



## INFORMATIONAL MEMORANDUM

TO: Transportation and Infrastructure Committee  
FROM: Henry Hash, Public Works Director *HH*  
BY: Dave Sorensen, Project Manager  
CC: Mayor Allan Ekberg  
DATE: May 11, 2018  
SUBJECT: Annual Pavement and Repair Program Forecast  
Informational Update

### ISSUE

What funding level is required to keep pace with the normal deterioration of roadway pavement, with the goal to eliminate the backlog of deferred maintenance within 10 years?

### BACKGROUND

Tukwila owns, operates, and maintains over 200 lane miles of paved asphalt roadways. Public Works monitors the condition of each roadway segment in the City. Regularly updated data is collected and analyzed. Pavement conditions of each street segment is evaluated in terms of deterioration and distress signs; such as cracking, rutting, surface wear, humps, bumps, and sags. This information is then used to prioritize maintenance activities, develop a rehabilitation schedule, and plan multi-year budget strategies. Early this year each street was examined using visual inspection and computerized data entry and measurement to provide an updated roadway condition survey for all of Tukwila's streets. Citywide Pavement Condition Rating (PCR) scores was assigned to each street segment. The higher the rating score, the better condition of the roadway.

### ANALYSIS

The current PCR of the roadway network is in the mid-80s on a scale of 1-100. Based on the increasing cost of construction, and updated rehabilitation strategies, the current \$1.4M/year budget for the Overlay and Repair Program will increase the deferred maintenance and lower the overall network PCR by approximately 10-15 points over the next 10 years.

If the Overlay budget was cut in half, to \$750K/year, the deferred maintenance would increase at a faster rate over 10 years and the overall network PCR would drop nearly 30 points. To preserve the current level of deferred maintenance and PCR, the City should consider investing \$2.5M/year in the Overlay Program over the next 10 years. If the City wishes to eliminate or minimize their deferred maintenance, an investment of \$2.75M/year in the Overlay Program should be considered. The attached report and exhibits present the various funding strategies and their predicted effect on Tukwila's roadway network.

Also of note, non-asphalt work (drainage, curb ramps, etc.) are not included in the construction budget.

The results of the Pavement Condition Report show that historic City funding levels of the Overlay and Repair Program have decreased the previously deferred backlog of projects. Exhibit 1 is an overview of possible future funding levels of the Overlay and Repair Program. With decreases in funding, the corresponding deferred maintenance then increases.

Exhibit 2 shows \$1.5M annual budget that approximately reflects the City's current funding levels. Exhibit 3 through 6 shows potential increases and decreases in funding levels and the resulting status of the street network.

Inflation is on the horizon as our economy strengthens, escalating bidding climate, and increased construction costs would likely prevent the City from reaching the breakeven point unless future funding is increased as necessary.

### **RECOMMENDATION**

Increase funding level of the Overlay and Repair Program to eliminate backlogged deferred maintenance within 10 years. A \$2.75M/year funding level would allow maintenance and repairs to match the rate of deterioration (with zero roadway backlog).

Attachments: 2017 CIP, Pg. 18  
Tukwila Pavement Management Forecasting Report

**CITY OF TUKWILA CAPITAL PROJECT SUMMARY**

2017 to 2022

**PROJECT:** Annual Overlay and Repair Program

Project No. 9xx10401

**DESCRIPTION:** Select, design and construct asphalt and concrete pavement overlays of arterial and residential streets.

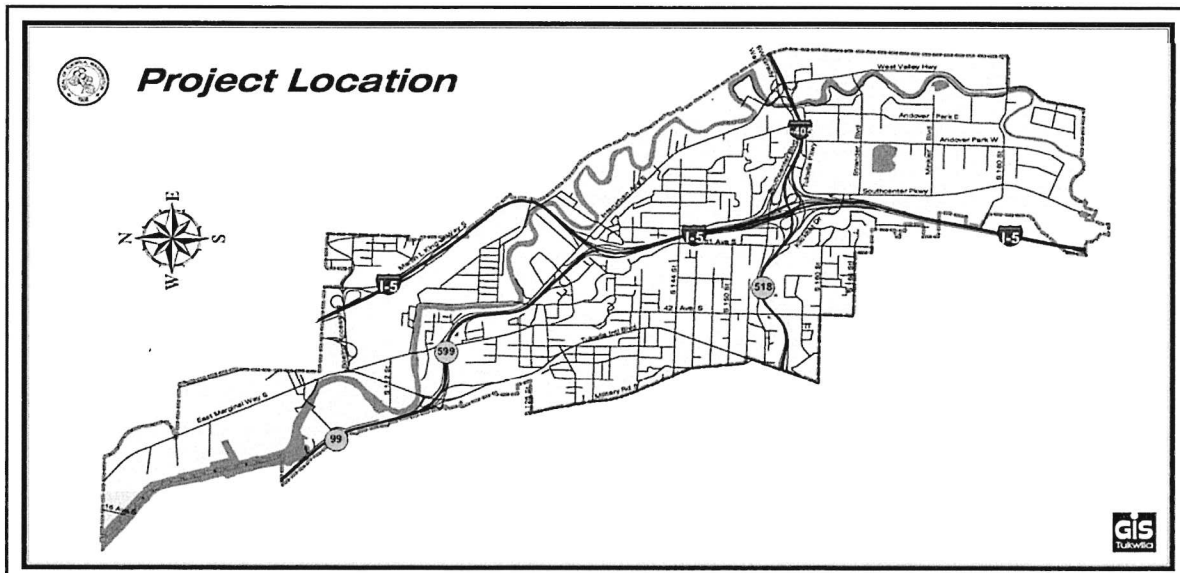
**JUSTIFICATION:** Preserve and maintain the street structure in a safe and useable state by resurfacing before failure which also minimizes costs. Some individual sites may be coordinated with water, sewer, and surface water projects.

**STATUS:** Each year various sections of roadway throughout the City are designed and constructed for asphalt overlay.

**MAINT. IMPACT:** Reduces annual maintenance.

**COMMENT:** Ongoing project. Only one year actuals shown in first column.

FINANCIAL (in \$000's)	Through		Estimated								TOTAL
	2015	2016	2017	2018	2019	2020	2021	2022	BEYOND		
<b>EXPENSES</b>											
Design	123	135	150	150	175	175	200	200	200	1,508	
Land (R/W)										0	
Const. Mgmt.	276	175	200	200	225	225	250	250	275	2,076	
Construction	1,289	1,260	1,050	1,050	1,330	1,340	1,350	1,350	1,375	11,394	
<b>TOTAL EXPENSES</b>	<b>1,688</b>	<b>1,570</b>	<b>1,400</b>	<b>1,400</b>	<b>1,730</b>	<b>1,740</b>	<b>1,800</b>	<b>1,800</b>	<b>1,850</b>	<b>14,978</b>	
<b>FUND SOURCES</b>											
Awarded Grant										0	
Proposed Grant										0	
Mitigation Actual										0	
Mitigation Expected										0	
City Oper. Revenue	1,688	1,570	1,400	1,400	1,730	1,740	1,800	1,800	1,850	14,978	
<b>TOTAL SOURCES</b>	<b>1,688</b>	<b>1,570</b>	<b>1,400</b>	<b>1,400</b>	<b>1,730</b>	<b>1,740</b>	<b>1,800</b>	<b>1,800</b>	<b>1,850</b>	<b>14,978</b>	



## Memorandum

**To:** Dave Sorensen – Project Manager  
City of Tukwila

**From:** Bryce Corrigan – KPG  
Nelson Davis, PE – KPG

**Date:** 3/14/2018

**Re:** Tukwila Pavement Management Forecasting

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### Overview

The purpose of this memo is to provide the City with updated information on their roadway network and the funding level to keep pace with the deterioration of the network's pavement. In 2014 Pavement Engineers provided the City of Tukwila with information that updates the funding level for the maintenance and rehabilitation of their roadway network. The program, called *PMSPRO* by Pavement Engineers, predicts the rehabilitation strategies and costs of the roadway network throughout the City of Tukwila. The program assigns a Pavement Condition Rating (PCR) to a roadway based on the pavement's distresses relative to the overall pavement area. For Example, a PCR of 90 represents 10% of the roadway surface has low alligator cracking. The program then assigns a rehabilitation strategy to a particular PCR and will produce a cost associated with that rehabilitation strategy for that particular roadway.

### Analysis

KPG has updated the program based on projects that have been completed between 2014 and 2018 by setting PCR of those roadway segments to 100 in year of completion. The current PCR of the roadway network is in the mid-80s. Based on the updating PCR for projects completed in the last 5 years, the increasing cost of construction, and updated rehabilitation strategies, the current \$1.5M/year budget for the overlay program will likely increase the deferred maintenance and lower the overall network PCR about 10-15 points over the next 10 years. If the budget was cut in half, to \$750k/year, the deferred maintenance would increase at a faster rate over 10 years and the overall network PCR would drop nearly 30 points. To preserve the current level of deferred maintenance and PCR, the City should consider investing \$2.5M/year in the overlay program over the next 10 years. If the City wishes to eliminate or minimize their deferred maintenance, an investment of \$2.75M/year in the overlay program should be considered. The following exhibits present the various funding strategies and their predicted effect on Tukwila's roadway network.

## **Exhibit Descriptions**

### **Exhibit 1 – Forecasted Network**

This Exhibit illustrates a 10 year period from 2018 to 2027 and the Five (5) different funding scenarios and their effect on the Average PCR and Deferred Maintenance Costs of City's entire roadway network.

### **Exhibit 2 – Existing Funding Level: \$1.5M/year**

These graphs illustrate the effects on the roadway network if the existing funding level is maintained over the next 10 years. Deferred rehab increases, PCR drops 10-15 points.

### **Exhibit 3 – Half Existing Funding Level: \$750K/year**

These graphs illustrate the effects on the roadway network if the existing funding level is cut in half every year for the next 10 years. Deferred rehab increases, network PCR drops 20-30 points. Number of roads with PCR<20 increased to 30%.

### **Exhibit 4 – Increase Funding Level: \$2.5M/year**

These graphs illustrate that an increase in the funding level to \$2.5M/year maintains the City's network PCR and deferred rehab.

### **Exhibit 5 – \$750k in 2018, \$1.5M 2019-2027.**

These graphs illustrate the effects on the roadway network if the existing funding level is maintained over the next 10 years. Deferred rehab increases, PCR drops 10-15 points.

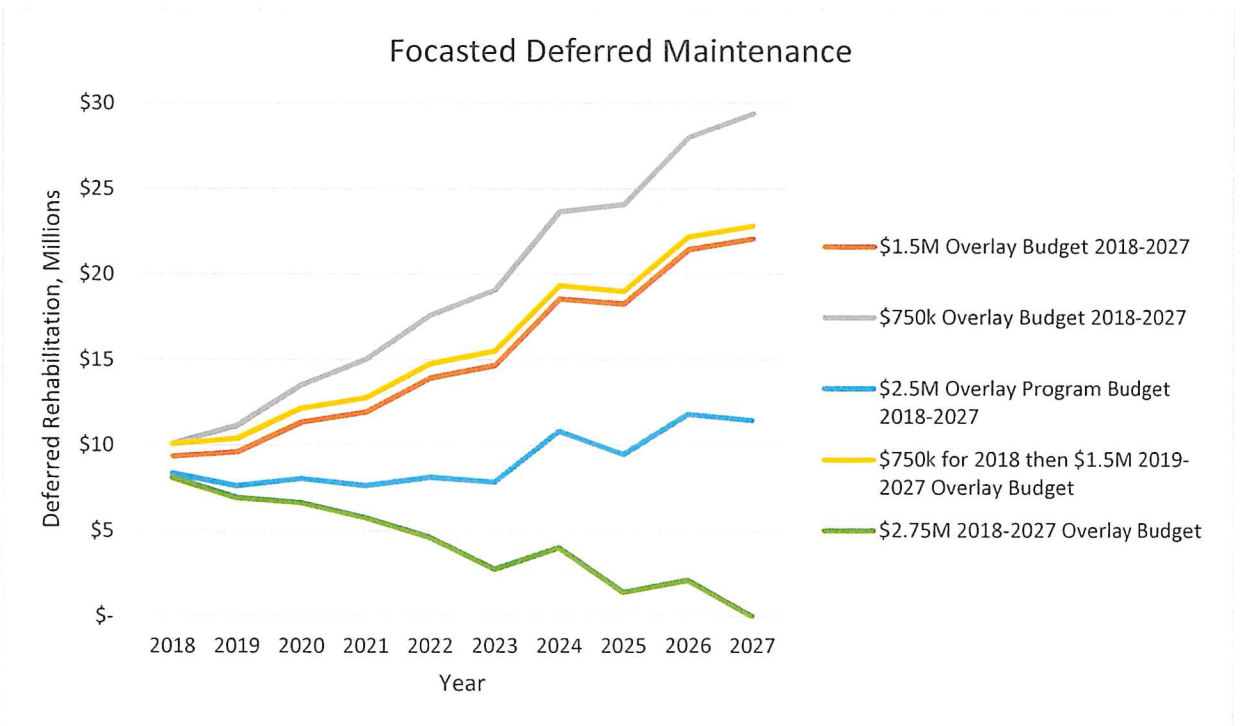
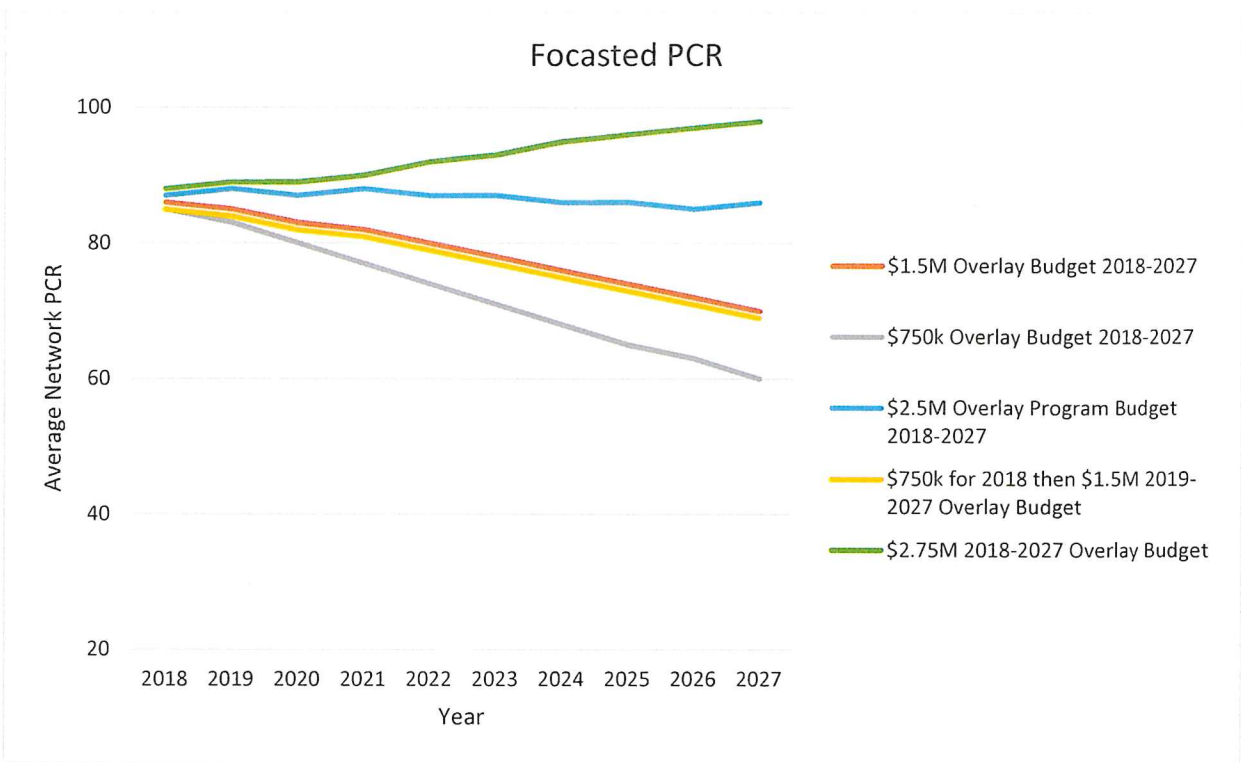
### **Exhibit 6 – Increase Funding Level: \$2.75M/year**

These graphs illustrate that an increase in the funding level to \$2.75M/year improves the City's PCR to above 90 by 2027 and decreases the deferred maintenance to \$0; that being the Funding Level is equal to, or does not increase, the deferred maintenance.

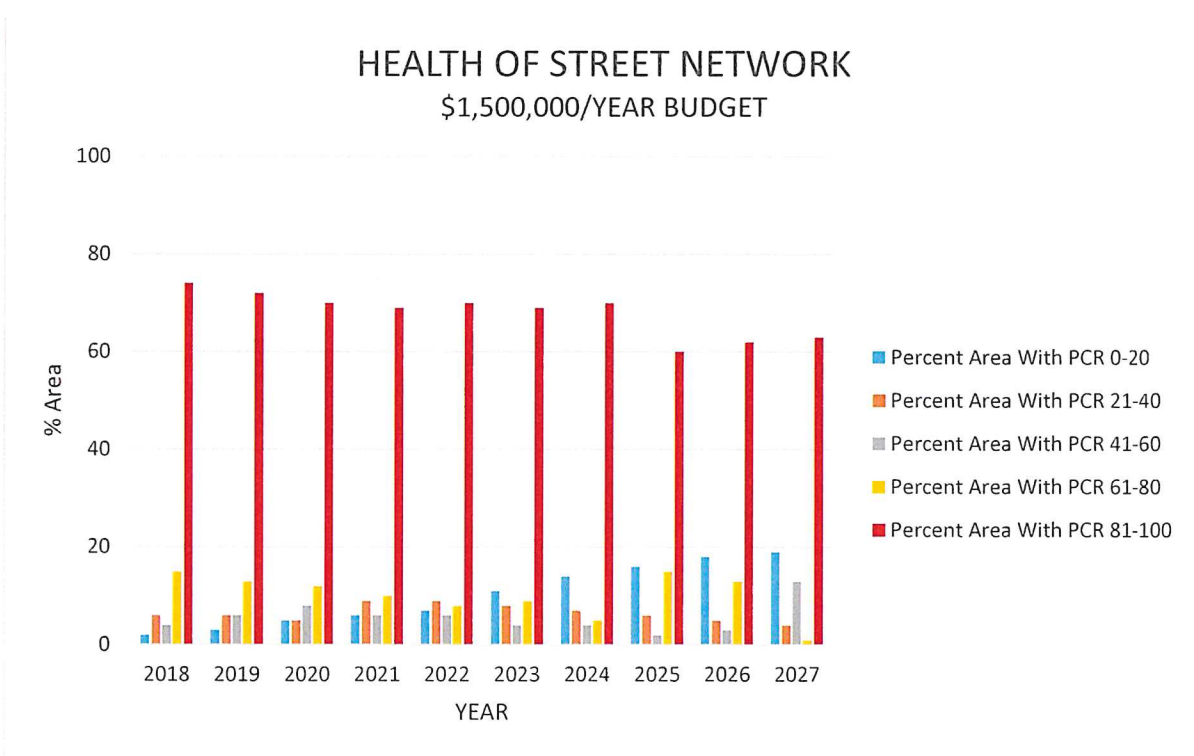
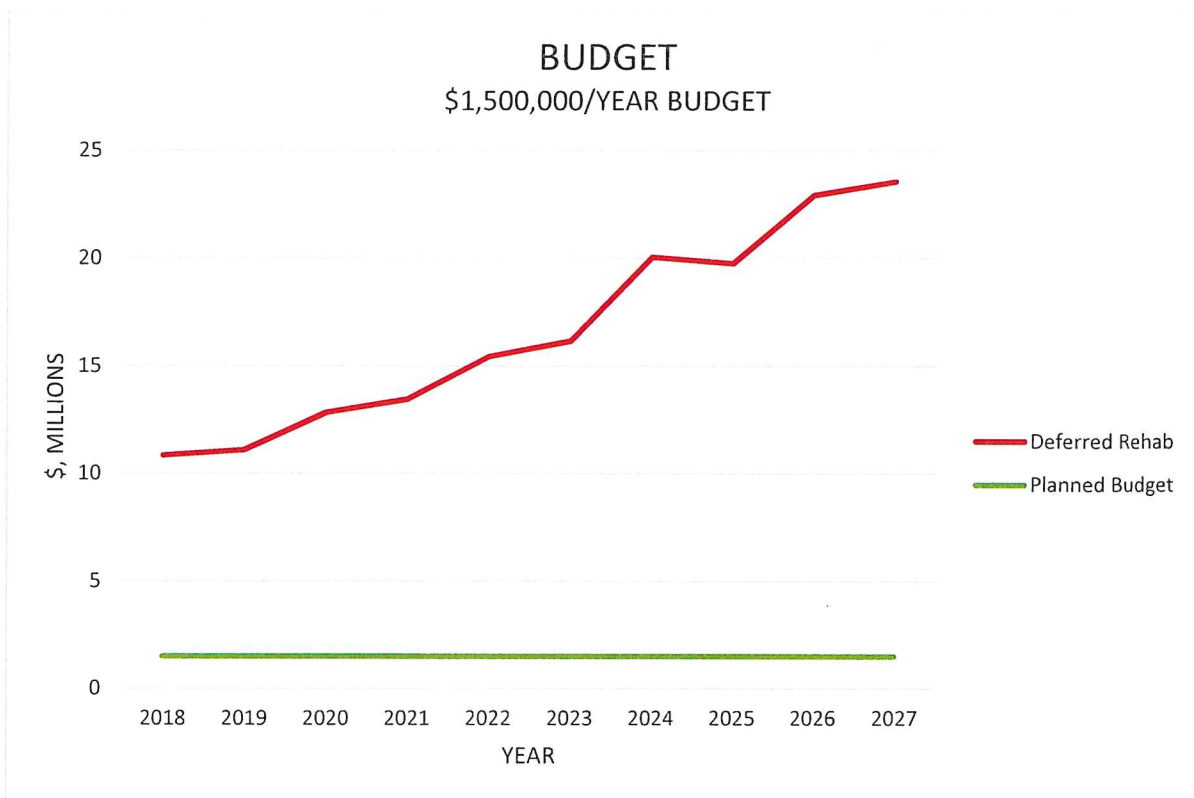
## **Conclusion**

The City of Tukwila's roadway network relies upon consistent funding that follows trends of the construction industry. Without a continually updated pavement management funding strategy the City's roadway network will inevitably become more and more expensive to maintain.

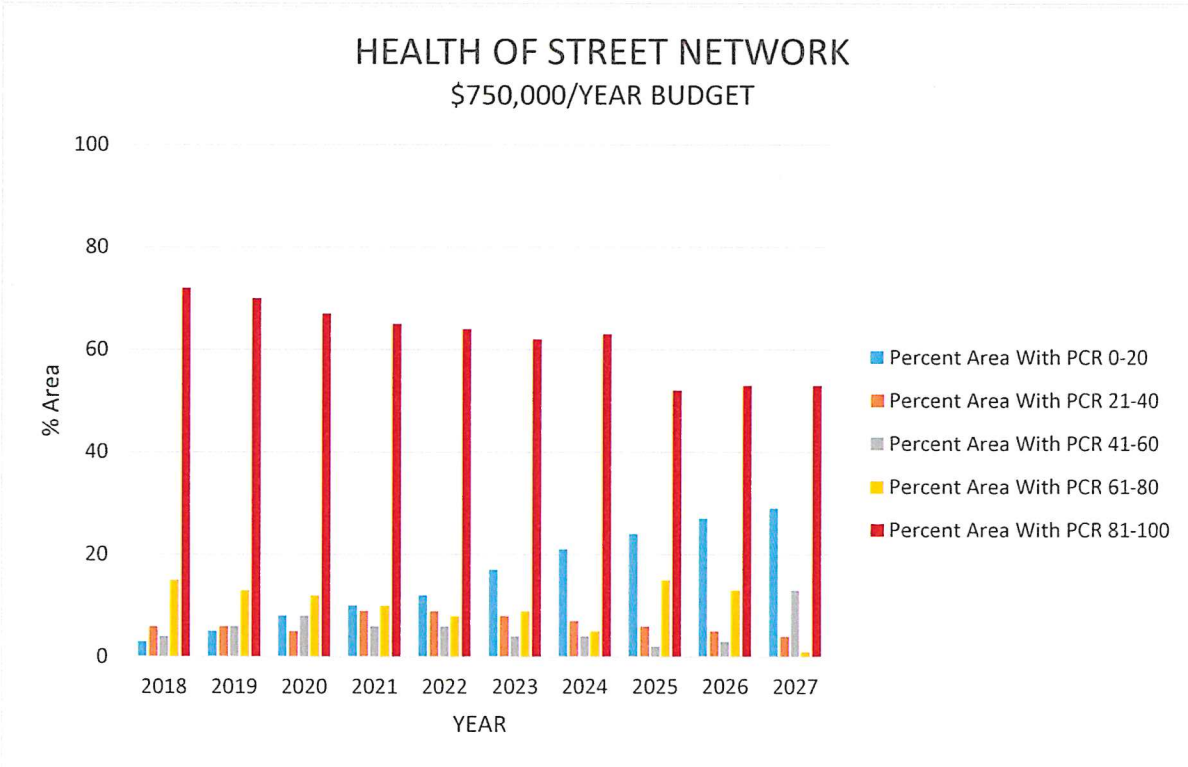
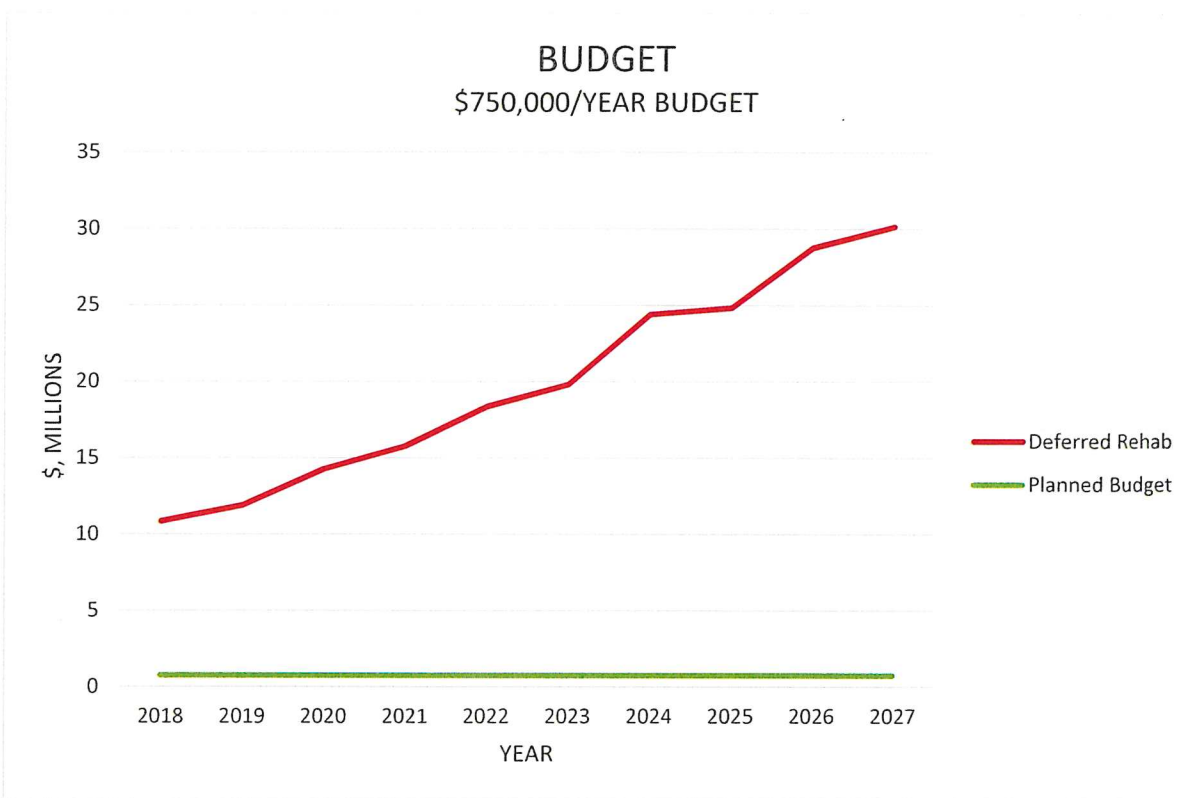
**Exhibit 1 – Forecasted Network**



**Exhibit 2 – Existing Funding Level: \$1.5M/year**

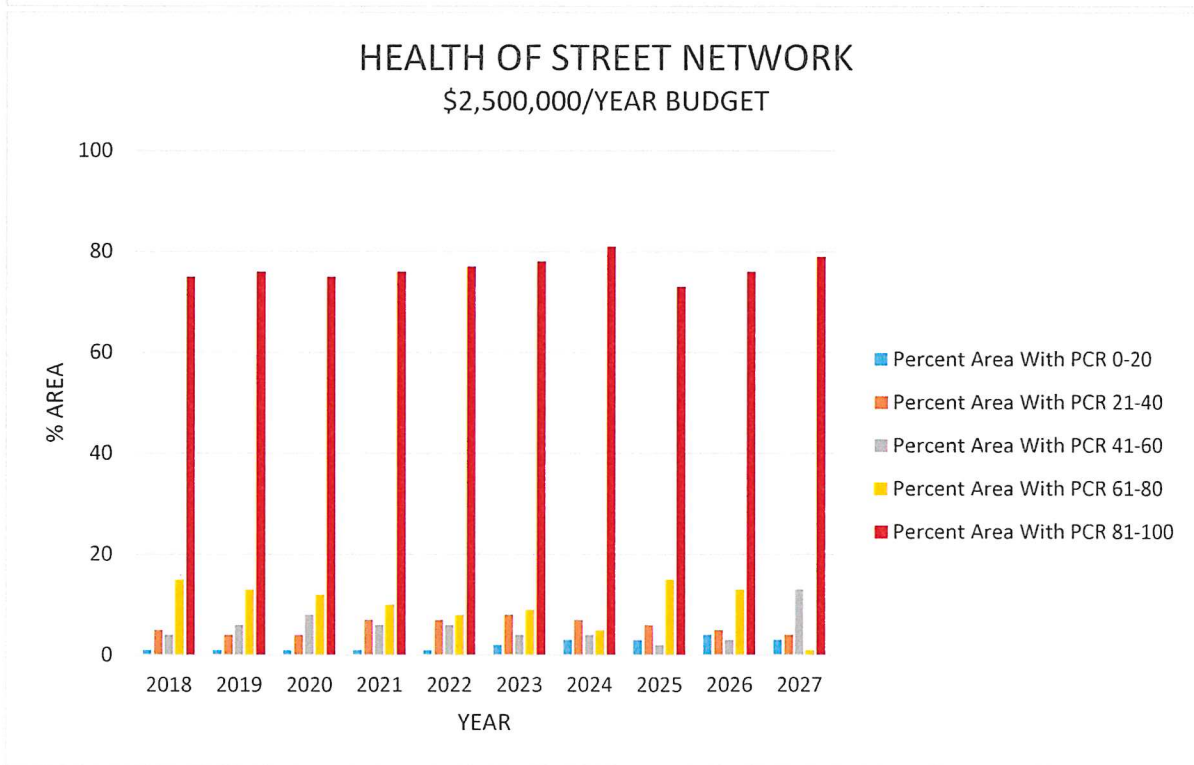
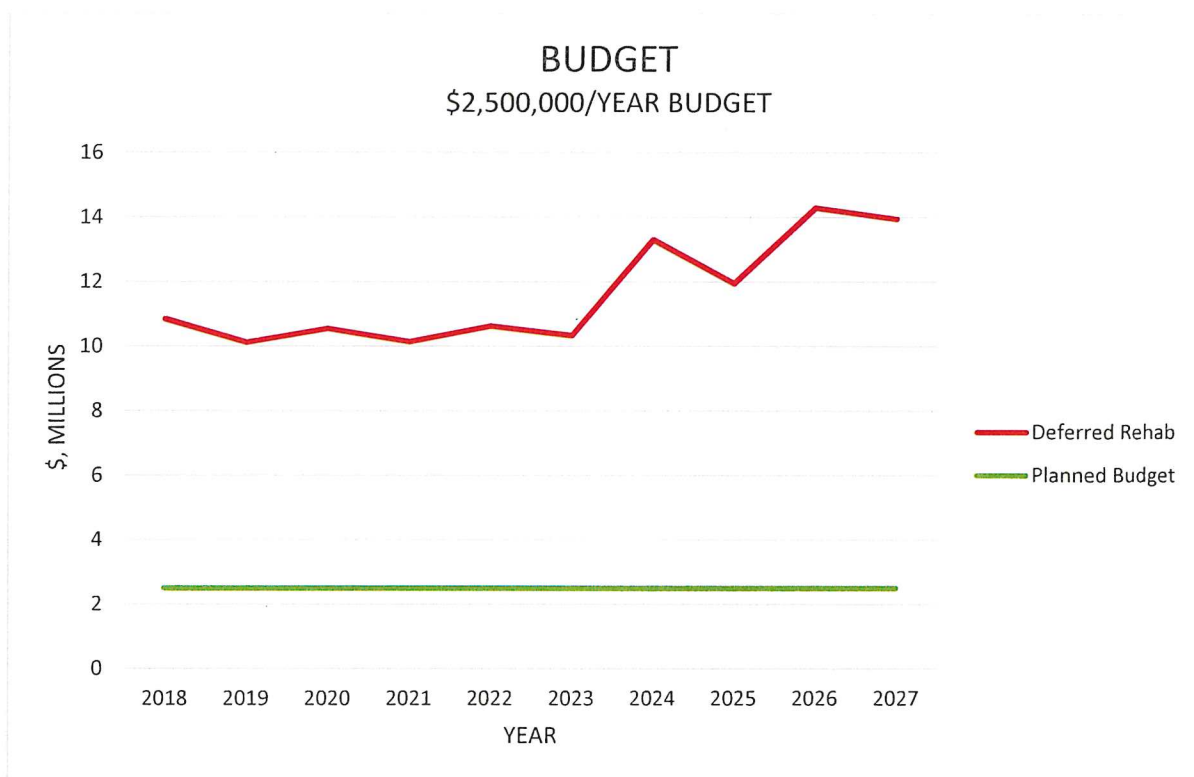


**Exhibit 3 – Half Existing Funding Level: \$750K/year**

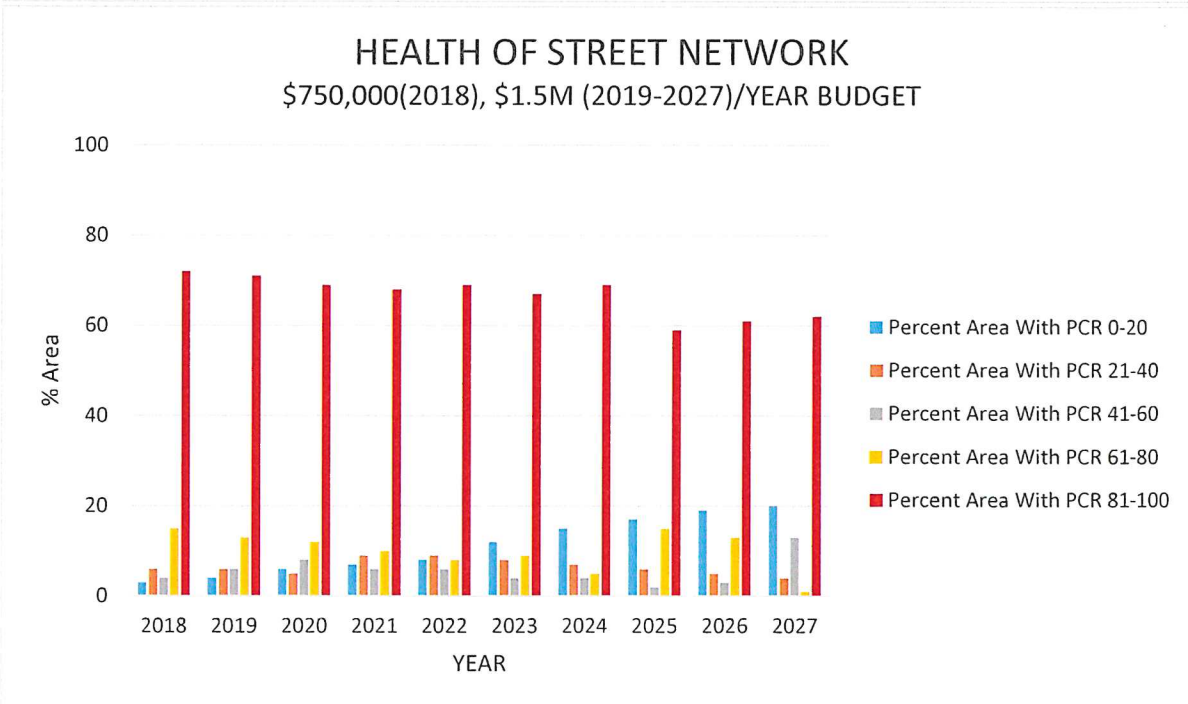
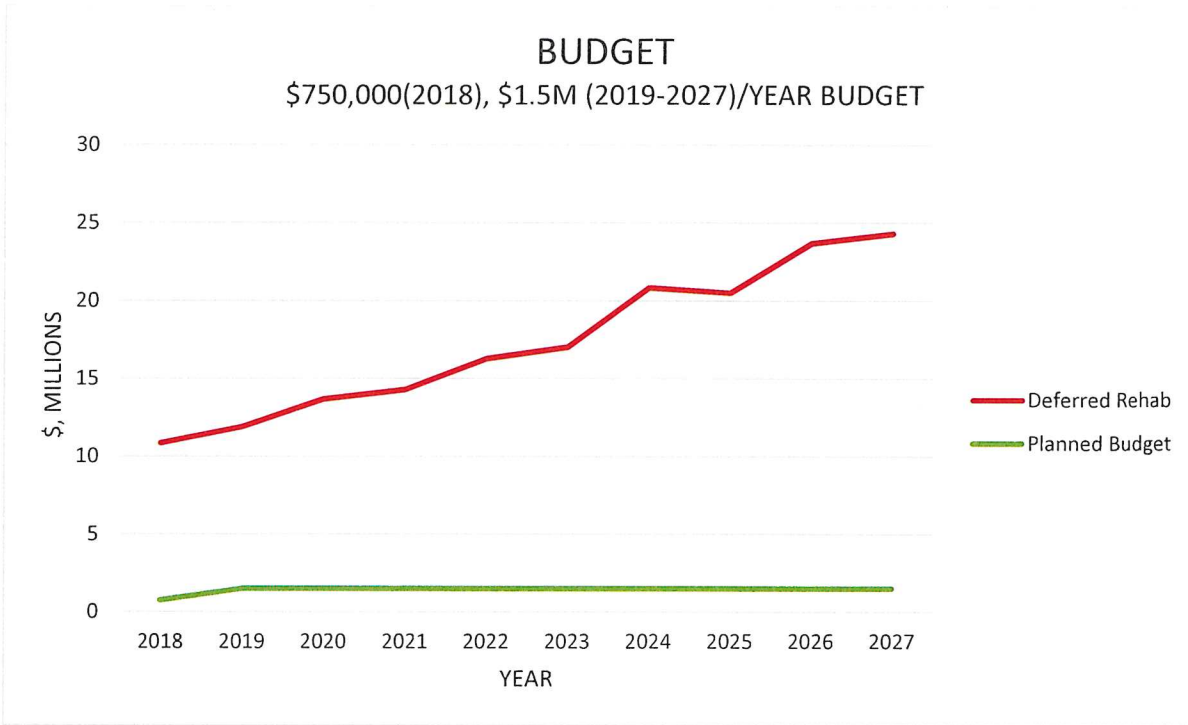




**Exhibit 4 – Increase Funding Level: \$2.5M/year**



**Exhibit 5 – \$750k in 2018, \$1.5M 2019-2027**



**Exhibit 6 – Increase Funding Level: \$2.75M/year**

