6<sup>th</sup> St S, thus the cost estimate reflected only one new overhead for the 6<sup>th</sup> St approach, along with pedestrian curb ramps, APS, and pedestrian countdown timers. Portland Ave S & 6<sup>th</sup> St had tested curb extensions as a pilot with paint and delineators. The original cost estimate included installing permanent curb extensions at this location but feasibility of the other locations was not known at the time.

The revised cost estimate reduces the cost to reflect the change in scope at 1st Ave N & 6th St N and Hennepin Ave S & 6th St S. Based on the 30% design, additional curb extensions are possible on some corners at 3rd Ave S & 6th St S and 5th Ave S & 6th St S. The estimate for these two locations has increased to reflect the cost of the curb extensions and potential relocation of drainage structures. City staff are continuing to discuss what the impacts to drainage might be at all the intersections where curb extensions are proposed which will greatly influence which corners are included in the final plans. Contingencies were added to the revised cost estimate to reflect unknown increases that may arise in final design and construction.

**Revised Benefit/Cost**

The original HSIP application included two crash reduction countermeasures. The primary countermeasure was the installation of overhead signal indications. This was estimated to have a right angle crash reduction factor of 80% and a reduction factor for all other crashes to be 30%. The secondary countermeasure was the installation of pedestrian countdown timers which had a pedestrian crash reduction factor of 30%. Thus, by combining the two factors, a pedestrian crash reduction factor of 51% was used as part of the benefit/cost computation.

The benefit/cost calculation has been redone since installing pedestrian countdown timers at 1st Ave N & 6th St N and Hennepin Ave S & 6th St S is no longer included in the project as a result of this scope change request. Complicating the calculation is that three locations will still include installing new pedestrian countdown timers whereas two do not. The 51% factor was used for three locations and 30% for the other two. For each intersection the changes in crashes were computed. Then the sum of all five intersection’s change in crashes was used to determine the benefit/cost ratio.

At 1st Ave N & 6th St N and Hennepin Ave S, crashes originating from the north-south approaches were not included in the original benefit/cost calculations as overhead signal indications were already installed. However all pedestrian crashes were included since initially pedestrian countdown timers were included in the scope. As a result of the scope change, the new calculation also omits the pedestrian crashes from the north-south approaches.

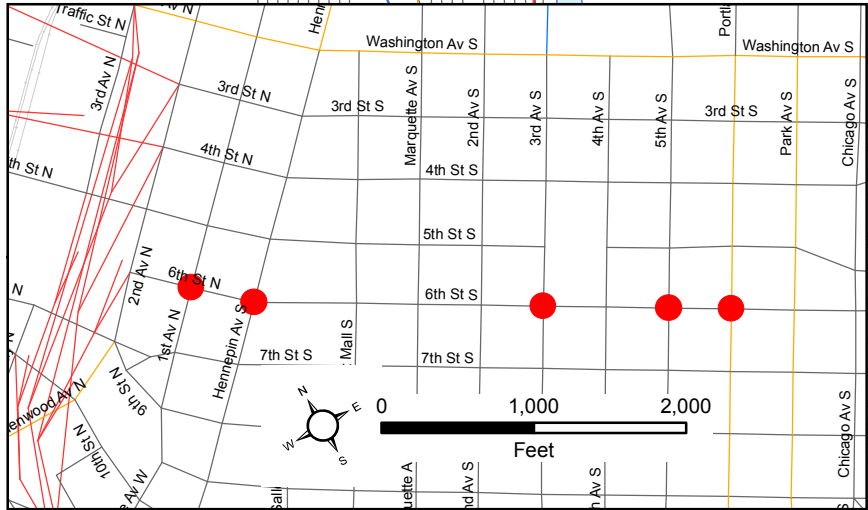
The new benefit/cost over the life of the project is calculated to be 12.07. While slightly lower than the 15.30 included in the original application, this ratio indicates the project would still provide a significant benefit to public safety and meet the goals of the HSIP program.

**Revised Funding**

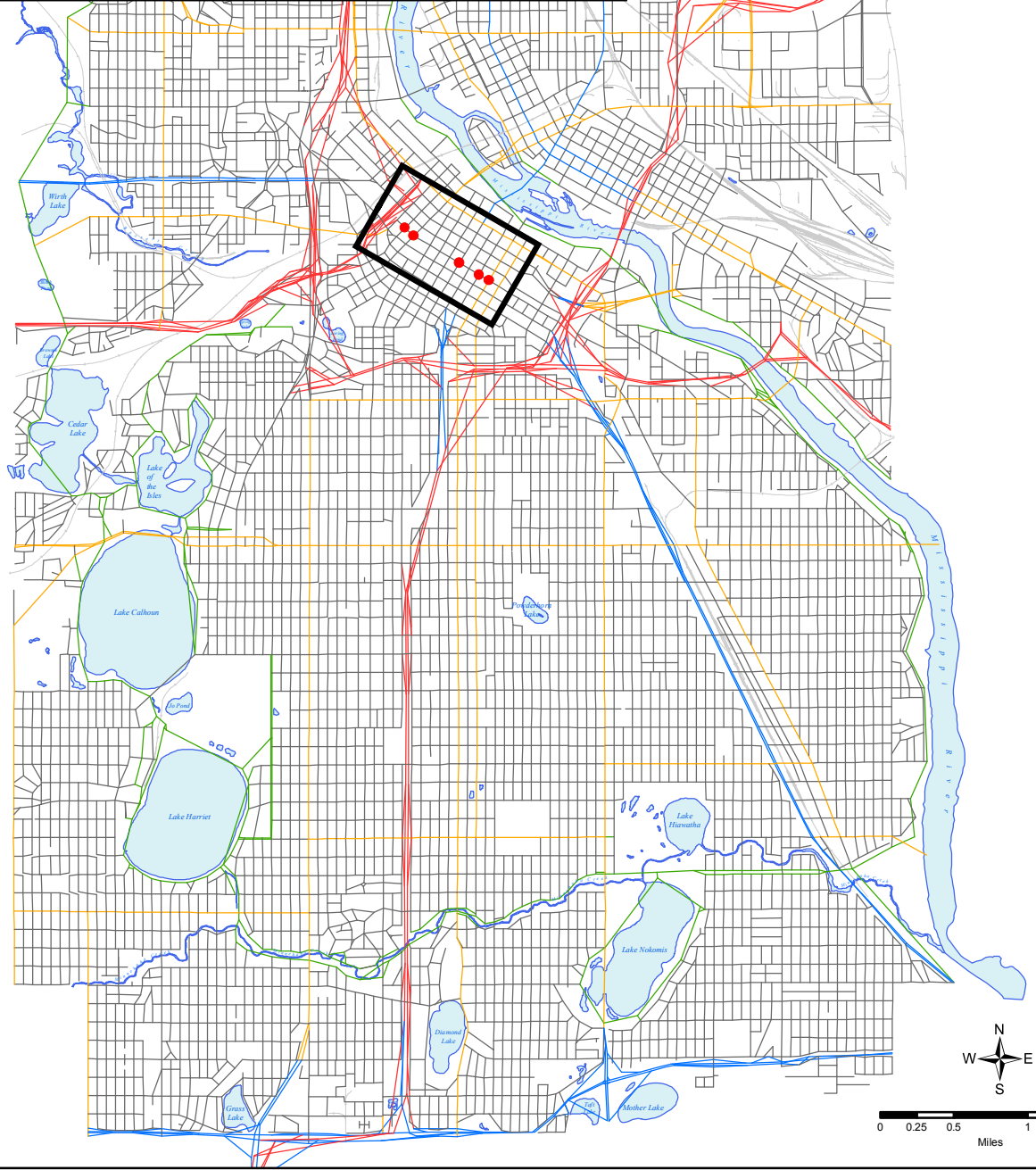
The funding is in the 2018-2021 State Transportation Improvement Program (STIP) in the amount of \$1,166,000 (\$1,049,400 federal). This included a 6% increase for inflation as compared to the original estimate included on the HSIP application. The table below summarizes the funding sources.

<b>Funding Source</b>	<b>Original Funding</b>	<b>Current STIP</b>	<b>Proposed Funding</b>
FHWA	\$990,000	\$1,049,400	\$1,039,500
City Local	\$85,000	\$91,600	\$90,500
County	\$25,000	\$25,000	\$25,000
<b>Total</b>	<b>\$1,100,000</b>	<b>\$1,166,000</b>	<b>\$1,155,000</b>

The reason for keeping the proposed funding similar to the current STIP amount is that it would allow the City to pursue installing more curb extensions. The 30% design indicated more curb extensions are feasible. Drainage impacts have not been fully analyzed yet which would affect costs, so contingencies were included when calculating the revised cost estimate for this scope change. Curb extensions shorten the crossing distance and make pedestrians more visible which would have a huge benefit for improving pedestrian safety, further meeting the goals of the HSIP funding.



● Project Locations



HSIP: 6th Street South Overhead Signal Additions



HSIP worksheet		Control Section	T.H. / Roadway	Location			Beginning Ref. Pt.	Ending Ref. Pt.	State, County, City or Township	Study Period Begins	Study Period Ends			
				6th Street South			1st Ave N	Portland Ave S	Minneapolis	1/1/2011	12/31/2013			
Accident Diagram Codes		Description of Proposed Work												
1 Rear End		2 Sideswipe Same Direction		3 Left Turn Main Line		5 Right Angle		4,7 Ran off Road		8, 9 Head On/ Sideswipe - Opposite Direction		Pedestrian	Other	Total
Study Period: Number of Crashes		Fatal	Personal Injury (PI)	Property Damage	Fatal	Personal Injury (PI)	Property Damage	Fatal	Personal Injury (PI)	Property Damage	Fatal	Personal Injury (PI)	Property Damage	Total
		F	A	PD	F	A	PD	F	A	PD	F	A	PD	
		0	0	11	0	0	21	0	0	2	0	0	5	47
% Change in Crashes		F	A	PD	F	A	PD	F	A	PD	F	A	PD	
*Use Crash Modification Factors Clearinghouse		-30%	-30%	-30%	-30%	-30%	-30%	-30%	-30%	-30%	-30%	-30%	-30%	
Change in Crashes		F	A	PD	F	A	PD	F	A	PD	F	A	PD	
= No. of crashes X % change in crashes		0.00	0.00	-3.30	0.00	0.00	-16.80	0.00	0.00	-0.60	0.00	0.00	-1.50	-24.60
Year (Safety Improvement Construction)		2015												
Project Cost (exclude Right of Way)		\$ 1,155,000		Type of Crash	Study Period: Change in Crashes	Annual Change in Crashes	Cost per Crash	Annual Benefit	<div style="border: 1px solid black; padding: 5px; display: inline-block;">B/C= 12.07</div> Using present worth values, <b>B= \$ 13,937,638</b> <b>C= \$ 1,155,000</b> See "Calculations" sheet for amortization.					
Right of Way Costs (optional)				F			\$ 10,300,000							
Traffic Growth Factor		3%		A	-0.80	-0.27	\$ 550,000	\$ 146,667						
Capital Recovery				B	-4.52	-1.51	\$ 160,000	\$ 241,067						
1. Discount Rate		4.5%		C	-12.90	-4.30	\$ 81,000	\$ 348,300						
2. Project Service Life (n)		20		PD	-24.60	-8.20	\$ 7,400	\$ 60,680						
				Total			\$ 796,713		Office of Traffic, Safety and Technology September 2014					



**Amortizing (From Scope Change Request)**

<b>Year</b>	<b>Crash Benefits</b>	<b>Present Worth Benefits</b>	<b>Present Worth Costs</b>
2015	\$ 796,713	\$ 796,713	\$ 1,155,000
2016	\$ 820,615	\$ 785,277	
2017	\$ 845,233	\$ 774,005	
2018	\$ 870,590	\$ 762,895	
2019	\$ 896,708	\$ 751,945	
2020	\$ 923,609	\$ 741,151	
2021	\$ 951,317	\$ 730,513	
2022	\$ 979,857	\$ 720,027	
2023	\$ 1,009,253	\$ 709,691	
2024	\$ 1,039,530	\$ 699,504	
2025	\$ 1,070,716	\$ 689,464	
2026	\$ 1,102,838	\$ 679,567	
2027	\$ 1,135,923	\$ 669,813	
2028	\$ 1,170,000	\$ 660,198	
2029	\$ 1,205,100	\$ 650,722	
2030	\$ 1,241,253	\$ 641,381	
2031	\$ 1,278,491	\$ 632,175	
2032	\$ 1,316,846	\$ 623,100	
2033	\$ 1,356,351	\$ 614,156	
2034	\$ 1,397,042	\$ 605,341	
0	\$ -	\$ -	
0	\$ -	\$ -	
0	\$ -	\$ -	
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0	\$ -	\$ -	
0	\$ -	\$ -	

**Totals = \$ 13,937,638 \$ 1,155,000**  
**(B) (C)**

year (n)= 1, 2, 3,....  
discount rate (i) = 4.5%

$$\text{Crash Benefits (@ year n)} = (\text{Crash Benefits})_{n-1} \times (1 + \text{Traffic Growth Factor})$$

$$\text{Present Worth Benefits (@ year n)} = (\text{Crash Benefits})_n \times 1/(1 + \text{Discount Rate})^n$$

### Amortizing (From Original Application)

Year	Crash Benefits	Present Worth Benefits	Present Worth Costs
2015	\$ 961,823	\$ 961,823	\$ 1,100,000
2016	\$ 990,678	\$ 948,017	
2017	\$ 1,020,398	\$ 934,409	
2018	\$ 1,051,010	\$ 920,997	
2019	\$ 1,082,541	\$ 907,777	
2020	\$ 1,115,017	\$ 894,746	
2021	\$ 1,148,467	\$ 881,903	
2022	\$ 1,182,921	\$ 869,244	
2023	\$ 1,218,409	\$ 856,767	
2024	\$ 1,254,961	\$ 844,469	
2025	\$ 1,292,610	\$ 832,347	
2026	\$ 1,331,388	\$ 820,400	
2027	\$ 1,371,330	\$ 808,624	
2028	\$ 1,412,470	\$ 797,017	
2029	\$ 1,454,844	\$ 785,576	
2030	\$ 1,498,489	\$ 774,300	
2031	\$ 1,543,444	\$ 763,186	
2032	\$ 1,589,747	\$ 752,231	
2033	\$ 1,637,440	\$ 741,433	
2034	\$ 1,686,563	\$ 730,791	
0	\$ -	\$ -	
0	\$ -	\$ -	
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0	\$ -	\$ -	

**Totals =                    \$ 16,826,059    \$ 1,100,000**  
**(B)**                    **(C)**

year (n)= 1, 2, 3,....  
discount rate (i) = 4.5%

$$\text{Crash Benefits (@ year n)} = (\text{Crash Benefits})_{n-1} \times (1 + \text{Traffic Growth Factor})$$

$$\text{Present Worth Benefits (@ year n)} = (\text{Crash Benefits})_n \times 1/(1 + \text{Discount Rate})^n$$

**Process to evaluate scope change requests for regionally-selected projects.**

**Adopted by the Transportation Advisory Board on March 16, 2011**

**ACTION TRANSMITTAL 2011-35**

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Projects submitted for consideration through the regional solicitation are often just concepts or unrefined ideas. Project sponsors work on the preliminary and final design, environmental studies etc... after the TAB awards funds to the project. Sometimes during project development the project sponsor has to make significant design changes or finds that the construction cost was underestimated. When that happens, project sponsors may be required to request a scope change and TIP/STIP amendment because the scope and cost in the TIP/STIP has to be consistent with final project documentation that is sent to the FHWA.

Projects sponsors, Met Council and TAB staff, the TAC Funding & Programming Committee (F&PC) and the region would benefit from an adopted methodology to evaluate requested project scope changes. MN/DOT Metro State Aid has been very good at sorting out the significant scope changes that require action from the TAB. The FHWA has provided guidance on when a cost increase triggers a TIP/STIP amendment, and when a change in a project's design requires a scope change and TIP/STIP amendment (attached). The TAC and TAB want to be comfortable that the revised project scope of a regionally-selected project still provides about the same benefits as the original project scope and would have scored high enough to have been selected like the original project scope – to be fair to the other projects not selected. Below is a proposed outline of a process and guidelines for scope change requests.

- 1) Any construction elements added to the project scope must be eligible according to the solicitation criteria used to evaluate the original project submittal, unless the additional elements are already programmed in the STIP.
- 2) Additional federal funds will not be provided and federal funds cannot be swapped between projects of the same or different sponsor.
- 3) Met Council and TAB staff will provide data on the original project to the TAC F&PC, including cover page, project description, location map, layouts, sketches or schematics, and the original project cost estimate.
- 4) The project sponsor must provide data on the revised project scope to the TAC F&PC, including a complete project description, location map, project layout or sketches or schematics, checklist of work that still needs to be done and a revised project cost estimate.
- 5) The project sponsor must also recalculate the responses to certain key criteria based on the revised project scope and provide them to the TAC F&PC. Met Council and TAB staff may consult with the scoring group chair and individual project scorers if necessary to evaluate the recalculated responses and estimate the change in the original project score.
- 6) The TAC F&PC will base their recommendation on whether the estimated score of the revised project scope would have been high enough to have been awarded funds through the regional solicitation. A recommendation to approve the scope change and adopt a TIP amendment will go before the TAC, TAB Programming Committee and full TAB for adoption, then to the Metropolitan Council for concurrence. A recommendation to reject the scope change and TIP amendment will go before the TAC, TAB Programming Committee and full TAB for approval.