



CITY OF SAN ANTONIO

SHIRLEY GONZALES
CITY COUNCILWOMAN
DISTRICT 5

City Councilwoman Shirley Gonzales
District 5

Street Maintenance and Pavement Preservation Programs Report

June 16, 2017



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DISTRICT 5

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Executive Summary

As I'm sure my council colleagues acknowledge, constituents regularly and consistently express dissatisfaction with street and pavement conditions. Since my first year on Council I have sought to determine why so many streets are in less than good condition and whether we allocate sufficient resources to streets. As a result, I have given careful consideration to Transportation and Capital Improvement (TCI) reporting on the San Antonio Street Maintenance and Pavement Preservation Programs and the funding mechanisms for those programs. In addition, I requested a report from the City Auditor to answer several outstanding questions. The auditors' report helped my understanding of this complex issue, but left some questions unanswered. This report extends the findings from the auditors' report, and is based on three major sources:

1. A May 3, 2017 report from the City Auditor in response to my request for street maintenance information (enclosed).
2. Supporting data and tables assembled by the auditors in the process of preparing their report.
3. Information provided by TCI in the course of my on-going queries regarding street maintenance planning, funding and practices.

San Antonio has a street inventory of 4,085 centerline miles (CLMs), as of June, 2017. The TCI programs preservation, repair, reclamation and reconstruction of city managed streets to maintain a level of service that is measured using the Pavement Condition Index (PCI).

The Street Maintenance and Pavement Preservation Programs are funded through two major sources, the Infrastructure Management Program (IMP) and Capital Budget. Other entities, such as CPS Energy, SAWS, and private companies may provide minor repairs or other work to streets while delivering their services.

Streets are assessed based on a PCI numerical score assigned to 5 levels of condition: Excellent (86-100), Good (71-85), Fair (61-70), Poor (41-60) and Failed (0-41) . The city utilized contractors in 2011 and 2016 to conduct detailed assessments of street conditions, and updates the baseline data as improvements are made. A collective city-wide score of 70 is considered satisfactory by TCI and confirmed by the auditor based on standard industry practice.

It is important to recognize that adequate street maintenance is extremely difficult to achieve. Traffic usage and loads, age, environmental and numerous other factors affect the condition of streets. There is no question that TCI does yeoman's work directly and through contractors to maintain our streets with the resources available. Current TCI practices, on the surface, appear reasonable as a city-wide strategy.

Nevertheless, a closer look at the auditor's report and TCI data raises at least four serious concerns.

- City council has not established policy for street preservation and repair. Given that streets are one of the city's highest priorities, it is imperative that council establish preservation and repair policy.



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- An examination of the auditor's data indicates that current practices result in inequities across council districts. The table below illustrates that 5 districts fall below the standard PCI average score of 70:

Pavement Condition by Council District

District	Avg. PCI (2016)
9	78.30
6	77.88
8	76.55
4	73.10
7	71.47
5	69.34
10	68.93
1	68.34
3	68.11
2	64.85

- The auditor determined that in 2016 a total of 152 CLM of streets that were reported failed in 2011 remained in failed condition, indicating that some streets may never be restored under current practice.

"The PCI average of 70+ can be maintained even as streets remain in a failed condition so long as there are sufficient streets in excellent and good conditions to maintain the average. For example, in the 2011 PCI study, 404 center line miles (CLM) of streets were rated in a failed condition. Of these 2011 failed streets, 152 CLM remained in a failed state in the 2016 study even though the citywide average PCI score was above 70." (Audit Report, p 2)

- There is a downward trend in overall scores from 2011 to 2016.

"While the overall PCI score has fallen from 73.62 in 2011 to 71.10 in 2016, the City has also increased IMP spending within this time frame." (Audit Report, p 2)

The auditors concluded the IMP funding level from FY2016 and the projected capital funding increases beginning in FY2018 were sufficient to maintain a citywide average PCI 70. However, the increases to the IMP and Capital Budget for FY2018 through FY2022 are only 63.7% of the expansion of one-time repair costs reported from 2011 to 2016.

Given these findings, the question is what policy and funding responses are needed?



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Recommendations

I propose the following policy and budget recommendations.

1. Apply the average PCI score of 70 to each council district, instead of maintaining a citywide average.
2. Allocate 60% of annual IMP funding to districts below PCI 70 instead of the current rough proportionality formula, until all districts achieve the PCI 70 standard.
3. Increase the FY 2018 IMP budget by \$10 to \$15 million to begin addressing the downward trend in PCI scores.
4. Instruct staff to develop a 15 year plan that identifies projected funding options from all potential sources to eliminate the backlog of streets rated failed.

On the following pages, you will see the details and analyses that prompted me to make these recommendations.

Introduction

As I'm sure my council colleagues acknowledge, constituents regularly and consistently express dissatisfaction with street and pavement conditions. Since my first year on Council I have sought to determine why so many streets are in less than good condition and whether we allocate sufficient resources to streets. As a result, I have given careful consideration to Transportation and Capital Improvement (TCI) reporting on the San Antonio Street Maintenance and Pavement Preservation Programs and the funding mechanisms for those programs. In addition, I requested a report from the City Auditor to answer several outstanding questions. The auditors' report helped my understanding of this complex issue, but left some questions unanswered. This report extends the findings from the auditors' report, and is based on three major sources:

1. A May 3, 2017 report from the City Auditor in response to my request for street maintenance information (enclosed).
2. Supporting data and tables assembled by the auditors in the process of preparing their report.
3. Information provided by TCI in the course of my on-going queries regarding street maintenance planning, funding and practices.

Background

San Antonio has a street inventory of 4,085 CLMs (as of June, 2017). TCI programs preservation, repair, reclamation and reconstruction of city managed streets to maintain a level of service that is measured using the Pavement Condition Index (PCI). The current level of service standard is a citywide average PCI 70.



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In response to my queries TCI maintained the FY2016 IMP and capital budget funding levels were sufficient to sustain an average PCI of 70. Not satisfied that this position was sufficient to address street maintenance needs, I was prompted to request the assistance of the Internal Auditor to provide more detailed information regarding street maintenance programming.

I initiated the audit to answer four questions.

1. What is the San Antonio policy for street and pavement quality level of service?
2. How does the San Antonio's policy for pavement quality level of service compare to peer cities?
3. Are the Infrastructure Management Program (IMP) and street capital budget sufficiently funded to sustain the Street Maintenance and Pavement Preservation Programs?
4. Does the cost basis used for budget planning accurately represent actual expenses?

The audit report is included as attachments to this report. They found:

1. City Council has not established policy on pavement condition. The standard used by the City is not Council policy, but an industry practice.
2. Although there is variation nationally, San Antonio's standard is consistent with peer cities.
3. The IMP and capital programs are funded sufficiently to maintain an average PCI of 70.
4. Expenses and planning are consistent with a standard of a citywide average PCI 70.

In addition to answering my initial questions, the auditor's report and supporting data produced material regarding street maintenance which raise other concerns that require more analyses. The remainder of this report identifies these concerns and discusses policy implications.

Examination of Audit Data Raises Concerns

Although the auditors concluded the Street Maintenance and Pavement Preservation Programs are sufficiently funded, an examination of the data reported by the audit raises serious concerns about the sufficiency of the Street Maintenance and Pavement Preservation Programs. Those concerns include:

1. Inequity between Council Districts. The disparity appears to be between older and low income neighborhoods and newer and high income neighborhoods.
2. Insufficient funding to reverse the citywide trend of deteriorating street and pavement condition. Pavement conditions currently meet the stated pavement condition standard, but analysis of funding and pavement condition trends suggests genuine risk that pavement conditions could deteriorate below the City's standard by 2022.
3. Insufficient funding to repair failed streets in a timely manner.
4. Unreliable street condition data.



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Inequity across Districts

Although a citywide average level of surface is helpful for planning purposes, it does not address the minimum acceptable level of service for individual streets or ensure equitable conditions within City Council Districts. Pavement conditions are not equitable across the city. Districts 6, 8 and 9 have significantly fewer miles of failed streets (PCI < 41) than all other districts, while Districts 1, 2, 3, 5 and 7 have more miles of failed streets than the city average. Similarly, Districts 6, 8 and 9 have average PCI scores that significantly exceed PCI 70, while Districts 1, 2, 3, 5 and 10 have average PCI scores below 70.

The duration a street remains in failed condition is also a concern. TCI consistently briefs the appropriate treatment for failed streets is reclamation or reconstruction. It is not clear how long streets, and particularly neighborhood streets, that deteriorate to a failed condition remain in a failed condition before TCI performs reclamation or reconstruction. TCI has stated their priorities for street preservation, repair, reclamation and reconstruction are the functionally classified streets, and that neighborhood streets are the lowest priority. Considering the higher than average CLMs of failed streets or lower levels of service in some Districts, there is concern that neighborhood streets in Districts 1, 2, 3, 5 and 10 are not receiving sufficient care.

IMP Funding Level Appears Insufficient

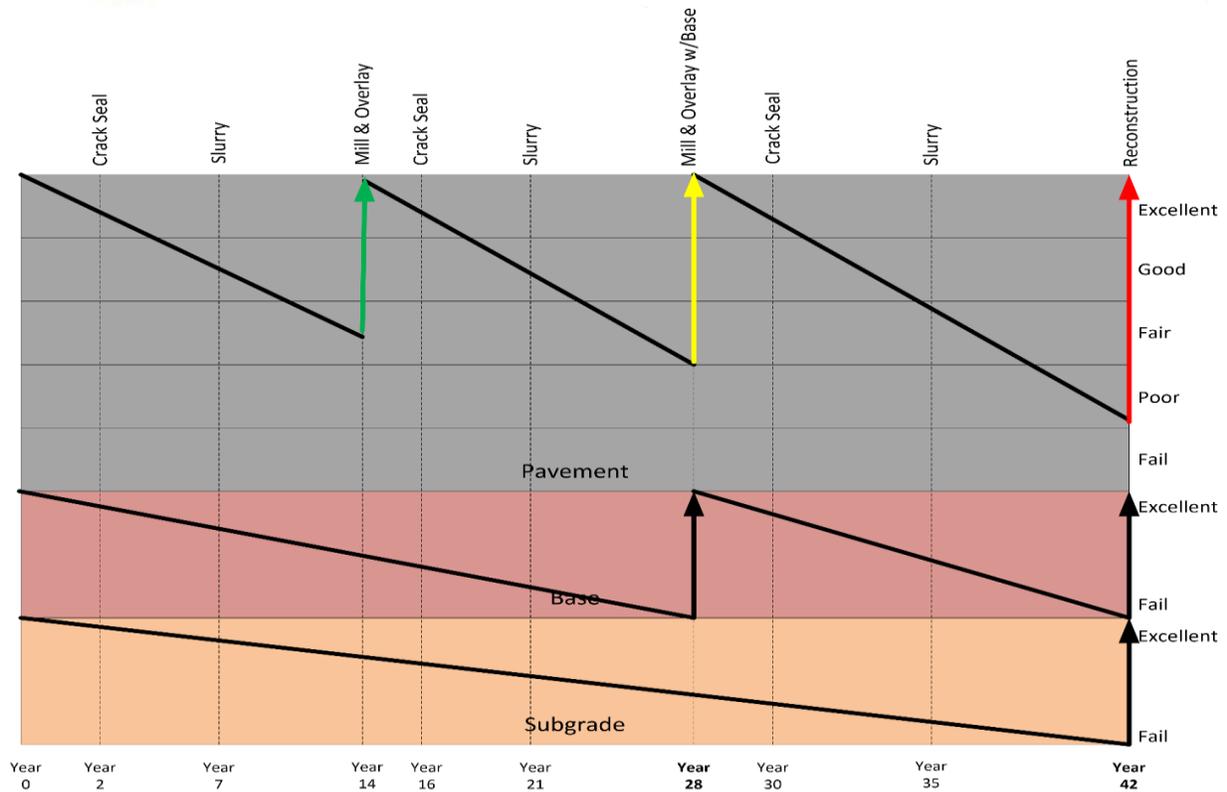
Examination of the street preservation and repair model described by TCI raised concerns that the IMP and Streets and Drainage Capital Budget are not sufficiently funded. Figure 1, Street Lifecycle, illustrates the street lifecycle with preservation, repair, rehabilitation and reconstruction applications applied through San Antonio's Street Maintenance and Pavement Preservation Programs. Figure 1 illustrates the street preservation and repair model, as explained by TCI. The programs use two to three 14-year preservation and repair cycles, and ends with reclamation or reconstruction.

The cycle begins following construction, reclamation or reconstruction. Crack sealing will be performed two years after construction, reclamation or reconstruction. Micro-surfacing, slurry seal, or equivalent will be conducted five years later, at Year 7. Mill & Overlay will be performed 7 years later, at Year 14. Mill & Overlay could include base repair, depending on street condition. A second 14-year preservation and repair cycle is completed, and at Year 28 an assessment is made to determine if the street can be sustained with a third preservation and repair cycle or if the road requires reclamation or reconstruction at Year 28.



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Year	Treatment	Cost
2	Crack Seal	\$ 20,000
7	Micro-Surfacing or Slurry Seal	\$ 68,000
14	Mill & Overlay	\$ 300,000
16	Crack Seal	\$ 20,000
21	Micro-Surfacing or Slurry Seal	\$ 68,000
28	Mill & Overlay w/Base	\$ 350,000
30	Crack Seal	\$ 20,000
35	Micro-Surfacing or Slurry Seal	\$ 68,000
42	Reconstruction	\$2,000,000
Total		\$2,914,000

Note: Street to be assessed for reconstruction or overlay at Year 28

Figure 1, Street Lifecycle

If Mill & Overlay is not a satisfactory option at Year 28, the street will receive Reclamation or Reconstruction. Reclamation rebuilds the roadway between curbs and sidewalks, while reconstruction rebuilds the roadway, curbs and sidewalks. If a third preservation and repair cycle is viable, the street will receive reclamation or reconstruction at Year 42. Table 1, Street Lifecycle Models summarizes annualized cost estimates for 28-year, 42-year and 70 year lifecycles.



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Lifecycle Models

Table 1, Street Lifecycle Models

Treatment	Cost Per Treatment	Treatments per Lifecycle		
		28-year Model	42-year Model	70-year Model
Crack Seal	\$20,000	2	3	5
Slurry Seal/Microsurface	\$68,000	2	3	5
Mill & Overlay	\$300,000	0.5	1	2
Mill & Overlay w/Base	\$350,000	0.5	1	2
Reclamation or Reconstruction	\$2,000,000	1	1	1
Total per CLM		\$2,501,000	\$2,914,000	\$3,740,000
Annualized Cost per CLM		\$89,321	\$69,381	\$53,429
Annualized Cost for 4085 CLM		\$364,878,036	\$283,421,190	\$218,255,714

Street lifecycle costs are either an estimated \$2.3 million per centerline mile (CLM) over 28 years or \$2.914 million per CLM over 42 years, depending on the deterioration rate of an individual street. TCI has stated the Street Maintenance and Pavement Preservation Programs are planned on a 28-year lifecycle. However, the audit found evidence that neither a 28-year or 42-year preservation and repair cycle were being followed.

A 42-year lifecycle of the city’s 4,085 CLMs of street phased evenly over the entire lifecycle would require \$283.4 million per year, while a 28-year lifecycle would require \$364.9 million per year. The IMP is \$64 million in both FY2016 and FY2017. The FY2016 6-year streets capital program is \$338 million, suggesting per year program is approximately \$56 million.

However, the capital budget is allocated to both expansion and reclamation/reconstruction. TCI reported that approximately \$166 million of the FY2016 6-year capital budget is allocated to reclamation and reconstruction alone, while the remaining is allocated to expansion.

As a result, approximately \$27.7 million per year of capital funding are allocated to the Street Maintenance and Pavement Preservation Programs for FY2016-2021. The total FY2016 IMP and capital funding for street maintenance and preservation was approximately \$91.7 million. FY2016 funding is 32.4% of funding required for a 42-year lifecycle, and just 25.1% required for a 28-year lifecycle.

FY2016 and FY2017 IMP funding correlates to the requirements to support only streets in Excellent, Good, Fair and Poor condition. The IMP for FY2016 and FY2017 was \$64M per year. At the time the FY2016 and FY2017 budgets were prepared, TCI reported 11% of streets were reported in failed condition, meaning 3,618 CLMs were in excellent, good, fair and poor condition. Funding requirements for a 28-year lifecycle, exclusive of reclamation or reconstruction, is an estimated \$64.75M.



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If it assumed the IMP supports streets in excellent, good, fair and poor condition and reclamation or reconstruction of failed streets is funded through the capital program, then it would appear the capital program is between 9 and 14% funded.

The significant inconsistencies between the funding levels required by the Street Maintenance and Pavement Preservation Programs model reported by TCI and the actual funding provided through IMP and capital programs led to the request for City Auditors to assess if existing funding levels were sufficient to sustain city streets.

Analysis of Audit Findings

The audit confirmed the Street Maintenance and Pavement Preservation Programs were not funded to support the lifecycle models as stated by TCI. However, it was also recognized that TCI’s overall objective was to maintain a stated level of service, not to necessarily adhere to a lifecycle model. A deeper analysis of work performed, network-wide trends, and trends by Council District was performed to better understand funding requirements and outcomes from current practices. City auditors concluded current funding levels were sufficient to maintain a citywide average PCI of 70.

However, analysis of the data provided by TCI and City Auditors suggests the city’s street network is at risk of continuing to deteriorate and could soon be below the target level of service. Analysis also demonstrates inequity between Districts, a systemic trend of not addressing streets in failed condition, and the risk of unreliable pavement condition data. These finding are discussed fully in this section.

Risk of Continued Street Network Deterioration

Auditors reported the citywide average PCI decreased from 73.62 in 2011 to 71.10 in 2016. Auditors also noted the IMP increased from \$33M in FY2011 to \$64M in FY2016, and projected capital funding for street preservation and repair would be \$150M during the 2017-2022 bond program. Table 2, IMP and Capital Funding summarizes street preservation and repair funding during FY2012 to FY2016 (roughly the overlapping time period between pavement condition data collection in CY2011 and CY2016). Table 1 shows street preservation and repair funding will increase \$116.5M during the 5-year period beginning FY2018, compared to the 5-year period beginning FY2012.

Table 2, IMP and Capital Funding

Year	IMP Funding (\$ in Millions)	Capital Funding (\$ in Millions)	Year	IMP Funding (\$ in Millions)	Capital Funding (\$ in Millions)
2012	\$35.0	\$27.7	2018	\$64.0	\$30.0
2013	\$40.0	\$27.7	2019	\$64.0	\$30.0
2014	\$35.0	\$27.7	2020	\$64.0	\$30.0
2015	\$41.0	\$27.7	2021	\$64.0	\$30.0
2016	\$64.0	\$27.7	2022	\$64.0	\$30.0
Sub-Total	\$215.0	\$138.5	Sub-Total	\$320.0	\$150.0
Total		\$353.5	Total		\$470.0



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Auditors also examined the change in one-time repair costs from 2011 to 2016. The one-time repair cost in 2011 was \$1.299 billion. At the time of the audit, only 96.5% (3,945.39 CLMs) of the city's street network had been rated from the pavement condition data collection in 2016. The one-time repair cost for the rated streets from the 2016 data collection cycle was reported as \$1.431 billion, or \$362,779 per CLM. The projected one-time repair cost for the city's 4,085 CLM network is \$1.482 billion. One-time repair costs expanded an estimated \$183 million from 2011 to 2016. One-time repair cost per centerline mile also expanded by over \$28,000 per centerline mile, from \$334,535 per CLM in 2011 to \$362,779 per CLM in 2016.

The projected funding increase of \$116.5 million during the 5-year period beginning FY2018 does not seem sufficient to address the \$183 million increase in one-time repair costs reported in the 5-year period beginning CY2011. Although the rate of deterioration could be slowed, the city's street network is at risk of continuing to deteriorate, with one-time repair costs possibly approaching \$1.55 billion by 2022. The citywide average PCI declined 2.5 points from 2011 to 2016. That trend may be slowed in the coming years, but there is risk that the citywide PCI average could fall below 70 by 2022.

Inequity

The policies of a) rough proportionality, b) managing street preservation and repair programs based on a citywide average pavement condition, c) repairing the best streets first, d) prioritizing highest function streets and e) a de facto policy of not reconstructing failed streets in a timely manner has resulted in inequity. Newer districts are advantaged; older districts are disadvantaged. Auditors reported average PCI scores significantly above 70 in Districts 6, 8 and 9, while Districts 1, 2, 3, 5 and 10 had average PCI scores below 70. Table 3 summarizes pavement condition by District, in descending order of average PCI. Figure 2 shows not only that inequity currently exists between Council Districts, but the trend has persisted for at least five years. Figure 2 further illustrates the general decline in pavement conditions from 2011 to 2016, showing a decline in average PCI in 9 out of 10 Districts.

Table 3, Pavement Condition by Council District

District	Average PCI (2016)
9	78.30
6	77.88
8	76.55
4	73.10
7	71.47
5	69.34
10	68.93
1	68.34
3	68.11
2	64.85



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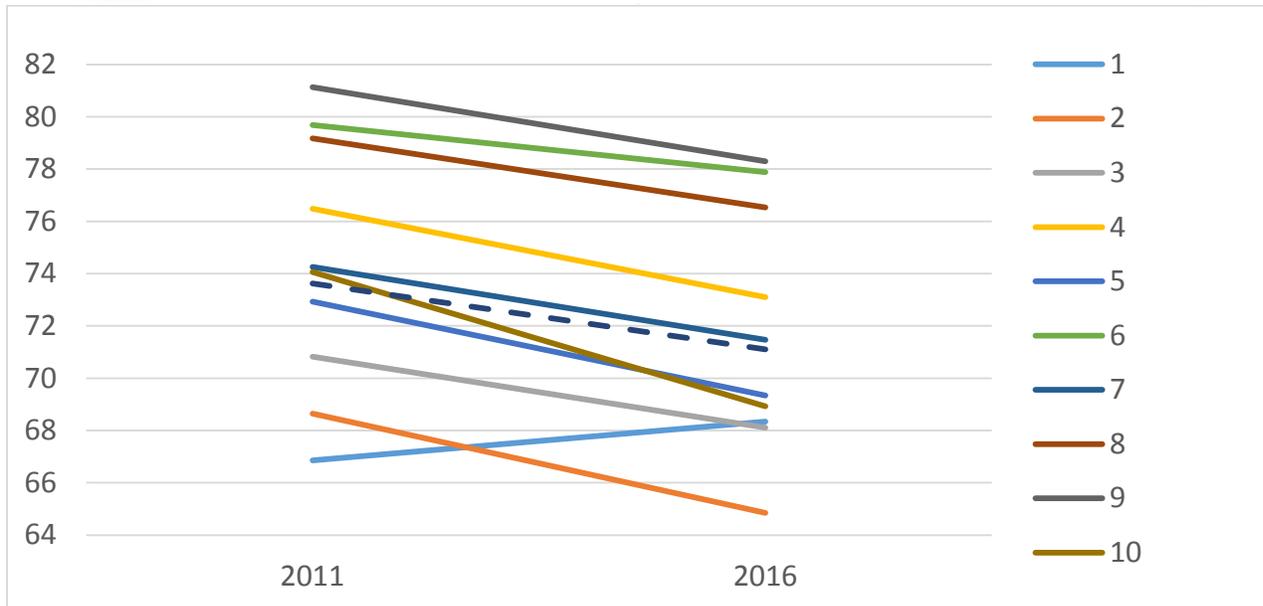


Figure 2, PCI Trend by District

The funding levels, policies and practices in place from 2011 to 2016 have perpetuated the inequities that existed in 2011. Addressing these systemic inequities requires new policies.

Data Reliability

Detailed analysis of results from the 2011 and 2016 pavement condition data collection cycles demonstrate the inherent challenge with consistently measuring pavement condition. The audit revealed street segments where the reported PCI score improved from 2011 to 2016 without work being performed on those segments. TCI advised the PCI assessments may vary because of differences in equipment, calibration and subjectivity of the people doing the analysis. TCI does not have a process to normalize results between data collection cycles.

This inherent variation in pavement condition measurements could reduce the usefulness of PCI scores when examining long-term trends or assessing funding requirements. For example, PCI scores reported in 2016 may be inflated compared to PCI scores reported in 2011. 404 CLMs were reported in failed condition in 2011. Auditors examined the specific segments reported failed in 2011 and compared the PCI reported in 2011 to the PCI reported in 2016. The analysis determined that 194 CLMs reported failed in 2011 had not had any work performed during the period 2011 to 2016, yet a higher PCI score was reported in 2016 on 82 CLMs of those street segments. A higher PCI score was reported in 2016 on over 42% of streets reported as failed in 2011 without any work being performed. The audit did not perform the same analysis on the other rating categories, but if this trend was consistent across all rating categories there is a risk street deterioration was under-reported by the audit. If this condition existed, it would indicate even greater funding gaps for the Street Maintenance and Pavement Preservation Programs.



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A second factor reinforces the concern about PCI measurement reliability. From the audit report, it can be extracted that 286 CLMs failed between 2011 and 2016. These are street segments that were not reported failed in 2011, but were reported failed in 2016. For the 5-year period from 2011 to 2016, that is an average of 57.2 CLMs failing per year. A street network with 4085 would see an average of 146 CLMs fail per year for a 28-year lifecycle, and an average 85 CLMs fail per year for a 42-year lifecycle. A failure rate of 57.2 CLMs per year suggests a 70-year lifecycle. TCI has explained the expected lifecycle for San Antonio's street network is 28 years, and by exception some streets may see a 42-year lifecycle. TCI has never discussed the possibility that a 70-year lifecycle would apply to any streets in San Antonio, and they have never suggested the citywide standard could be 70 years. Further, industry literature does not support the possibility of a 70-year lifecycle. There could be several explanations for this anomaly, but one possible explanation includes variations in pavement condition measurements. If the PCI score inflation observed for failed streets in 2011 were generalized to all rating categories, it is possible the street failure could have been significantly under-reported during the period of 2011 to 2016.

Failed Streets Systematically not being Reconstructed

404 CLMs were reported failed in 2011. An additional 280 CLMs failed from 2011 to 2016. TCI reported that 77.27 CLMs were reconstructed from 2011 to 2016. Although other treatments were applied to failed streets from 2011 to 2016, TCI did not explain if those treatments were temporary repairs or if they were sufficient work for streets in failed condition. At most, just 11% of streets reported failed in 2011 and streets that failed between 2011 and 2016 were reconstructed.

Further, the failure rate reported from 2011 to 2016 is wildly optimistic compared to either a 28- or 42-year lifecycle. A 28-year lifecycle and street network of 4,085 CLMs would suggest a street failure rate of 146 CLMs per year, while a 42-year lifecycle for the same network would suggest a street failure rate of 97 CLMs. TCI reported an average of just 57 CLMs per year failed from 2011 to 2016. An average of just 15.45 CLMs per year were reconstructed from 2011 to 2016. Even if the very optimistic failure rate reported by TCI from 2011 to 2016 could be sustained permanently, streets are failing at a rate over three times the reconstruction rate. This is not sustainable.

Recommendations

The following budget and policy recommendations are proposed.

Level of Service Policy

Existing standards were selected and implemented by TCI based on industry standards. City Council has not established a policy for street Level of Service. The current practice of determining Level of Service based on citywide averages results in inequity between Districts. City Council should establish a policy based on District averages, not citywide average. An average PCI of 70 is consistent with the 28-year and 42-year lifecycles discussed in this report, but the City policy should be to ensure an average PCI of 70 for each District.



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Street Reclamation and Reconstruction Standard

TCI has explained the appropriate treatment for streets in a failed state is reclamation or reconstruction, and has implied to City Council that reclamation or reconstruction of failed streets is in their management model. Yet, the fact that almost 90% of streets that were failed in 2011 and that failed from 2011 to 2016 did not receive those treatments during that time period demonstrates that reclamation or reconstruction of failed streets is not the policy that is practiced. The audit demonstrates that the policy being practiced is to perhaps complete some temporary repair of failed streets, but otherwise largely ignore failed streets.

City Council should establish a policy for reclamation or reconstruction of failed streets, with clear and specific standards for how long failed streets can remain in failed state before reclamation or reconstruction. Any policy that mandates failed streets must receive the appropriate repairs in a timely manner will undoubtedly require new funding. These new funding commitments could be large. City Council should consider a full range of policy options to address the expectedly large funding gap. Those options may include zoning changes, reduction of paved surface area, and prioritizing repairs over expansion.

Address Inequity

The data illustrates the disparity between Council Districts. Districts 6, 8 and 9 have exceptionally high levels of service, while Districts 1, 2, 3, 5 and 10 have levels of service below the city's standard. Policies should be revised and created to mitigate these disparities. Policy considerations include:

- Replace rough proportionality budget allocation for street funding with needs-based allocation. Generally speaking, Districts with more CLM of streets and streets in worse condition should receive more funding.
- Establish a program to complete reclamation or reconstruction of failed streets. The current backlog for failed streets alone is approximately \$872 million. The audit reported approximately 57 CLMs fail each year, meaning approximately \$200 million per year in reclamation and reconstruction work for the next 10 years would be required to eliminate the backlog of failed streets by 2028. That funding should be proportioned to Districts based on streets in failed condition, not distributed by rough proportionality.
- Establish a Level of Service policy by Council District average, not citywide average.
- The policy of prioritizing street repair by function disproportionately impacts neighborhood streets in older communities. That policy should be amended to raise the priority of streets that have been long neglected.

IMP Funding

IMP funding must be sufficient to maintain PCI average of 70 or better in each Council District. Although the auditors determined that \$64 million per year is sufficient to maintain the level of service to San Antonio's 4,085 CLMs, this report argues the current funding levels are not sufficient. The IMP should be



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increased by \$10 - \$15 million per year, and the increase should be targeted to the Districts below PCI 70.

Capital Funding

Capital Funding is clearly inadequate. The audit reported that on average 57 CLMs per year fail, but only 15.5 CLMs per year are reconstructed. The reported failure rate suggests approximately \$114 million per year is required to prevent the inventory of failed streets from continuing to expand. An additional \$87.2 million dollars per year for 10 years is required to address the backlog of failed streets. Capital funding for reclamation and reconstructions should be dramatically increased to address new streets that fail each year and begin to reduce the backlog of failed streets.

Capital investments should prioritize maintenance first. Certificates of Obligation that fund added capacity or operational improvements should be redirected to reclamation and reconstruction. Future bond programs should prioritize reclamation and reconstruction over added capacity or operational improvement projects.

Annexation

San Antonio is not meeting its obligation to maintain and repair the city's street network, and the shortfalls are not disclosed in the budget. Yet, the budget serves as the basis for estimating costs in areas being considered for annexation. The budget should not be used as the basis for estimating street costs for annexation decisions. The appropriate lifecycle model should be used to estimate street preservation and repair costs. Auditors reported that TCI uses a 28-year lifecycle model as the basis for their planning. Therefore, that model should be used as the basis for projecting street preservation and repair costs for all planning purposes, to include annexation decisions.

Long-term Sustainability

Despite steady increases in funding over recent years as reported by the auditor, this report argues that the Street Maintenance and Pavement Preservation Programs are underfunded. This ranges from \$126 million to \$273 million per year needed to address the backlog. The combined General Fund and Capital Budget for FY2017 was \$1.725 billion. Not considering general obligation bonds, the funding gap estimated in this report is between 7.3 and 15.8% of the FY2017 combined General Fund and Capital Budget. An additional \$87.2 million per year for 10 years is needed to address the street reclamation and reconstruction backlog.

Conclusion

Sufficient new revenue is not likely to be generated to address these funding gaps. Nor would it be prudent policy to commit to disproportionate funding without properly accounting for other high priority needs and obligations of the city. Nonetheless, given that constituents consistently rate street maintenance needs among their highest priority requests, the City must find a way to ensure the long-term sustainability of its street network. The funding gaps this report asserts are the result of



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insufficient revenue to meet our commitments to preserve and repair the street network. This problem requires additional analysis and continuing involvement by Council in determining policy to deal with this condition. The dialog and considerations should be consistent with the city design and density principles addressed in SA Tomorrow reports, which, if followed, could result in increased private investments leading to the additional revenues needed to address street maintenance requirements.