Agenda Item No: 17.A

STAFF REPORT

Report To: Board of Supervisors **Meeting Date:** August 5, 2021

Staff Contact: Darren Schulz, Public Works Director

Agenda Title: For Possible Action: Discussion and possible action regarding Carson City's roadway funding needs and a preliminary evaluation of potential options to fill the transportation funding gap. (Darren Schulz, dschulz@carson.org and Lucia Maloney, lmaloney@carson.org)

Staff Summary: Staff, with consultant support, will present the Carson City Roadway Needs and Funding Report which includes an analysis on the City's current pavement conditions, transportation funding needs, and potential options to generate additional long-term funding to fill the transportation funding gap.

Agenda Action: Formal Action / Motion **Time Requested:** 45 minutes

---

Proposed Motion

I move to direct staff to proceed with further analysis of the preferred transportation funding options as discussed on the record.

Board's Strategic Goal

Sustainable Infrastructure

Previous Action

June 9, 2021 - the Carson City Regional Transportation Commission (RTC) was provided with a presentation on the City's current pavement conditions, transportation funding needs, and potential options to generate additional long-term funding to fill the transportation funding gap. Commissioner discussion followed, though no formal action was taken. Generally, the commissioners were interested in pursuing and researching the potential roadway funding mechanisms further and generally agreed that additional roadway funding is necessary to adequately maintain the roadway infrastructure to an acceptable level of service. The commissioners expressed the most interest in the Program of Local Improvements, General Improvement District (GID) and Transportation Sales Tax options. Discussion also ensued about the importance of engaging and communicating with the public, providing a clear and transparent implementation plan, and ensuring that a substantial portion of funding would address the needs of local, neighborhood streets.

Background/Issues & Analysis

Carson City's paved roadway assets are currently in Fair condition, with a Pavement Condition Index (PCI) score of 57 out of a possible 100. If additional funding is not allocated towards Carson City's paved roadway assets, pavement conditions are projected to be in Poor condition, with a network average PCI score of 42, by 2030.

Current annual funding for roadway projects is approximately $2.8 million. As noted in the Roadway Needs and Funding Report (Attachment 1), annual funding in the amount of $20.6 million is estimated to be needed to maintain the roadway network in Fair condition. Due to the current shortfall in funding and associated deferred maintenance and rehabilitation needs, the following roadway facilities are deteriorating:

- Roadway pavement
- Roadway subbase
- Curb and gutter
- Sidewalks
- Traffic signals and signs

As directed by the Board of Supervisors at the 2020 Annual Board Retreat, Carson City staff has partnered with a consultant to research and evaluate potential funding options. Additional funding would allow Carson City to be proactive in addressing roadway pavement rehabilitation and preservation needs. Being proactive would extend the lifecycle of roadway assets and reduce long-term costs associated with neglected infrastructure. Similar to a 1970's oil-filter slogan - pay now or pay more later - pavement management aims to reduce long-term taxpayer costs for having a safe, reliable, and efficient transportation network available for public use 24 hours a day, 365 days a year.

The Needs and Funding Report identified eight (8) potential funding mechanisms that could be considered by the Carson City Board of Supervisors. Each funding mechanism was evaluated on the degree to which it supports Carson City's Strategic Goals.

Applicable Statute, Code, Policy, Rule or Regulation
N/A

Financial Information
Is there a fiscal impact? No

If yes, account name/number: N/A

Is it currently budgeted? No

Explanation of Fiscal Impact: N/A

Alternatives
N/A

Attachments:
Attachment1_Needs and Funding Report_v3_Complete.pdf

Attachment2_BOSPresentation_v3.pdf

Board Action Taken:

Motion: _____ 1) _____ Aye/Nay
2) _____ _____
_____
_____
_____
_____

_____
(Vote Recorded By)

Carson City Roadway Needs and Funding Report

E. Fifth Street, 2019

Introduction

Current available annual funding for Carson City's roadway capital projects is approximately $2.8 million, budgeted annually from local sources. This funding is allocated to system rehabilitation and system preservation improvements, which typically include costs for roadway and sidewalk improvements. System rehabilitation and preservation improvements are the primary tools to improve pavement condition for Carson City, aside from localized maintenance, such as pot holing, shouldering, and crack sealing.

At the February 27, 2020, Board of Supervisors' workshop, Carson City Public Works presented the condition of the City's roadway assets and the need for additional funding. Following the discussion, the workshop attendees prioritized (2nd out of 10) the need to increase funding for street maintenance, and to work with residents and businesses to develop long term solutions.

Since the 2020 workshop, City staff has worked with a consultant to quantify the financial needs in accordance with a desired outcome, such as, how much funding would be needed to restore the overall condition of roadways to a Good or Satisfactory condition. Applied Pavement Technology, Inc., in partnership with staff, developed a *Carson City Pavement Condition Analysis Report* (Attachment 1). In parallel, City staff worked with a second consultant to explore eight (8) potential funding options. Morse Associates Consulting, LLC, developed a *Potential Options for Carson City Roadway Funding Report* (Attachment 2).

Roadway Needs

Well-designed and well-built asphalt roads will last about 25 years. However, no matter how well a road is constructed, the asphalt will begin to deteriorate almost immediately. Over time, the materials that make up asphalt begin to break down due to exposure to the elements, such as rain, sunlight, and chemicals that come into contact with the pavement surface. Roads that experience a high volume of vehicle traffic will deteriorate at a slightly faster rate than roads less traveled.

Additional funding would allow Carson City to be proactive in addressing roadway pavement rehabilitation and preservation needs. Being proactive will extend the lifecycle of roadway assets and reduce long-term costs associated with neglected infrastructure. Similar to a 1970's oil-filter slogan - *pay now or pay more later* - pavement management aims to reduce long-term taxpayer costs for having a safe, reliable, and efficient transportation network available for public use 24 hours a day, 365 days a year.

Figure 1.0 Fifth Street, 2019

Carson City's paved roadway assets are currently in Fair condition, with a Pavement Condition Index (PCI) score of 57 out of a possible 100. If additional funding is not allocated towards Carson City's paved roadway assets, pavement conditions are projected to be in Poor condition, with a network average PCI score of 42, by 2030. Pavement in Poor condition typically has a significant amount of moderate- and high-severity distresses. Figure 1.0 provides a picture of a road that is in Poor Condition. Figure 2.0 is a graphic of the Pavement Condition Index (PCI) scale for reference.

Figure 2.0 Pavement Condition Index (PCI) Scale

PCI Range		Condition Category		Typical Distresses Present
100	86	Good		Very little distress. Minor cracking.
85	71	Satisfactory		Mostly low-severity distress, with the possibility of some moderate. Little to no fatigue cracking. Minor rutting.
70	56	Fair		Starting to see more moderate-severity distress, including some fatigue cracking. Patching and rutting are present typically.
55	41	Poor		Moderate- and high-severity cracking, including notable low- and/or moderate-severity fatigue cracking, patching, and rutting.
40	26	Very Poor		Significant amounts of cracking, including notable moderate- and high-severity fatigue cracking, raveling, and patching. Cracking is moderate- to high-severity. Rutting may approach 0.5 inches.
25	11	Serious		Significant amounts of cracking, including considerable amounts of moderate- and high-severity fatigue cracking, raveling, and patching. Majority of cracking is moderate- to high-severity. Rutting may approach 1 inch.
10	0	Failed		Significant amounts of cracking, including moderate- and high-severity fatigue cracking, raveling, patching. Cracking is generally high-severity. Possible high-severity rutting.

Due to the current shortfall in funding and associated deferred maintenance and rehabilitation, the following roadway facilities are deteriorating:

- Roadway pavement
- Roadway subbase
- Curb and gutter
- Sidewalks
- Traffic signals and signs (traffic control)

As part of the *Carson City Pavement Condition Analysis Report* (Attachment 1), Applied Pavement Technology performed five network scenarios to forecast what the network pavement condition would be in 30-years. All the scenarios assumed an annual 3% inflation rate, 2% annual increase in revenue, and the cost of incidentals (e.g. design, project/construction management, contingency). Two of the scenarios were based on revenue levels and three were based on a targeted pavement condition, the five scenarios are:

1. 30-year pavement condition with current revenue
2. 30-year pavement condition with current revenue plus 50%
3. How much would it cost to improve and maintain regional roads at a 70 PCI and local roads at a 50 PCI
4. How much would it cost to improve and maintain regional roads at 75 PCI and local roads at 70 (Goals from the City's 2018 Pavement Management Plan)
5. How much would it cost to maintain roads at the current network average PCI of 57

Under the current revenue levels, the City's pavement management software forecasts an average pavement condition of 42 PCI in ten years and 31 PCI in 30 years. Figure 3.0 illustrates the 30-year pavement condition trends for each of the five scenarios. For the Current Revenue scenario and for the Current Revenue Plus 50% scenario, the forecasted rate of decline indicates that in a few years the network is going to start reaching a point where more and more segments are going to require more costly rehabilitation work, and the City will not be able to maintain roads in acceptable condition.

Figure 3.0 Chart of Pavement Condition by Scenario

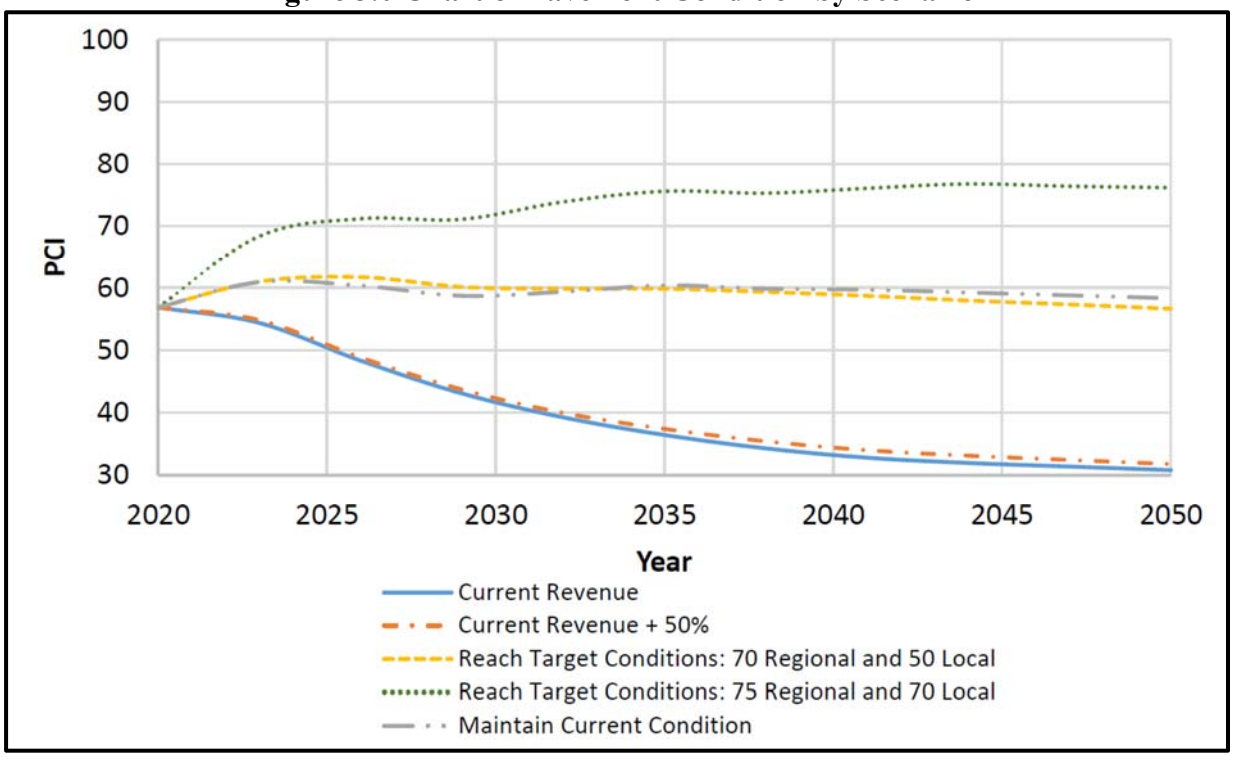
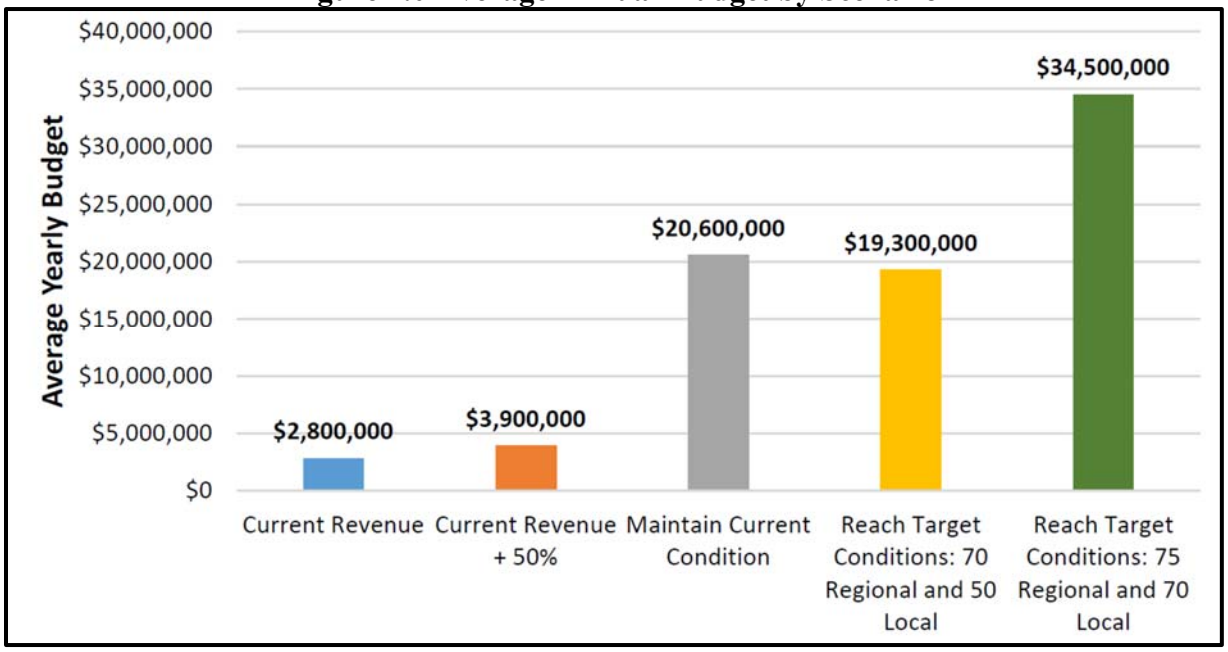


Figure 4.0 illustrates the approximate 30-year annual average budget to improve and maintain pavement conditions for the five scenarios.

Figure 4.0 Average Annual Budget by Scenario



Funding Options

Carson City's ability to impose taxes, fees, or other types of revenue collection is heavily limited and restricted by Nevada's legal statutes, commonly known as Nevada Revised Statutes (NRS). To identify potential revenue streams, existing funding mechanisms in NRS and funding mechanisms currently in use in other States were researched and evaluated at a high planning level (Attachment 2, *Potential Options for Carson City Roadway Funding Report*). For this initial step, the following eight potential funding mechanisms were explored:

- Fuel tax indexing (NRS 373)
- General Improvement District (NRS 318)
- Program of local improvements (NRS 271)
- Property tax override (NRS 354)
- Road utility fee (a.k.a. transportation utility fee)
- Supplemental Governmental Services Tax (NRS 371)
- Transportation sales tax (NRS 377A)
- Vehicle Miles Traveled (VMT) Fee

If Carson City decides to pursue one or more of the funding mechanisms, a more detailed analysis will need to be completed to aid decision making. Additional analysis will need to include consultation with legal and municipal financial professionals.

Criteria and Evaluation

In examining these eight funding mechanisms, potential criteria were identified by Morse Consulting. These criteria were assigned a weighted score, between one and three, for how important a particular criterion is in identifying an adequate long-term funding option (numeric value in parentheses). The ten criteria are:

- Legislative authority (3):
    - Is the mechanism currently authorized?
    - Is new or amended legislation needed?
    - Is a voter approval required for implementation?
- Revenue potential (3): How much revenue could the mechanism yield at an illustrative rate?
- Reliability (3): How sensitive is the funding option to typical economic cycles?
- Sustainability (3):
    - Does the mechanism automatically adjust for inflation?
    - Can the mechanism address increases in vehicle fuel economy, including the impact of all electric vehicles?
- Equity (3):
    - Can the method of collection be structured to account for socio-economic equity?
    - Can the method of collection be distributed to both residents/businesses?
    - Are there approaches to improve equity?

- Administrative efficiency (2):
    - Are existing transparent processes and procedures already in-place to collect/expend the new revenue with little or no additional cost?
    - Could existing administrative processes and procedures be adapted to transparently collect/expend the new revenue with modest additional cost?
    - Would extensive new administrative processes and procedures that require considerable expense need to be developed to transparently collect/expend the new revenues?
- Bond Potential (2): Could revenue from the funding mechanism be used to service debt, allowing the City to finance improvements in the present day versus waiting for sufficient revenue to accumulate?
- Flexibility of use (1):
    - Can the funding be used on Local roads?
    - Can the funding be used on Regional roads?
    - Can the funding be used on appurtenant roadway items such as curb, gutter, sidewalk, traffic signal, signs, guard rails, etc.?
    - Can the funding be used for all types of activities (new construction, reconstruction, system renewal, system preservation)?
- Ease of adjusting fee/assessment/tax rates to accommodate changing conditions (1):
    - Can funding adjustments be made to adjust for changes in travel demand and patterns, increases/decreases in roadway funding from existing federal/state/local sources, or new federal/state/local mandates (e.g., fuel efficiency, transportation technology, greenhouse gas emissions, etc.)?
    - Does the funding need to be adjusted for changing conditions?
- Indications of public support (1): Does historical experience indicate that the funding mechanism would be supported by the public?

In addition to the weighted score, the eight funding mechanisms were assigned a secondary score, of one through three, for how a particular funding option is able to support the Strategic Goals of the Carson City Board of Supervisors. The strategic goals are:

- Economic Development
- Efficient Government
- Organizational Culture
- Quality of Life and Community
- Safety
- Sustainable Infrastructure

The weighted and secondary number were multiplied to develop an evaluation score. Figure 5.0, below, illustrates how each funding option scored.

Figure 5.0 Evaluation Matrix of Potential Funding Options

Evaluation Criteria (weight factor)	Fuel Tax Indexing	General Improvement District	Program of Local Improvements	Property Tax Limit Override	Road Utility Fee	Government Services Tax	Special Purpose Sales Tax	Vehicle Miles Traveled Fee
Legislative Authority (3)	6	9	9	6	3	9	9	3
Revenue Potential (3)	3	9	9	6	9	6	6	9
Reliability (3)	3	9	9	6	9	6	6	6
Sustainability (3)	3	9	9	3	9	6	6	6
Equity (3)	3	9	9	6	6	3	3	3
Administratively Efficient (2)	6	4	4	6	4	6	6	4
Bond Potential (2)	6	6	6	6	6	6	6	6
Flexibility (1)	3	3	3	3	3	3	3	3
Ease of adjusting (1)	3	2	3	1	2	1	1	2
Public Support Potential (1)	1	1	3	2	2	2	2	1
Total	**37**	**61**	**64**	**45**	**53**	**48**	**48**	**43**

On the following pages, Figure 6.0 provides a conceptual estimate of how much funding could be generated by each of the funding options evaluated. High level assumptions were used to generate the first year of revenue. Funding assumptions are provided in the report.

Figure 6.0 Illustrated Rates by Funding Option

	Table 1: Illustrative rates and revenues			
Potential funding mechanisms		**Illustrative rate**	**Potential gross first year revenue**	**Notes**
	General Improvement District	$10/month per residential unit Avg. $125/month for comm/indus establishment	$5-$6 million	1. Based upon trip generation by land use category. 2. Assessment against property; statute may allow fee to be charged to "responsible parties" (i.e., parties having control of the premises.)
	Program of local improvements	$10/month per residential unit Avg. $125/month for comm/indus establishment	$5-$6 million	1. Based upon trip generation by land use category. 2. Assessment against property.
	Road Utility Fee	$10/month per residential unit Avg. $125/month for comm/indus establishment	$5-$6 million	1. Based upon trip generation by land use category. 2. Charged against "responsible parties" (i.e., parties having control of the premises.)
	VMT Fee	$.025-$0.03/VMT	$4-$6 million	1. Assumes only LDVs registered in Carson City. 2. Vehicles subject to VMT Fee would pay no local fuel tax; revenue estimate is net of lost fuel tax revenue. 3. Assumes "low-cost/low-tech" odometer based program.
	Transportation sales tax	0.25%	$3.2 million	1. Revenue estimate based on existing sales tax revenue.
	Supplemental Governmental Services Tax	1% of assessed vehicle valuation	$1-$2 million	1. Tax calculated and collected with initial registration and annual renewals based on depreciated value of vehicle.
	Property tax override	Revenue potential reported to be extremely low.		1. Subject to total rate cap of $3.64 per $100 of value. 2. Exempt from year-over-year revenue cap.
	Fuel tax indexing	2.1% annual inflation adjustment	$600,000-$700,000 first year	1. Assumes indexing on all motor vehicle fuel taxes (gas, diesel, etc.) in Carson City at all levels (federal, state, local). 2. Longer-term projections of revenue from indexing would need to address increasing fleet economy. 3. If there is no inflation, revenue will not increase.

Conclusion and Recommendation

For some of the potential funding mechanisms, there was considerable latitude in how the mechanism could function, such as selecting a fee, rate, or tax structure that is variable or fixed. How a mechanism functions can have a significant impact on how a funding mechanism can support the BOS's strategic goals, such as economic development, efficient government, and quality of life and community. This high-level report does not dive into the details or legal requirements for establishing a fair and equitable methodology; but does reference if a particular structure is found to be prohibited or required. Below are short generic definitions of the two main types of rate structures, fixed rate, and variable rate. Frequently, rate structures include both types of rates to cover the cost of service and situations of high use.

- Fixed Rate – a stated charge for service not based on the quantity of service, but rather the cost of service.
- Variable Rate – a charge based on the quantity of consumption, such as vehicle miles traveled, or trip generation rates typically based off land use norms (e.g. A Single-Family Detached Housing generates 9.4 trips per day).

After review of the eight funding options and current pavement conditions, a multi-phased approach is suggested. This approach is recommended to increase annual revenue over time and to distribute the financial burden to residents and businesses equitably, so as not to have a significant and sudden impact to the residents and businesses of Carson City. Regardless of which funding option is selected, public support will be needed.

Based on a review of recent successful funding initiatives, including the Quality of Life Initiative (1996), V&T Railroad Sales Tax (2006), and the Infrastructure Sales Tax (2014), it appears that public support is provided when a clear plan of expenditures is provided and the cost of the initiative is distributed over the entire population, not solely based on level of use.

Transportation is innately personal – each of us experiences the transportation network through our own unique lens of our daily activities. Each of us has social activities, medical appointments and day-to-day errands that require travel. Young adults may have college, jobs, and flexibility after-hours for time spent with friends. Families may take children to school and after-school activities. Older residents may decide to forego driving personal automobiles and begin using the bus or non-motorized modes of transportation. Whether a person uses the roads on a daily basis to provide housekeeping service or whether a retired person uses the roads a few times a week, taxpayers and visitors expect access to transportation facilities 24 hours a day, 365 days a year. It is for this reason, that if a funding option is pursued, a well-reasoned and transparent rate structure that is <u>not</u> heavily based on use, will be critical to success.

Based on the scoring of the eight funding options above, use of a Program of Local Improvements ranked the highest for its ability to support Carson City's Strategic Goals and reduce the roadway funding gap. Based on a preliminary review of Nevada Revised Statutes (NRS) 271 Local Improvements, State Law authorizes cities and counties to undertake projects in the public interest including street projects. The City could utilize NRS 271 to create an ongoing program of project-specific street improvements. Revenue would be raised using special assessments on properties based upon the special benefits conferred by the roadway system. The concept assumes assessment based on location or another equitable basis. This is similar to the Infrastructure Sales Tax (2014), in which a list of projects was presented and publicly discussed.

This mechanism does not require a formal vote of the people but can be stopped if the majority of property owners' object. This mechanism could be based on an annual fee/rate structure established annually or over a short-term period, allowing flexibility by the elected officials to implement gradually and to be responsive overtime to strong or poor economic conditions.

Other options that may address the transportation funding shortfall, while supporting implementation of the City's Strategic Goals include formation of a General Improvement District (GID) under NRS 318, or seeking legislation for a Road Utility Fee as discussed in Attachment 2.

This report and incorporated attachments provide an initial evaluation of potential funding mechanisms for roadway improvements. With support and direction from the Board of Supervisors, next steps should include (1) selection of 1-3 funding options for further exploration; and (2) solicitation of both legal and financial peer reviews of selected options.

Attachments

1.) Carson City Pavement Condition Analysis Report, Applied Pavement Technology
2.) Potential Options for Carson City Roadway Funding Report, Morse Associates, LLC

Carson City Pavement Condition Analysis Final Report

Prepared For:

Carson City Public Works

3505 Butti Way

Carson City, Nevada 89701

775-887-2000

http://www.carson.org

Prepared By:

Applied Pavement Technology, Inc.

1755 E Plumb Lane, Suite 264

Reno, NV 89502

775-345-1999

www.appliedpavement.com

CONTENTS

INTRODUCTION AND PURPOSE

Carson City Public Works (CCPW) contracted with Applied Pavement Technology, Inc. (APTech) to analyze Carson City's (City) roadway pavement assets and forecast budget needs for the next 30 years.

This report provides a detailed description of the current condition of pavement assets, examples of different pavement conditions, a review of pavement performance in Carson City, and budget scenarios to assist Carson City's elected officials in balancing City priorities.

Carson City is the capital of the State of Nevada. It was founded in 1864, covers about 157 square miles, and has a population of about 55,000 (2010 census). CCPW is responsible for maintaining approximately 282 centerline miles of pavement. This equates to 52,265,798 square feet of pavement or 1.87 square miles of pavement.

ROADWAY PAVEMENT INVENTORY

CCPW maintains a pavement database of all City roadways. The database, updated annually, was used to review pavement performance and to complete budget scenarios. Below is a detailed summary of roadway pavement assets that CCPW maintains, preserves, and rehabilitates.

Tables 1 and 2 provide information on pavement surface area, roadway functional classification, and Pavement Performance District (see figure 1). CCPW's network is predominantly comprised of local roads.

Table 1. Pavement area by roadway functional classification.

Functional Classification	City Classification	Area (ft^2)	Percentage of Network Area
Arterials	Regional	7,752,697	15%
Collectors		9,892,797	19%
Local	Local	34,620,304	66%
Total		52,265,798	100%

Table 2. Pavement area by District.

Performance District	Functional Classification	City Classification	Area (ft^2)	Percentage of District Area
1	Arterials	Regional	2,039,278	20%
	Collectors		1,337,722	13%
	Local	Local	6,780,603	67%
Total			**10,157,603**	**100%**
2	Arterials	Regional	2,442,486	24%
	Collectors		1,186,034	11%
	Local	Local	6,722,014	65%
Total			**10,350,534**	**100%**
3	Arterials	Regional	988,173	9%
	Collectors		2,286,552	22%
	Local	Local	7,339,450	69%
Total			**10,614,176**	**100%**
4	Arterials	Regional	1,356,593	12%
	Collectors		2,439,696	22%
	Local	Local	7,083,733	65%
Total			**10,880,023**	**100%**
5	Arterials	Regional	926,167	9%
	Collectors		2,642,792	26%
	Local	Local	6,694,504	65%
Total			**10,263,463**	**100%**

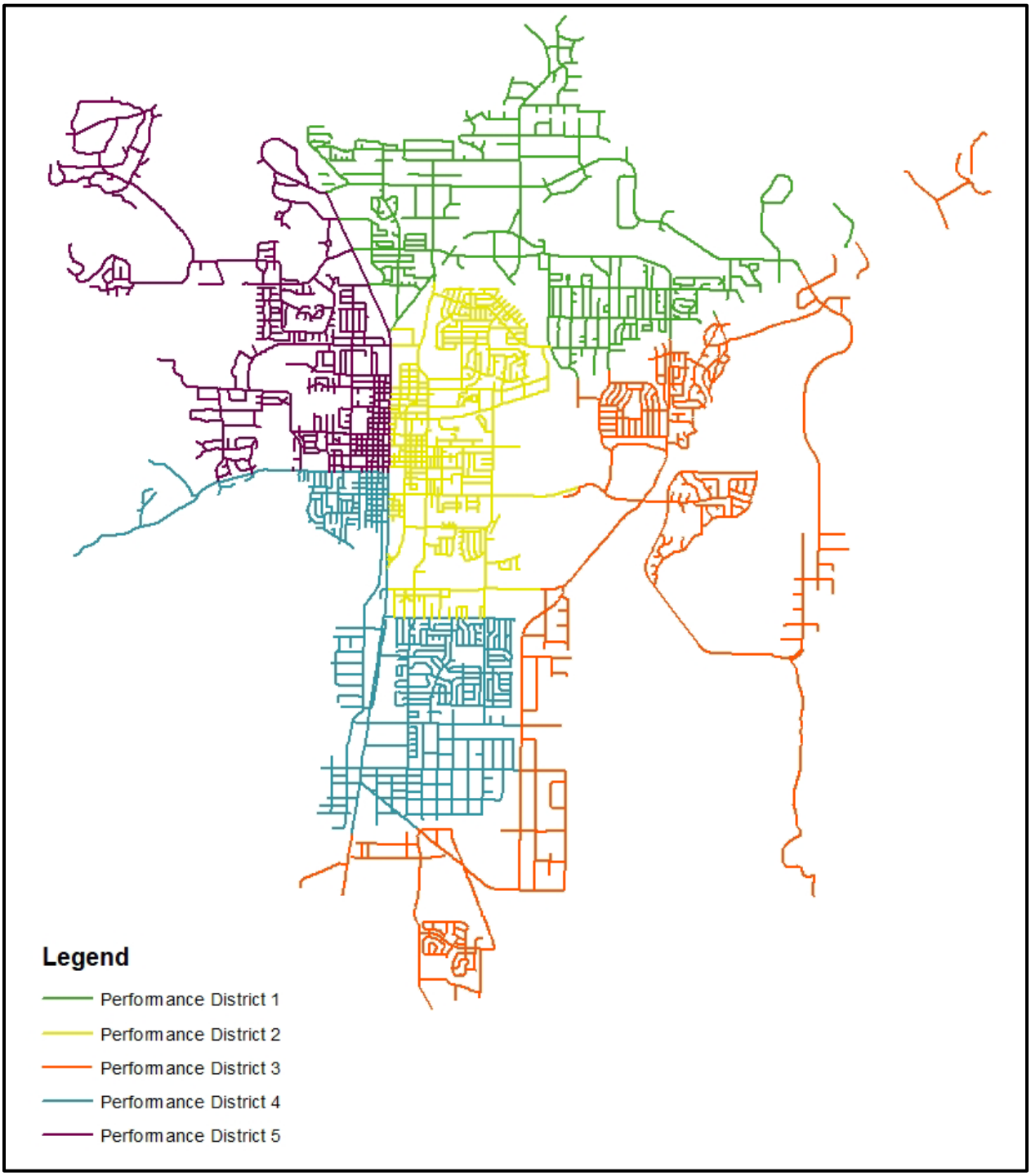


Figure 1. Carson City maintained roads by Performance District.

PAVEMENT CONDITION

Pavement Condition Index

CCPW has performed pavement surveys two times since 2014. The pavement surveys were carried out using automated data collection vans which drove the network and collected pavement distress data. The last round of data collection was conducted in 2017. Distress data is used to calculate a value for each of the 3,073 road sections in the pavement network. Pavement condition is quantified using the Pavement Condition Index (PCI). This method assigns a value ranging from 0 to 100, where a PCI of 0 describes a severely distressed pavement and a PCI of 100 describes a pavement in excellent condition. In the calculation of PCI, each distress type and severity have an associated deduct value. Structural distresses, like rutting and fatigue cracking, have much higher deduct values than others. Thus, small amounts of these distresses will lower a PCI value much faster than large amounts of other functional distresses. Table 3 provides an overview of the industry standard condition categories used by CCPW, along with typical distresses present in each category.

Table 3. PCI ranges and condition categories.

PCI Range		Condition Category		Typical Distresses Present
100	86	Good		Very little distress. Minor cracking.
85	71	Satisfactory		Mostly low-severity distress, with the possibility of some moderate. Little to no fatigue cracking. Minor rutting.
70	56	Fair		Starting to see more moderate-severity distress, including some fatigue cracking. Patching and rutting are present typically.
55	41	Poor		Moderate- and high-severity cracking, including notable low- and/or moderate-severity fatigue cracking, patching, and rutting.
40	26	Very Poor		Significant amounts of cracking, including notable moderate- and high-severity fatigue cracking, raveling, and patching. Cracking is moderate- to high-severity. Rutting may approach 0.5 inches.
25	11	Serious		Significant amounts of cracking, including considerable amounts of moderate- and high-severity fatigue cracking, raveling, and patching. Majority of cracking is moderate- to high-severity. Rutting may approach 1 inch.
10	0	Failed		Significant amounts of cracking, including moderate- and high-severity fatigue cracking, raveling, patching. Cracking is generally high-severity. Possible high-severity rutting.

Figures 2 through 8 show representative images for each PCI condition category described in Table 3. There are multiple combinations of distress types, severities, and extent that may lead to the same PCI.

Figure 2 taken on Race Track Road has no distresses visible (8% of the roads in Carson City are rated as Good).

Figure 2. Pavement in Good condition category (PCI 100-86).

Figure 3 taken on Silver Oak Drive shows low- and moderate-severity longitudinal and transverse cracking (14% of the roads in Carson City are rated as Satisfactory).

Figure 3. Pavement in Satisfactory condition category (PCI 85-71).

Figure 4 taken on Deer Run Road shows a combination of moderate-severity transverse cracking and low-severity alligator cracking (31% of the roads in Carson City are rated as Fair).

Figure 4. Pavement in Fair condition category (PCI 70-56).

Figure 5 taken on Fifth Street shows a combination of low and moderate-severity longitudinal cracking and moderate-severity alligator cracking (27% of the roads in Carson City are rated as Poor).

Figure 5. Pavement in Poor condition category (PCI 55-41).

Figure 6 taken on North Lompa Lane shows a combination of low and moderate-severity longitudinal and transverse cracking, low-severity patching, and a considerable amount of moderate-severity alligator cracking with low severity rutting (15% of the roads in Carson City are rated as Very Poor).

Figure 6. Pavement in Very Poor condition category (PCI 40-26).

Figure 7 taken on Deer Run Road shows a combination of low and moderate-severity longitudinal and transverse cracking along with considerable amounts of moderate-severity alligator cracking with moderate-severity rutting (4% of the roads in Carson City are rated as Serious).

Figure 7. Pavement in Serious condition category (PCI 25-11).

Figure 8 taken on Brick Road shows a combination of moderate- and high-severity alligator cracking and potholes (1% of the roads in Carson City are rated as Failed).

Figure 8. Pavement in Failed condition category (PCI 10-0).

Current Network Conditions

Based on the PCI values for all the roadways, the current overall area weighted average PCI for the network is 57. This indicates that the overall condition of the network is Fair with a rating near the bottom of the Fair condition category (PCI 70-56). Tables 4 and 5 provide breakdowns of the average PCI values by facility type and district, respectively. Note that these are average values, and that there is a distribution of condition values from very high to very low throughout the network.

Table 4. Average PCI by facility type.

City Classification	Area (ft^2)	Percentage of Network Area	Area Weighted PCI
Regional	17,645,494	34%	66
Local	34,620,304	66%	52
All Roads	52,265,798	100%	57

Table 5. Average PCI by Performance District.

Performance District	City Classification	Area (ft^2)	Percentage of District Area	Area Weighted PCI
1	Regional	3,377,000	33%	60
	Local	6,780,603	67%	51
	All Roads	10,157,603	100%	54
2	Regional	3,628,520	35%	70
	Local	6,722,014	65%	53
	All Roads	10,350,534	100%	59
3	Regional	3,274,725	31%	70
	Local	7,339,450	69%	54
	All Roads	10,614,176	100%	59
4	Regional	3,796,289	35%	72
	Local	7,083,733	65%	48
	All Roads	10,880,023	100%	56
5	Regional	3,568,959	35%	57
	Local	6,694,504	65%	56
	All Roads	10,263,463	100%	56

Figure 9 displays the distribution of pavement area by condition category. Approximately 22 percent of the roadway network area is in Good to Satisfactory condition with PCI values greater than 70. Roadways in Good or Satisfactory condition are typically excellent candidates for pavement preservation treatments. Strategically timed pavement preservation treatments extend the life of a roadway in a cost-effective manner, delaying the need for more costly treatments.

Approximately 58 percent of the roadways in the City are in Fair or Poor condition with a PCI between 40 and 70. Roadways in this condition category will, based on standard City practice, likely require some form of rehabilitation work or pavement preservation work to restore or prolong condition. The remaining 20 percent of the City's roadways are in Very Poor, Serious, or Failed condition. Roadways in these conditions are generally candidates for reconstruction or major rehabilitation which are costly.

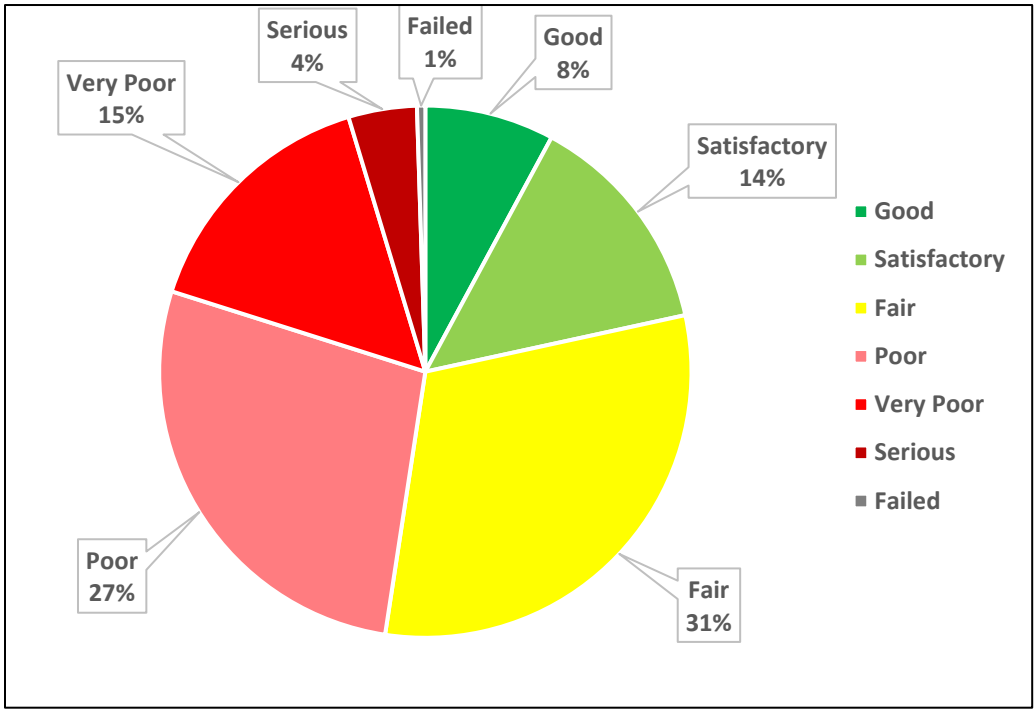


Figure 9. Distribution of pavement area by condition category.

Figures 10 and 11 display the distribution of pavement area in the different condition categories by the functional classification of the roadway. Approximately 41 percent of the regional roads are in Good or Satisfactory condition, while only 12 percent of the local road area is in Good or Satisfactory condition.

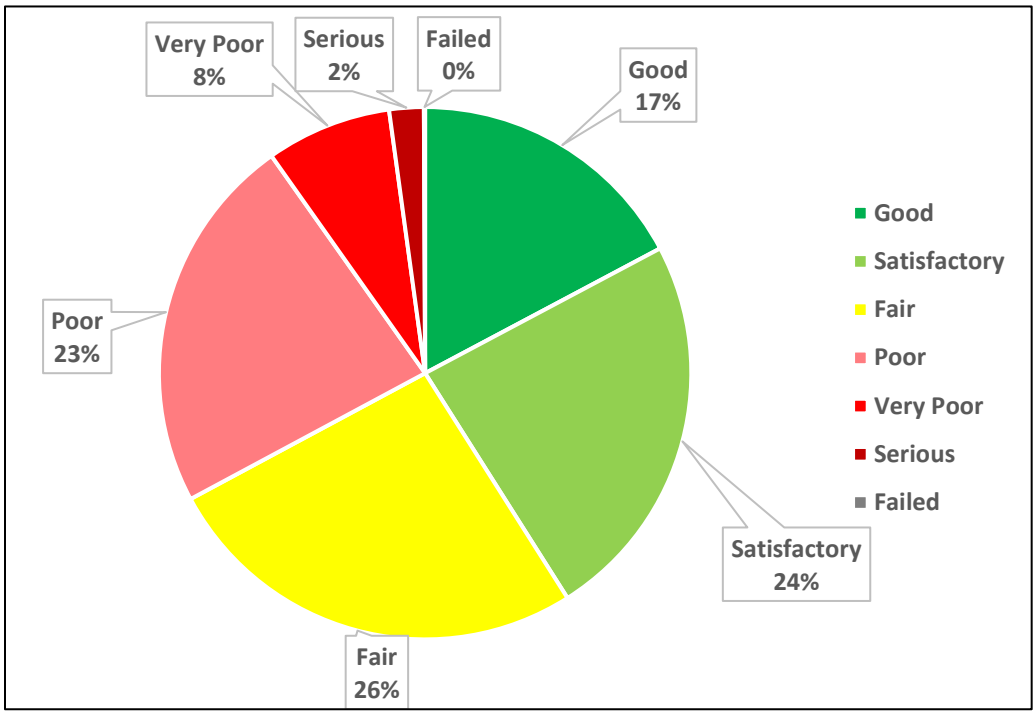


Figure 10. Regional roadways distribution of pavement area by condition category.

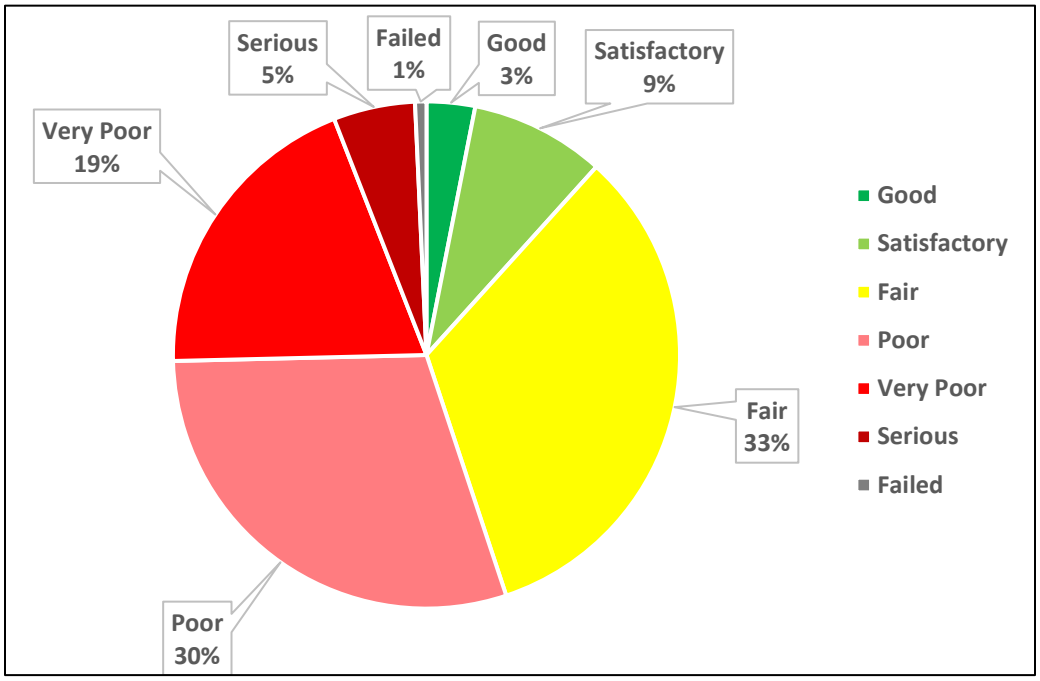


Figure 11. Local roadways distribution of pavement area by condition category.

Treatment Strategy

The Carson City Pavement Management Plan outlines the City's approach to maintaining, preserving, and rehabilitating the City's roadways. The plan identifies project evaluation criteria to consistently and transparently prioritize projects. The leading criteria include:

- Pavement Condition
- Preventive and Corrective Maintenance Schedule
- Roadway Functional Classification
- Traffic Volume
- Safety (high speed facilities)

Pavement maintenance schedule is guided by the City's pavement management software which tracks pavement condition, work history, and allows for performance modeling that helps predict financial needs to proactively budget for roadway treatments (pavement repair, maintenance, and rehabilitation). The software assists in assigning and scheduling specific treatment strategies by condition category and calculates funding needs based on assigned unit costs. This allows the user to select the right treatment for the right pavement section at the right time.

Pavement maintenance includes routine maintenance actions that are applied to address a specific distress, such as crack sealing linear cracks, or patching a pothole. In general, pavement maintenance is divided into two approaches depending on the overall condition of the pavement: preventive and stopgap. Characteristics of each maintenance approach are provided below, along with the following definitions:

- Preventive maintenance: treatments applied to a pavement generally in good condition with the primary objective of slowing the rate of pavement deterioration.

- Stopgap maintenance: maintenance activities performed to keep a deteriorated pavement operational and in a safe condition.

The goal of preventive maintenance is to preserve the pavement system by slowing the rate of deterioration through the use of proactive treatments or by improving the surface condition. Since preventive maintenance treatments are usually very low in cost, their use is generally a cost-effective strategy for preserving network conditions. Preventive maintenance policies are established to define the type of maintenance action needed to correct each distress type observed during the pavement evaluation.

Stopgap maintenance is recommended when rehabilitation activities are warranted but funding is insufficient to perform the needed level of work. The goal of stopgap maintenance is to keep the pavement operational through the repair of distress type and severity level combinations that could create hazardous situations like the potential for tire damage, hydroplaning, or other safety concerns. Stopgap maintenance treatments are considered temporary and generally do not provide very many years of service.

Surface treatments and thin overlays applied to the roadway surface do not increase the structural capacity. However, these treatments protect the existing structure from the elements that cause

rapid aging, such as moisture intrusion and pavement oxidation that lead to structural deterioration. Additionally, surface treatments can be used to fill small surface distortions and improve skid resistance.

A threshold PCI value (i.e., critical PCI) is used to distinguish between preventive and stopgap maintenance. CCPW defined the this value to be 65 for all roadways in their network (Pavement Management Plan). The Critical PCI identifies when major rehabilitation work should be considered. Preventive maintenance actions are only recommended for roadways above the critical PCI level. Below the critical PCI, stopgap maintenance could be applied but ideally the pavement is being considered for major maintenance and rehabilitation (M&R) in the near future. Major M&R is typically defined as an activity such as an overlay or reconstruction that would return the pavement to basically "new" condition and would result in a PCI of 100 (no distress) if implemented.

According to the National Center for Pavement Preservation (NCPP), it costs six to fourteen times less to use pavement preservation treatments to extend the life of pavement segments rather than waiting until the pavement reaches poor condition and repairing or replacing it. Preservation treatments have shorter expected lifespans, which causes concern among the public about more frequent applications and associated interruptions. However, research clearly shows that life-cycle costs for roadway maintenance are reduced by using pavement preservation approaches, keeping good roads in good condition while repairing those that have fallen below acceptable levels of condition for preservation. Figure 12 shows the benefit of using a pavement preservation approach.

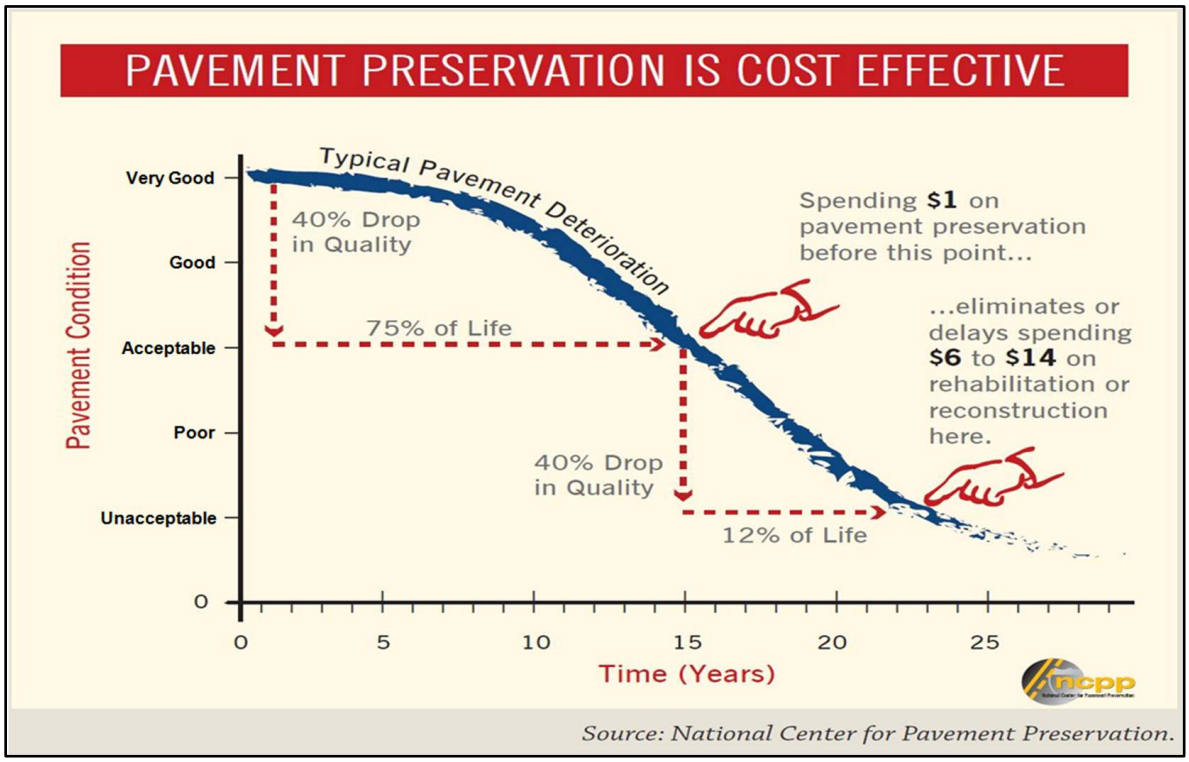


Figure 12. Pavement preservation cost vs. pavement rehabilitation cost.

Table 6 provides the list of treatment types (activity) currently considered in Carson City's pavement management software.

Table 6. CCPW Existing treatment types.

Activity	PAVER Budget Category	Cost[1]	Unit
Crack Sealing	Localized Preventive	\$0.75	ft
Patching		\$8.00	ft^2
Pothole Filling		\$6.00	ft^2
Micro Surface[2]	Surface Treatments	\$0.20	ft^2
Chip Seal[3]		\$0.35	ft^2
Cold Mill and Overlay - 2 Inches	Major M&R	\$2.00	ft^2
Cold Mill and Overlay - 3 Inches		\$2.50	ft^2
Complete Reconstruction - AC		\$3.50	ft^2

[1]Costs do not include non-pavement incidentals (e.g., pavement marking, ADA compliance, engineering)
[2]Time to reach pre-treatment condition is 3 years and application interval is 5 years.
[3]Time to reach pre-treatment condition is 4 years and application interval is 6 years.

The pavement management software estimates preventive, stopgap, and major M&R costs based on the pavement condition of each roadway. Localized preventive treatment unit costs shown above were used to estimate maintenance costs for the entire pavement surface area, the results are summarized in Table 7. It is noteworthy to mention that the pavement management software interpolates unit costs between the PCI values shown. For example, a pavement section with a PCI of 75 will have an associated cost of \$0.025 per square foot for preventive maintenance.

Note that surface treatments are not recommended based on a cost by condition. These are calculated based on the unit costs shown in Table 6 and sections will only be targeted if they fall within the selected PCI range of 90 to 65 and a minimum of two years after a major M&R has been applied.

Table 7. Cost (per ft^2) by PCI range for preventive, stopgap, and major.

PCI	Preventive	Stopgap	PCI	Major M&R
0	$1.67	$0.83	0	$6.00
10	$1.67	$0.83	10	$6.00
20	$1.33	$0.67	20	$6.00
30	$0.80	$0.40	30	$6.00
40	$0.33	$0.17	39.99	$6.00
50	$0.17	$0.08	40	$2.50
65	$0.05	$0.05	49.99	$2.50
70	$0.04	$0.04	50	$2.00
80	$0.01	$0.01	64.99	$2.00
90	$0.00	$0.00	65	$0.00
100	$0.00	$0.00	100	$0.00

Performance Models

Performance models are used by the pavement management software to predict future decline in condition. As additional pavement surveys are completed, the models are reviewed and updated to improve accuracy.

Currently there are two performance models within the CCPW software, one for polymer modified asphalt surfaced roads and another for non-modified asphalt surfaced roads. Figure 13 provides a graphic showing the models.

Over time, as additional data becomes available (i.e., original construction records, new rounds of pavement inspections) performance models may be refined, and additional performance curves may be needed to better represent roadway performance. For example, adding a separate model for regional and local roads due to prioritization of treatments or separate models for roads that have received different pavement preservation treatments.

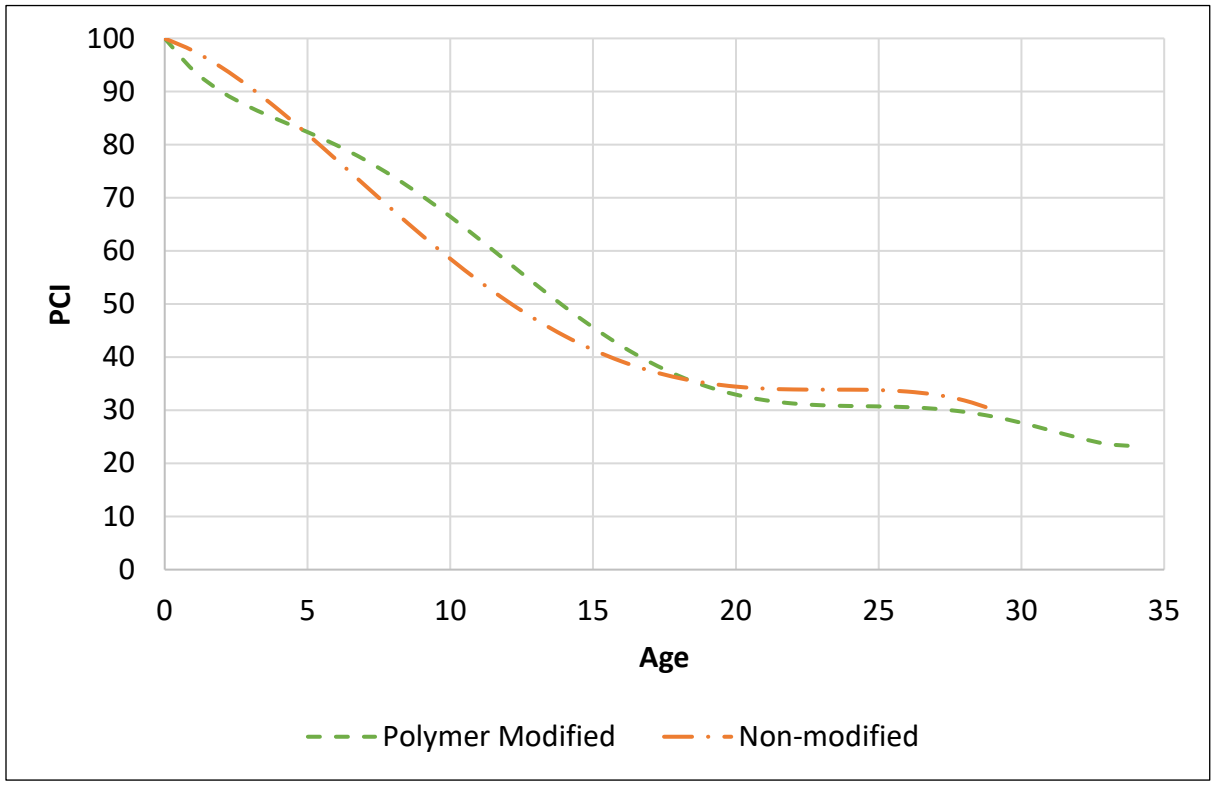


Figure 13. CCPW performance models.

BUDGET SCENARIO ANALYSES

Based on the assumptions mentioned above, the City's pavement management software was used to perform various budget and condition forecasting scenarios. The software uses pavement condition inspection data, pavement performance models, and treatment strategies to predict future network conditions or future budget requirements. The discussion below provides an overview of the analyses performed and results.

An analysis period of 30 years was selected by CCPW. Pavement management software analyses are typically carried out for shorter time periods (i.e., 5 or 10 years) because of the variability of inputs over time. Variables include accuracy of the pavement performance models (refined over time as more data becomes available); the introduction of additional performance models due to new materials, treatments, and technologies; significant changes in treatment unit costs; unforeseen environmental factors such as earthquake or flooding events; and reliability of funding. Pavement management software is capable of long-term analysis periods, but caution should be applied to long-term projections. To improve accuracy, scenario assumptions should be refined over time.

Five budget scenarios were analyzed as part of this project, two of these were based on constrained budgets and three based on target PCI conditions. Details of each scenario are summarized below:

Constrained Funding Scenarios

- **Current Revenue Levels:** CCPW estimated that it spends an average of approximately $650 thousand per year on preventive maintenance activities, and another average of $1.4 million on surface treatments and rehabilitation activities. Additionally, there is a total of $22.05 million from a combination of the City's 1/8 cent sales tax and the Virginia and Truckee Plan of Expenditures which was distributed over the first five years of the analysis period. Funding from the 1/8 cent sales tax is allocated to the rehabilitation of North Carson Street and William Street. This has been incorporated into the forecast to offset costs associated with the two mentioned corridors. This scenario predicts the future condition of the pavement network if current funding levels are maintained.

- **Current Revenue Levels increased by 50 percent:** CCPW wanted to analyze what the impact to their network would be if revenue is increased to an average of approximately $975 thousand per year on preventive maintenance activities and $2.143 million on surface treatments and rehabilitation activities. The additional $22.05 million for surface treatments and rehabilitation activities that is to be evenly distributed over the first five years of the analysis period was maintained since both revenue streams will conclude by 2026.

Target Pavement Condition Scenarios

- **Maintain Current Condition:** This scenario predicts the annual budget requirements to maintain the current area-weighted average network PCI of approximately 57 (Fair) over the 30-year analysis period.

- **Reach Target Conditions:** This scenario predicts the annual budget requirement to reach a specified area weighted average PCI; the two scenarios below were analyzed:

    - Approved Pavement Management Plan scenario where regional and local roadways would reach an area weighted average PCI of 75 and 70, respectively, in the initial ten years then maintain the target conditions over the remainder of the 30-year analysis period.

    - Modified Pavement Management Plan scenario, which is more in line with the City's current practice of roadway prioritization that focuses on roadways with higher volumes and speeds, and addressing local roadways as budget becomes available. Regional and local roadways would reach an area weighted average PCI of at least 70 and 50, respectively, by 2030 and then maintain target conditions over the remainder of the 30-year analysis period.

It is noteworthy to mention that when conditions are targeted, it is expected for the software to return a value that is not exactly the target. Due to the many variables that are involved in forecasting (e.g., network condition, analyses period, number of sections, budget), it may not be possible for a scenario to reach the target. Therefore, for the target pavement condition scenarios above, multiple iterations were carried out to approximate the target values, in those cases where it was not possible, as long as the values were greater than the targeted PCI the scenario was considered acceptable.

Assumptions

During conversations with CCPW, it was decided to account for roadway project incidentals that are typically encountered during surface treatments and rehabilitation projects. Assumed incidentals as a percentage of the total project costs are shown in table 8. The budgets for these categories were reduced accordingly for all scenarios because unit costs in the software account for only pavement-related construction. Additionally, an overall inflation rate of 1% was used, this value was calculated by subtracting the 3% inflation rate and the expected 2% increase in revenue.

Table 8. CCPW Incidental Costs.

Category	Major M&R	Surface Treatment
ADA	20%	10%
Design/Project Management	12.5%	6.5%
Construction Management	8.5%	11.5%
Contingency	10%	10%
Striping	10%	30%
Total	**61%**	**68%**

Because the budgets for rehabilitation and surface treatments were combined, it was necessary to define a starting point that allows for a funding allocation balance between surface treatments and rehabilitation. This assumed roadways that are in good condition can be maintained in that condition while roadways that have reached the end of their service life (below the critical PCI) can be planned for rehabilitation. The initial funding allocation split between surface treatments and rehabilitation was assumed to be 30 percent for surface treatments and 70 percent for rehabilitation. Due to the length of the analysis period, there were multiple years where there was a considerable funding surplus from the 30 percent budget allocation for Surface treatments. This surplus was moved to the rehabilitation treatment budget to incorporate additional rehabilitation work.

It is noteworthy to mention that although there are unit costs set up in the pavement management software for stopgap maintenance, Carson City has staff and budget dedicated to carry out routine stopgap maintenance activities throughout the network. Therefore, this maintenance category is excluded from all analyses to eliminate additional fund allocation to stopgap activities.

Tables 9 through 13 show the annual report card used by CCPW that summarizes the average area weighted PCI for all facility types over the first ten years of the analysis period for every budget scenario. These tables show the percentage change between the first and tenth year of the analysis period. Tables 14 through 18 show the same report card for every three years of the 30-year analysis period along with the percentage change between the first and thirtieth year of the analysis period.

Table 9: 10-year report card for current revenue levels.

Pavement Condition Index (PCI) - Annual Report Card													
Facility Type		Estimated PCI with Annual Budget Scenario of $2,813,677											Percent Change 2020 to 2030
		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
City-wide	Regional Roads	66	69	68	68	67	66	63	62	59	57	55	-16%
	Local Roads	52	52	50	48	45	43	41	39	37	36	35	-33%
	All Roads	57	58	57	54	52	50	48	46	45	43	42	-27%
Performance District 1	Regional Roads	60	64	64	64	65	67	64	62	60	57	54	-10%
	Local Roads	51	51	49	46	43	41	39	37	35	34	33	-35%
	All Roads	54	56	54	52	50	50	47	45	43	42	40	-26%
Performance District 2	Regional Roads	70	75	78	76	76	74	75	73	71	69	66	-5%
	Local Roads	53	53	51	48	45	43	41	39	37	36	35	-34%
	All Roads	59	60	60	58	56	54	53	51	49	47	46	-22%
Performance District 3	Regional Roads	70	72	70	71	73	70	66	65	62	59	57	-18%
	Local Roads	54	54	52	50	48	45	44	42	40	39	38	-30%
	All Roads	59	60	58	57	55	53	51	49	47	45	44	-26%
Performance District 4	Regional Roads	72	73	72	68	66	63	60	58	56	54	52	-28%
	Local Roads	48	48	46	44	41	39	38	36	35	34	33	-32%
	All Roads	56	57	55	52	50	48	45	44	42	41	39	-30%
Performance District 5	Regional Roads	57	60	59	58	57	55	52	50	49	47	47	-18%
	Local Roads	56	56	54	51	48	45	43	40	39	37	36	-36%
	All Roads	56	57	56	53	51	48	46	44	42	40	40	-29%

Table 10: 10-year report card for current revenue levels increased by 50 percent.

Pavement Condition Index (PCI) - Annual Report Card													
Facility Type		Estimated PCI with Annual Budget Scenario of $3,852,948											Percent Change 2020 to 2030
		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
City-wide	Regional Roads	66	69	69	68	68	67	65	63	61	58	57	-14%
	Local Roads	52	53	51	48	45	43	41	39	38	36	35	-33%
	All Roads	57	58	57	55	53	51	49	47	45	44	42	-25%
Performance District 1	Regional Roads	60	65	64	68	69	70	67	64	62	60	60	-1%
	Local Roads	51	51	49	46	44	41	39	37	35	34	33	-35%
	All Roads	54	56	54	53	52	51	48	46	44	43	42	-22%
Performance District 2	Regional Roads	70	75	78	77	75	73	75	74	71	68	65	-6%
	Local Roads	53	53	51	48	45	43	41	39	37	36	35	-34%
	All Roads	59	61	60	58	56	53	53	51	49	47	46	-22%
Performance District 3	Regional Roads	70	72	71	71	73	70	66	65	62	59	58	-17%
	Local Roads	54	54	53	50	48	46	44	42	41	40	38	-29%
	All Roads	59	60	58	57	55	53	51	49	47	46	44	-25%
Performance District 4	Regional Roads	72	73	72	68	66	63	60	59	56	54	52	-28%
	Local Roads	48	48	46	44	41	39	38	36	35	34	33	-31%
	All Roads	56	57	55	52	50	48	46	44	42	41	40	-30%
Performance District 5	Regional Roads	57	60	61	58	57	58	55	53	53	51	49	-13%
	Local Roads	56	56	54	51	48	45	43	41	39	38	36	-35%
	All Roads	56	57	57	54	51	50	47	45	44	42	41	-27%

Table 11: 10-year report card for maintaining current conditions.

Pavement Condition Index (PCI) - Annual Report Card													
Facility Type		Estimated PCI with Annual Budget Scenario of $20,612,435											Percent Change 2020 to 2030
		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
City-wide	Regional Roads	66	74	81	85	88	87	86	83	80	76	80	22%
	Local Roads	52	54	51	48	46	46	48	49	49	50	48	-8%
	All Roads	57	61	62	61	60	60	60	60	59	59	59	4%
Performance District 1	Regional Roads	60	79	86	89	88	88	86	82	78	74	82	37%
	Local Roads	51	53	50	47	44	45	48	49	50	51	49	-3%
	All Roads	54	62	62	61	59	59	60	60	60	59	60	12%
Performance District 2	Regional Roads	70	78	84	86	87	85	87	84	80	77	81	16%
	Local Roads	53	55	52	49	46	47	48	49	49	49	47	-11%
	All Roads	59	63	63	62	60	60	61	61	60	59	59	0%
Performance District 3	Regional Roads	70	73	78	84	89	88	85	83	82	78	78	13%
	Local Roads	54	55	53	50	48	47	49	49	50	52	50	-7%
	All Roads	59	61	61	61	61	60	60	60	60	60	59	0%
Performance District 4	Regional Roads	72	73	83	87	89	87	85	83	80	76	76	5%
	Local Roads	48	49	47	44	42	42	42	42	42	42	41	-15%
	All Roads	56	58	59	59	58	58	57	56	55	54	53	-6%
Performance District 5	Regional Roads	57	68	76	81	88	88	86	84	80	76	83	46%
	Local Roads	56	59	55	52	49	50	52	54	54	55	53	-5%
	All Roads	56	62	63	62	63	63	64	64	63	62	63	13%

Table 12: Approved Pavement Management Plan Scenario

10-year report card for reaching target conditions of 75 and 70 for regional and local roads, respectively.

Pavement Condition Index (PCI) - Annual Report Card													
Facility Type		Estimated PCI with Annual Budget Scenario of $34,535,409											Percent Change 2020 to 2030
		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
City-wide	Regional Roads	66	71	73	74	76	77	77	77	76	75	76	15%
	Local Roads	52	59	62	66	67	67	68	69	69	69	70	34%
	All Roads	57	63	66	68	70	70	71	72	72	71	72	27%
Performance District 1	Regional Roads	60	71	78	81	82	83	81	79	76	73	77	28%
	Local Roads	51	60	61	65	67	67	68	71	73	72	75	47%
	All Roads	54	63	67	70	72	72	73	74	74	73	76	40%
Performance District 2	Regional Roads	70	76	80	79	80	79	82	81	80	79	80	14%
	Local Roads	53	60	63	68	68	68	70	71	70	70	71	35%
	All Roads	59	66	69	72	72	72	74	74	74	73	74	26%
Performance District 3	Regional Roads	70	73	71	73	80	78	75	76	77	77	77	11%
	Local Roads	54	59	63	63	65	65	66	65	65	67	68	26%
	All Roads	59	64	65	66	69	69	69	69	69	70	71	21%
Performance District 4	Regional Roads	72	73	72	73	73	74	76	77	77	75	72	0%
	Local Roads	48	52	55	60	63	64	65	65	64	64	64	32%
	All Roads	56	60	61	65	67	68	69	69	69	68	66	18%
Performance District 5	Regional Roads	57	63	64	64	65	69	70	72	71	72	74	30%
	Local Roads	56	64	69	72	72	72	74	75	75	72	73	32%
	All Roads	56	63	68	69	70	71	72	74	73	72	73	31%

Table 13: Modified Pavement Management Plan Scenario

10-year report card for reaching target conditions of 70 and 50 for regional and local roads, respectively.

Pavement Condition Index (PCI) - Annual Report Card													
Facility Type		Estimated PCI with Annual Budget Scenario of $19,311,103											Percent Change 2020 to 2030
		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
City-wide	Regional Roads	66	71	73	72	74	75	75	75	74	73	73	12%
	Local Roads	52	56	55	55	55	55	55	55	54	54	53	2%
	All Roads	57	61	61	61	61	62	62	62	61	60	60	6%
Performance District 1	Regional Roads	60	69	76	79	80	82	80	78	76	73	76	27%
	Local Roads	51	55	55	55	55	54	54	54	54	53	53	4%
	All Roads	54	60	62	63	63	63	62	62	61	60	61	12%
Performance District 2	Regional Roads	70	75	80	78	79	78	81	80	77	76	76	9%
	Local Roads	53	57	56	56	56	56	55	56	56	54	54	2%
	All Roads	59	63	64	64	64	64	64	64	63	62	62	5%
Performance District 3	Regional Roads	70	73	71	72	77	77	75	75	76	74	74	6%
	Local Roads	54	56	57	57	57	57	56	55	54	54	53	-2%
	All Roads	59	61	61	61	63	63	62	61	61	60	59	1%
Performance District 4	Regional Roads	72	74	72	69	71	72	73	74	74	74	71	-1%
	Local Roads	48	51	49	49	48	48	48	48	48	48	48	-1%
	All Roads	56	59	57	56	56	57	56	57	57	57	56	-1%
Performance District 5	Regional Roads	57	63	64	64	63	67	67	68	69	69	70	24%
	Local Roads	56	60	60	60	60	61	62	63	61	59	59	6%
	All Roads	56	61	62	61	61	63	64	65	64	62	63	12%

Table 14: 30-year report card for current revenue levels.

Pavement Condition Index (PCI) - Annual Report Card													
Facility Type		Estimated PCI with Annual Budget Scenario of $2,813,677											Percent Change 2020 to 2050
		2020	2023	2026	2029	2032	2035	2038	2041	2044	2047	2050	
City-wide	Regional Roads	66	68	63	57	51	46	42	39	38	37	36	-45%
	Local Roads	52	48	41	36	33	32	30	30	29	29	28	-46%
	All Roads	57	54	48	43	39	36	34	33	32	31	31	-46%
Performance District 1	Regional Roads	60	64	64	57	50	45	41	38	37	36	36	-41%
	Local Roads	51	46	39	34	32	30	30	30	29	29	29	-43%
	All Roads	54	52	47	42	38	35	34	32	32	32	31	-42%
Performance District 2	Regional Roads	70	76	75	69	62	55	51	47	46	46	45	-36%
	Local Roads	53	48	41	36	33	32	31	30	30	29	29	-46%
	All Roads	59	58	53	47	43	40	38	36	35	35	34	-41%
Performance District 3	Regional Roads	70	71	66	59	52	49	43	38	37	35	33	-52%
	Local Roads	54	50	44	39	36	33	31	29	28	27	27	-51%
	All Roads	59	57	51	45	41	38	35	32	31	30	29	-51%
Performance District 4	Regional Roads	72	68	60	54	47	41	38	35	34	33	32	-55%
	Local Roads	48	44	38	34	32	31	30	29	28	28	28	-43%
	All Roads	56	52	45	41	37	34	32	31	30	30	29	-48%
Performance District 5	Regional Roads	57	58	52	47	43	40	37	37	35	34	34	-40%
	Local Roads	56	51	43	37	34	32	31	30	30	30	29	-47%
	All Roads	56	53	46	40	37	35	33	33	32	31	31	-45%

Table 15: 30-year report card for current revenue levels increased by 50 percent.

Pavement Condition Index (PCI) - Annual Report Card													
Facility Type		Estimated PCI with Annual Budget Scenario of $3,852,948											Percent Change 2020 to 2050
		2020	2023	2026	2029	2032	2035	2038	2041	2044	2047	2050	
City-wide	Regional Roads	66	68	65	58	53	48	44	42	41	40	39	-41%
	Local Roads	52	48	41	36	33	32	31	30	29	29	28	-46%
	All Roads	57	55	49	44	40	37	35	34	33	32	32	-44%
Performance District 1	Regional Roads	60	68	67	60	58	52	49	50	47	44	47	-22%
	Local Roads	51	46	39	34	32	31	30	30	29	29	29	-43%
	All Roads	54	53	48	43	40	38	36	36	35	34	35	-35%
Performance District 2	Regional Roads	70	77	75	68	62	57	54	50	48	49	47	-32%
	Local Roads	53	48	41	36	33	32	31	30	30	29	29	-45%
	All Roads	59	58	53	47	43	41	39	37	36	36	35	-40%
Performance District 3	Regional Roads	70	71	66	59	52	48	42	39	38	36	34	-51%
	Local Roads	54	50	44	40	36	34	32	30	29	28	27	-51%
	All Roads	59	57	51	46	41	38	35	33	32	30	29	-51%
Performance District 4	Regional Roads	72	68	60	54	47	42	38	35	34	33	32	-56%
	Local Roads	48	44	38	34	32	31	30	29	29	28	28	-43%
	All Roads	56	52	46	41	37	35	33	31	30	30	29	-49%
Performance District 5	Regional Roads	57	58	55	51	45	42	39	37	37	36	35	-39%
	Local Roads	56	51	43	38	34	32	31	30	30	30	29	-47%
	All Roads	56	54	47	42	38	36	34	33	32	32	31	-44%

Table 16: 30-year report card for maintaining current conditions.

Pavement Condition Index (PCI) - Annual Report Card													
Facility Type		Estimated PCI with Annual Budget Scenario of $20,612,435											Percent Change 2020 to 2050
		2020	2023	2026	2029	2032	2035	2038	2041	2044	2047	2050	
City-wide	Regional Roads	66	85	86	76	87	87	78	86	88	79	86	30%
	Local Roads	52	48	48	50	45	47	51	46	45	49	44	-15%
	All Roads	57	61	60	59	59	60	60	60	59	59	58	3%
Performance District 1	Regional Roads	60	89	86	74	90	86	74	89	87	76	88	46%
	Local Roads	51	47	48	51	46	48	55	50	49	54	49	-3%
	All Roads	54	61	60	59	61	61	61	63	62	62	62	15%
Performance District 2	Regional Roads	70	86	87	77	86	87	79	85	87	79	85	22%
	Local Roads	53	49	48	49	44	46	51	46	44	49	45	-16%
	All Roads	59	62	61	59	59	60	60	60	59	59	59	0%
Performance District 3	Regional Roads	70	84	85	78	84	87	80	86	89	80	85	22%
	Local Roads	54	50	49	52	47	49	52	47	45	49	44	-19%
	All Roads	59	61	60	60	58	61	61	59	59	58	57	-4%
Performance District 4	Regional Roads	72	87	85	76	89	87	78	83	89	79	84	17%
	Local Roads	48	44	42	42	39	40	42	39	38	40	37	-23%
	All Roads	56	59	57	54	56	56	54	54	56	53	53	-5%
Performance District 5	Regional Roads	57	81	86	76	87	87	77	88	86	78	86	52%
	Local Roads	56	52	52	55	49	52	55	50	48	52	47	-15%
	All Roads	56	62	64	62	62	64	63	63	61	61	61	9%

Table 17: Approved Pavement Management Plan Scenario

30-year report card for reaching target conditions of 75 and 70 for regional and local roads, respectively.

Pavement Condition Index (PCI) - Annual Report Card													
Facility Type		Estimated PCI with Annual Budget Scenario of $34,535,409											Percent Change 2020 to 2050
		2020	2023	2026	2029	2032	2035	2038	2041	2044	2047	2050	
City-wide	Regional Roads	66	74	77	75	76	77	77	77	76	76	75	14%
	Local Roads	52	66	68	69	73	75	74	76	77	77	77	47%
	All Roads	57	68	71	71	74	76	75	76	77	76	76	34%
Performance District 1	Regional Roads	60	81	81	73	79	79	74	81	78	74	80	32%
	Local Roads	51	65	68	72	76	76	75	77	76	75	77	52%
	All Roads	54	70	73	73	77	77	75	78	77	75	78	44%
Performance District 2	Regional Roads	70	79	82	79	81	82	82	84	83	82	84	20%
	Local Roads	53	68	70	70	74	76	77	78	80	78	77	46%
	All Roads	59	72	74	73	77	78	79	80	81	80	80	35%
Performance District 3	Regional Roads	70	73	75	77	74	76	80	77	75	77	73	5%
	Local Roads	54	63	66	67	70	71	69	72	73	76	76	41%
	All Roads	59	66	69	70	71	73	72	74	73	76	75	28%
Performance District 4	Regional Roads	72	73	76	75	76	78	79	73	78	78	73	1%
	Local Roads	48	60	65	64	67	73	74	73	76	77	74	54%
	All Roads	56	65	69	68	70	75	76	73	77	77	74	31%
Performance District 5	Regional Roads	57	64	70	72	71	71	70	71	66	67	67	17%
	Local Roads	56	72	74	72	77	78	78	79	82	79	78	41%
	All Roads	56	69	72	72	75	76	75	76	76	75	74	33%

Table 18: Modified Pavement Management Plan Scenario

30-year report card for reaching target conditions of 70 and 50 for regional and local roads, respectively.

Pavement Condition Index (PCI) - Annual Report Card													
Facility Type		Estimated PCI with Annual Budget Scenario of $19,311,103											Percent Change 2020 to 2050
		2020	2023	2026	2029	2032	2035	2038	2041	2044	2047	2050	
City-wide	Regional Roads	66	72	75	73	73	73	73	72	71	71	70	7%
	Local Roads	52	55	55	54	53	53	53	52	51	51	50	-5%
	All Roads	57	61	62	60	60	60	59	59	58	57	57	0%
Performance District 1	Regional Roads	60	79	80	73	79	77	72	80	74	71	77	28%
	Local Roads	51	55	54	53	54	53	53	53	51	51	52	2%
	All Roads	54	63	62	60	62	61	59	62	59	58	60	12%
Performance District 2	Regional Roads	70	78	81	76	76	78	75	76	76	73	75	8%
	Local Roads	53	56	55	54	53	53	53	52	51	52	51	-4%
	All Roads	59	64	64	62	61	62	61	61	60	60	60	1%
Performance District 3	Regional Roads	70	72	75	74	71	71	73	72	71	71	67	-3%
	Local Roads	54	57	56	54	54	54	51	52	51	48	48	-11%
	All Roads	59	61	62	60	59	59	58	58	57	55	54	-8%
Performance District 4	Regional Roads	72	69	73	74	72	73	76	68	74	75	68	-6%
	Local Roads	48	49	48	48	46	46	47	45	45	45	44	-9%
	All Roads	56	56	56	57	55	56	57	53	55	56	52	-7%
Performance District 5	Regional Roads	57	64	67	69	68	66	66	67	63	62	62	10%
	Local Roads	56	60	62	59	58	60	59	57	57	56	54	-2%
	All Roads	56	61	64	62	62	62	61	60	59	58	57	2%

As illustrated in Figure 14 and tables 9 through 14, the current revenue levels scenario shows a decline in network condition over the analysis period, starting at a PCI of 57 and declining to a PCI of 42 in ten years and a PCI of 31 in thirty years. Regional roads will have a lower deterioration rate than local roads primarily due to their higher priority, however, they will still decline considerably throughout the analysis period. This rate of decline would indicate that in a few years the network is going to start reaching a point where more and more segments are going to require rehabilitation work, and the agency will struggle to maintain roads in acceptable condition. This signifies that the current annual budget is insufficient to maintain network condition given current treatment assumptions and funding. Increasing the revenue 50 percent has a relatively small impact over the entire network, a 50 percent budget increase will increase the overall network PCI 1 point at the end of the analysis period when compared to the current budget.

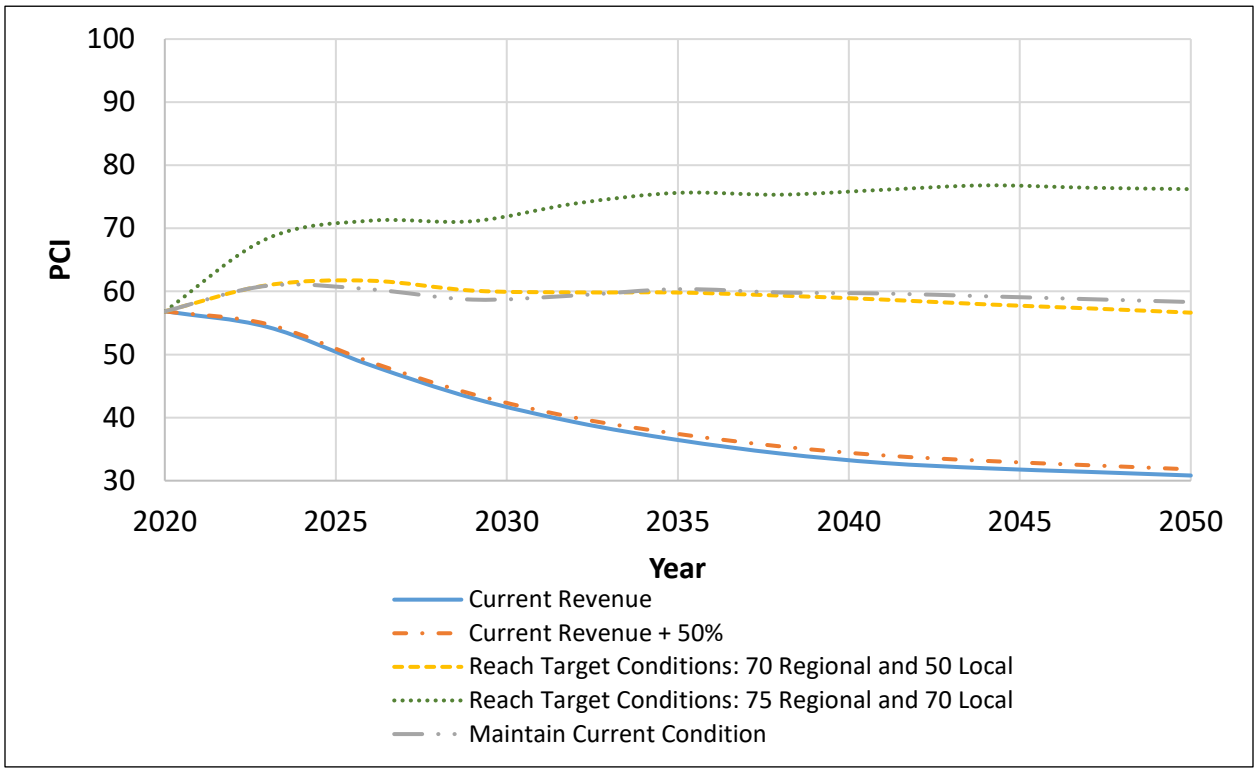


Figure 14: Chart of PCI over time for analyzed budget scenarios.

Figure 15 shows the average annual budgets for every scenario. The difference between the current annual revenue and the annual budget required to maintain the network in its current condition is approximately $17.8 million.

The difference between the current annual revenue and the annual budget required to meet the City's approved Pavement Management Plan pavement condition targets (75 for regional roads and 70 for local roads) is $31.7 million.

The difference between the current annual revenue and the annual budget required to meet the proposed modified pavement condition targets (70 for regional roads and 50 for local roads) is $16.5 million.

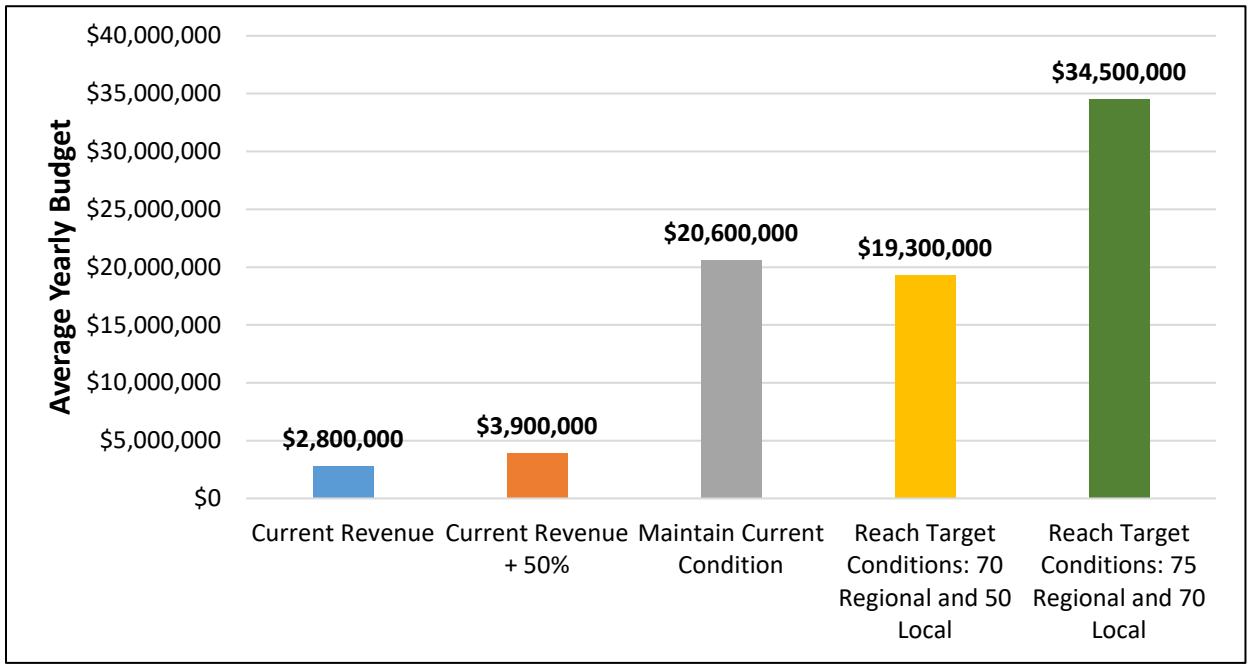


Figure 15: Average annual budget per scenario.

If the current revenue is not considerably increased, the agency will face a network in Poor condition within ten years and a Very Poor network in thirty years. Figures 16 and 17 show the forecasted condition categories by percentage of network area for 2030 and 2050.

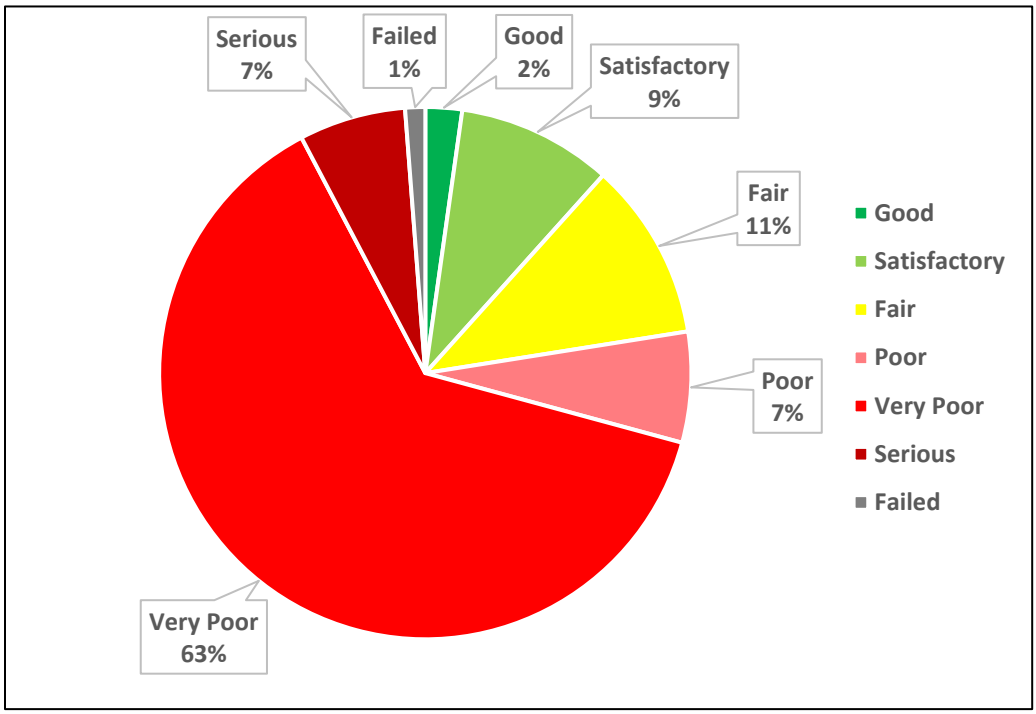


Figure 16. Forecasted distribution of pavement area by condition category in 2030.

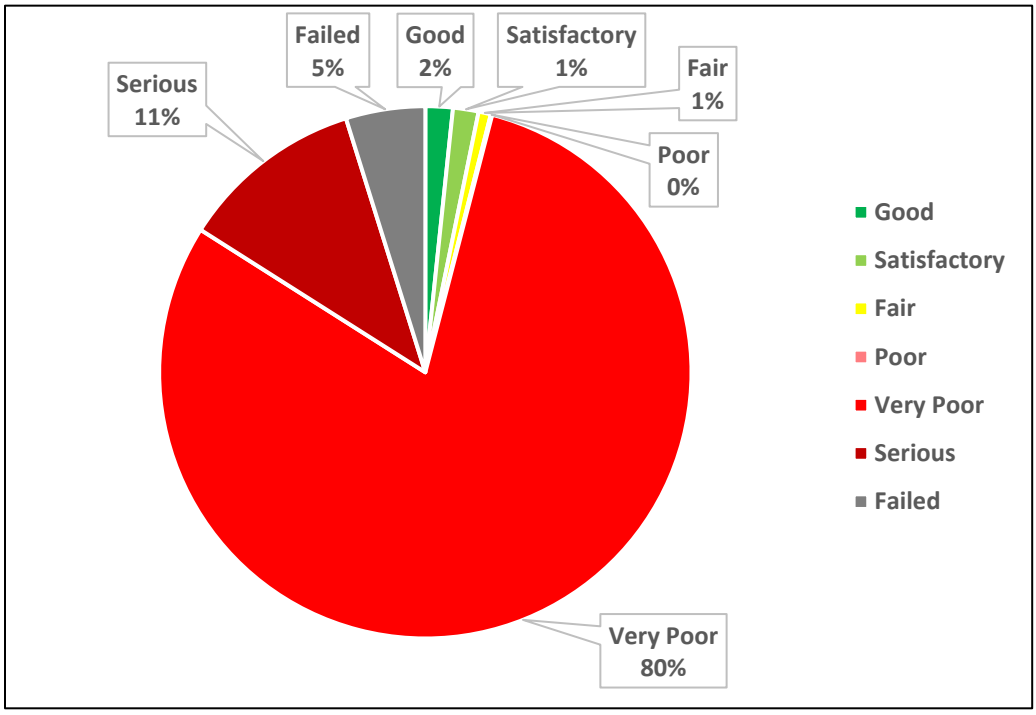


Figure 17. Forecasted distribution of pavement area by condition category in 2050.

This page intentionally left blank.

Potential Options for Carson City Roadway Funding

Prepared for Carson City, Nevada

by Morse Associates Consulting, LLC

May 2021

Purpose of Project

Carson City is interested in exploring potential mechanisms for raising additional revenue for local and regional roadways. The current roadway revenue shortfall is estimated by Carson City at $25.8 million annually (2020$). This shortfall includes existing backlog.

The facilities on which new revenues would be invested are:

- Local roads
- Regional roads where Carson City has all or partial maintenance responsibility
- Appurtenant roadway items such as curb, gutter, sidewalk, traffic signal, signs, guard rails, etc.

The activities contemplated for new revenues are:

- New construction
- Reconstruction
- System renewal
- System preservation

Scope of consultant work

Carson City has engaged Morse Associates Consulting, LLC (MAC) to assist in this effort. MAC has been tasked with making a high-level assessment of no more than eight potential revenue mechanisms using existing publicly available information. This work is an initial step to introduce, at a conceptual level, some of the funding mechanisms that may be available criteria that may be useful in evaluating potential mechanisms, and the salient features of each mechanism. In addition, the report offers some conclusions and a brief discussion of some ancillary considerations relevant to the pursuit of new local roadway revenues. This provides a departure point for future more detailed consideration of new revenue mechanisms and steps to realize these if desired by the Board of Supervisors (BOS).

Carson City's ability to impose taxes, fees, or other types of revenue collection is heavily limited and restricted by Nevada's legal statutes, commonly known as Nevada Revised Statutes (NRS). MAC's scope includes a preliminary examination of the most relevant statutes to provide a knowledgeable layperson's interpretation of potential applicability. References to applicable NRS sections are provided. All of the NRS are available online at https://www.leg.state.nv.us/nrs/. The opinions expressed by MAC in this regard are not legal opinions. If legal opinions are desired, Carson City should engage appropriate legal counsel. Estimates of potential revenue made by MAC are at a very high planning level based on publicly available information and should not be used for making financial decisions or commitments. If Carson City decides to pursue one or more of the mechanisms identified, additional more detailed analysis will need to be developed as a basis for decision-making.

In consultation with Carson City staff, the following eight potential transportation funding options were identified based on existing or past implementation in the State of Nevada or other states:

- Road utility fee (a.k.a. transportation utility fee)
- General Improvement District (NRS 318)
- Program of local improvements (NRS 271)
- Vehicle Miles Traveled (VMT) Fee
- Transportation sales tax (NRS 377A)
- Supplemental Governmental Services Tax (NRS 371)

- Property tax override (NRS 354)
- Fuel tax indexing (NRS 373)

Illustrative Evaluation Criteria and Weighting

Ten illustrative criteria were established in consultation with Carson City staff to provide insight into the things that are typically considered in evaluating and ranking potential funding mechanisms. In addition, each of the criteria was weighted by assigning a value of 1, 2, or 3 to give an indication of its relative importance. While these criteria are commonly used for these types of evaluations, they are not set in stone. If the City subsequently identifies additional criteria relevant to the local context, it would be appropriate to include these in subsequent evaluations. Similarly, the weighting of the criteria is very much open to further discussion and refinement. If the BOS decides to pursue additional roadway funding, it is extremely important that a consensus be reached on both the evaluation criteria to be used and their relative weights. Following is a list of the evaluation criteria used in this report with an indication of the types of things they are intended to address. Illustrative weighting values are given in parentheses.

- **Legislative authority (2)** which considers:
    - Is the mechanism currently authorized?
    - Is new or amended legislation needed?
    - Is a voter approval required for implementation?
- **Revenue potential (3)**: How much revenue could the mechanism yield at an illustrative rate?
- **Reliability (3)**: How sensitive is the funding option to typical economic cycles?
- **Sustainability (3)** which considers:
    - Does the mechanism automatically adjust for inflation?
    - Can the mechanism address increasing fleet vehicle fuel economy, including the impact of all electric vehicles?
- **Equity (2)** which considers:
    - Socio-economic equity
    - Sharing of burden by residents/businesses
    - Potential approaches to improve equity
- **Flexibility of use (1)** considers whether the funding could be used for all types of roadway facilities and activities such as:
    - Local roads
    - Regional roads
    - Appurtenant roadway items such as curb, gutter, sidewalk, traffic signal, signs, guard rails, etc.
    - New construction
    - Reconstruction
    - System renewal
    - System preservation
- **Ease of adjusting fee/assessment/tax rates to accommodate changing conditions (1)** such as:
    - Changing travel demand and patterns.
    - Increases/decreases in roadway funding from federal/state/local sources.
    - New federal/state/local mandates (e.g., fuel efficiency, transportation technology, Green House Gas emissions, etc.)

- **Administrative efficiency (2)** which considers:
    - Are existing transparent processes and procedures already in-place to collect/expend the new revenue with little or no additional cost?
    - Could existing administrative processes and procedures be adapted to transparently collect/expend the new revenue with modest additional cost?
    - Would extensive new administrative processes and procedures that require considerable expense need to be developed to transparently collect/expend the new revenues?
- **Indications of public support (1)**: Does historical experience indicate that the funding mechanism would be supported by the public?
- **Bond Potential (2)**: Could revenue from the funding mechanism be used to service debt, allowing the City to finance improvements in the present day versus waiting for sufficient revenue to accumulate?

Salient Features of Potential Funding Options

Salient features of each of the eight potential funding mechanisms are identified below using the illustrative evaluation criteria as a framework to organize the information. For some of the potential funding mechanisms, there is considerable latitude in how the mechanism could function. For clarity, a brief description is provided to summarize a single illustrative concept of how the mechanism could be used and relevant key elements. These are concepts only and could be further developed and modified as discussions of funding continue.

General Improvement District (NRS 318)

Description of funding mechanism: Using NRS 318, create a General Improvement District (GID) encompassing all of Carson City expressly formed to conduct activities on the City's roadway system including construction, reconstruction, system renewal, system preservation, etc. Revenue would be raised by special assessments, not ad valorem taxes. Assessments could be based on trip generation by land use type, with rates set annually at levels consistent with system financial needs. Other methods of assessments are certainly possible.

Legislative Authority

- NRS 318.050 authorizes the Board of Supervisors to create General Improvement Districts.
- NRS 318.065 says if a majority of the property owners protest, district cannot be formed.
- NRS 318.080 authorizes the BOS to appoint Board of Trustees for the District.
- NRS 318.0953(4) permits the BOS to be the ex-officio Board of Trustees for a District.
- NRS 318.098 allows county staff to be used for district business and for compensation for these services.
- NRS 318.225 authorizes Board of Trustees to levy property taxes.
- NRS 318.230 requires annual tax rates to be set by needs.
- NRS 318.350 allows the levy of special assessments against land and ***premises*** by two-thirds vote of Board; statute is silent regarding the exact basis of assessment, but must be based upon benefits. There is no definition of "premises" in this chapter. It could be that assessments could be levied against parties controlling the premises which could include residential and commercial tenants.
- NRS 318.101 grants Board of Trustees powers from NRS 271. This would conceivably allow assessment against tracts on any "equitable" basis chosen by Board including trips.

Revenue Potential

- Assuming that roughly half of all trips are generated by residential uses and the other half by commercial/industrial uses:

- An assessment of $10/month for each residential unit on a property could gross about $2.5-$3 million annually.
- An average assessment of about $125/month on commercial/industrial establishments could gross about $2.5-$3 million annually.
- Total annual gross revenue of $5-$6 million.
- These are very high-level planning estimates based upon limited data made for illustrative purposes only.

Reliability

- This mechanism would be largely immune from typical short-term economic cycles.

Sustainability

- If special assessments are set/adjusted annually, inflation could be accounted for.
- This mechanism would be immune from the impacts of increasing fleet vehicle fuel economy since it is unrelated to the sale of motor vehicle fuels.

Equity

- Socio-economic equity:
  - If a flat assessment per dwelling unit were to be used, this would be regressive.
  - Using a differentiated assessment based upon multifamily versus single family could help address equity.
  - A program could be set up to subsidize the assessments on dwelling units occupied by low-income tenants.
- Resident versus business equity:
  - In a closed system, commercial/industrial businesses would be generating about half the revenue and residential tracts about half.
  - Presumably, businesses would pass on the additional costs in what they charge for goods and services.
  - Non-residents doing business in Carson City would presumably share some of the burden through what they pay when purchasing goods and services.

Flexibility

- NRS 318.120(2) allows collected revenue to be used on all facilities of Carson City's defined roadway system.
- NRS 318.020(6) and NRS 318.145 allows use for all activities on Carson City's defined roadway system, e.g., construction, reconstruction, system renewal, system preservation, etc.

Ease of adjusting rates

- If changes in travel demand, changes in other federal/state/local funding, or new federal/state/local mandates increase or decrease roadway system needs, these impacts could be addressed when the rates for special assessments are set annually.

Administrative Efficiency

- Essential data for administering such a program appears to exist, e.g., land use and ownership for all parcels, etc. New administrative procedures and processes would need to be developed for a GID addressing road needs in the form conceptualized.
- Information on trip generation by land use category is available from Institute of Transportation Engineers (ITE).
- Billing and collections could piggyback on the property tax collection process or monthly utility billings.

- Carson City Public Works already undertakes the planning, programming, budgeting, and execution of roadway projects, as well as routine operations and maintenance.

Public Support Potential

- If established along the lines described above, this mechanism would function similarly to a road utility fee discussed below. According to the USDOT, more than 25 road utility fees/transportation utility fees are currently in-place in communities across the county including in Washington, Colorado, Texas, Oregon, Idaho, Utah, Missouri, and Florida.
- Nevada currently has dozens of GIDs providing a wide range of services. A local example would be the Indian Hills General Improvement District, located just south of Carson City in Douglas County. The Indian Hills GID is responsible for maintaining the local roads within its boundary, while Douglas County is responsible for maintaining the regional roads.

Bond Potential

- NRS 318.320 gives authority to issue bonds and to pledge assessment revenue to service bond debt.
- NRS 318.275 offers broad authority for bonding.

Other Issues

- Carson City could try using existing language of NRS 318 as is to implement a roadway funding mechanism or could seek amendments to this chapter to:
    - Explicitly allow tolls, rate, or charges to "owners or occupants" or "party controlling the premises" in addition to the currently authorized property taxes and special assessments against property. This could remove ambiguity in the statutory language, reinforce and clarify the linkage between use of the transportation system and payment for that use, and possibly enhance public understanding and acceptance.
    - Explicitly allow charges to be based upon trips determined by broad categories of land use or some other equitable basis.

Program of Local Street Improvements (NRS 271)

Description of mechanism: NRS 271 authorizes cities and counties to undertake projects in the public interest including street projects. This concept is to use NRS 271 to create an ongoing project of Local Street Improvements for the entire roadway system including construction, system preservation, system renewal, operations, and maintenance. Revenue would be raised using special assessments on properties based upon the special benefits conferred by the roadway system. The concept assumes assessment based on trip generation by broad categories of land use, but the BOS could use any equitable basis.

Legislative Authority

- This existing mechanism is authorized by NRS 271.265(1) for cities and counties.
- NRS 271.265(1) allows BOS to undertake projects without election but if majority of property owners object, the project may not go forward unless city pays more than 50% of cost from other sources NRS 271.306(2).
- NRS 271.270 authorizes BOS to levy either ***assessments against property*** or property taxes to defray project costs.
- NRS 271.045 allows assessment on any " equitable basis". If "trips" were used as the measure of assessment, assessment of residential properties could be made on the basis of the number of trips generated by the average dwelling unit in Carson City times the number of dwelling units on a tract. For commercial/industrial uses, assessment could be made on the basis of trip generation by broad categories of land use types. Assessments would be presumably passed on to tenants.

- Local government is exempt from assessments (NRS 271.040(2) and (3)). School property is also exempt unless District Trustees decide otherwise (NRS 271.366). The state is not exempt (NRS 271.407).
- NRS 271.370 appears to allow the governing board to assess tracts at any periodicity (e.g., could be annual).

Revenue Potential

- If revenue is raised by ad valorem taxes (property taxes), these will be subject to the rate and revenue caps. It appears that with these restrictions the revenue potential using ad valorem taxes is extremely limited.
- If revenue is raised by special assessments based upon trip generation by broad categories of land use, for the benefits conferred by the roadway system, assessment rates could be based on system needs. Special assessments are typically not considered ad valorem taxes and, thus, not subject to the ad valorem revenue and rate caps. Special assessments could not exceed the value of the benefits conferred.
- Assuming that roughly half of all trips are generated by residential uses and the other half by commercial/industrial uses:
    - An assessment of $10/month for each residential unit on a property could gross about $2.5-$3 million annually.
    - An average assessment of about $125/month on commercial/industrial establishments could gross about $2.5-$3 million annually.
    - Total annual gross revenue of $5-$6 million.
    - These are very high-level planning estimates based upon limited data made for illustrative purposes only.

Reliability

- This mechanism would be largely immune from typical short-term economic cycles.

Sustainability

- NRS 271.377 would appear to allow annual assessments including adjustments for inflation.
- This mechanism would be immune from the impacts of increasing fleet vehicle fuel economy since it is unrelated to the sale of motor vehicle fuels.

Equity

- Socio-economic equity:
    - If a flat assessment per dwelling unit were to be used, this would be regressive.
    - A differentiated assessment based upon multifamily vs single family could mitigate equity concerns.
    - A program could be set up to subsidize the assessment on dwelling units occupied by low-income tenants.
- Resident versus business equity:
    - In a closed system, commercial/industrial businesses would be generating about half the revenue and residential tracts about half.
    - Presumably, businesses would pass on the additional costs in what they charge for goods and services.
    - Non-residents doing business in Carson City would presumably share some of the burden through what they pay when purchasing goods and services.

Flexibility

- NRS 271.225) allows revenues to be used on all facilities of Carson City's defined roadway system.
- NRS 271.020 and 271.265 allows revenues to be used for all activities of Carson City's defined roadway system, e.g., construction, reconstruction, system renewal, system preservation, etc.

Ease of adjusting rates

- If changes in travel demand, changes in other federal/state/local funding, or new federal/state/local mandates increase or decrease roadway system needs, these impacts could be addressed when the rates for special assessments are set annually.

Administrative Efficiency

- Essential data for administering such a program appears to exist, e.g., land use and ownership for all tracts. New administrative procedures and processes would need to be developed for a GID addressing road needs as conceptualized in this form.
- Information on trip generation by land use category is available from ITE trip generation studies.
- Billing and collections could piggyback on the property tax collection process.
- Carson City Public Works already undertakes the planning, programming, budgeting, and execution of roadway projects, as well as routine operations and maintenance.

Public Support Potential

- If established along the lines described above, this mechanism would function similarly to a road utility fee discussed below. According to the USDOT, more than 25 road utility fees/transportation utility fees are currently in-place in communities across the county including in Washington, Colorado, Texas, Oregon, Idaho, Utah, Missouri, and Florida.

Bond Potential

- NRS 271.270 gives authority to issue bonds and to pledge assessment revenue to service bond debt.

Other Issues

- None

Road Utility Fee

Description of mechanism: Seek new legislation specifically authorizing Carson City to implement a dedicated Road Utility Fee (RUF) that would be used to defray the cost of construction, reconstruction, renewal, and preservation, etc. of the City's roadway system and appurtenances. This fee would be akin to fees for other public utilities such as sewer, water, and waste disposal fees. (Existing NRS does not address roadways or transportation as a public utility.) Fee rates could be based upon trip generation by broad categories of land use, and fees would be charged to "responsible parties" (owners or occupants) of improved premises.

Legislative Authority

- No legislative authority currently exists that specifically enables the implementation of a road utility fee dedicated to defraying the cost of the roadway system and appurtenances.
- Main elements of enabling legislation could include:
    - Authority for the governing bodies of cities and counties to impose transportation utility fees with or without a vote of the people.
    - Authority to levy tolls, fees, and charges for the transportation utility fee on "responsible parties" (owners or occupants) for each improved premises generating traffic within the defined fee area.

- Setting of levies, fees, and charges based upon trip generation as determined by broad land use categories or any other equitable method.
- Provisions to set and/or adjust fee rates annually based upon needs, current costs, and revenues from other sources.
- Requirement to establish physical, condition, and performance standards for the roadway system as the method to determine costs and needs.
- Provisions to allow a component of the RUF for the reduction and elimination of backlogged repair and maintenance.
- Ability to use RUF revenues for debt service.

Revenue Potential

- Potential revenue fees would need to be based on a quantifiable measure(s), such as the number of vehicle trips that a particular land use generates or a combination of measures such as land use, area, density, and long-term costs associated with maintaining a 24-hour transportation system.
- Assuming that trips are split about evenly between households and commercial/industrial establishments, a per household fee of about $10/month could gross $2.5-$3 million annually. A commercial/industrial establishment fee averaging about $125/month could gross similar amount for a total gross annual revenue of about $5-$6 million. These are very high-level planning estimates based upon limited data made for illustrative purposes only.

Reliability

- Trip generation is relatively inelastic to changing economic conditions so revenue from this source would be largely immune from short-term economic cycles.

Sustainability

- Legislation authority would want to allow for an annual adjustment of the RUF to account for inflation.
- This mechanism would be immune from the impacts of increasing vehicle fuel economy since it is unrelated to the sale of motor vehicle fuels.

Equity

- Socio-economic equity:
  - Since the mechanism requires new legislation, it might be possible to include in the architecture of the fee provisions to address socio-economic equity.
  - Using a differentiated fee based upon multifamily versus single family could mitigate equity concerns.
  - A program could be set up to subsidize the fees on dwelling units occupied by low-income tenants, similar to water rates in Carson City.
- Resident versus business equity:
  - In a closed system, commercial/industrial businesses would be generating about half the revenue and residential tracts about half.
  - Presumably, businesses would pass on the additional costs in what they charge for goods and services.
  - Non-residents doing business in Carson City would presumably share some of the burden through what they pay when purchasing goods and services.

Flexibility

- Enabling and implementing legislation should allow use of revenue for all facilities of Carson City's defined roadway system.

- Enabling and implementing legislation should allow use of revenue for all activities including construction, reconstruction, system renewal, system preservation, etc.

Ease of adjusting rates

- Enabling and implementing legislation should include provisions to set/adjust fee rates annually based upon current needs, costs, and revenues from other sources, as well as impacts of federal/state/local mandates.
- Similar to sewer and water rates, periodic Rate Studies may be required.

Administrative Efficiency

- Essential data for administering such a program appears to exist, e.g., land use and ownership for all tracts, utility billing addresses, etc. New administrative procedures and processes would need to be developed for a RUF program.
- Information on trip generation by land use category is available from ITE trip generation studies.
- Billing and collections could piggyback on the property tax collection and utility billing processes.
- Carson City Public Works already undertakes the planning, programming, budgeting, and execution of roadway projects, as well as routine operations and maintenance.

Public Support Potential

- According to the USDOT, more than 25 road utility fees/transportation utility fees are currently in-place in communities across the county including in Washington, Colorado, Texas, Oregon, Idaho, Utah, Missouri, and Florida.
- Experience from other jurisdictions appears to indicate that a fee levied on responsible parties, such as property tenants, instead of just property owners is viewed more favorably.

Bond Potential

- Enabling and implementing legislation should include authority to issue bonds and to pledge RUF revenue to service bond debt.

Other Issues

- As a new mechanism, it is likely that a RUF could face legal challenges. There is a body of relevant case law that should be closely studied in developing the enabling and implementing language for this new mechanism.

Vehicle Miles Traveled (VMT) Fee

Description of mechanism: Seek new legislation specifically authorizing the implementation of local VMT fees that would be dedicated to defraying the costs of the City's roadway system and appurtenances including construction, reconstruction, system renewal system preservation, etc. Fees would be charged for all light duty vehicles (LDVs) registered in Carson City based on odometer readings using a "low-cost/low tech" system.

Legislative Authority

- No legislative authority currently exists that specifically enables the implementation of a VMT fee dedicated to defraying the cost of the roadway system and appurtenances.
- Main elements of enabling legislation could include:
    - Authority for the governing bodies of counties to impose a VMT fee for specific classes of motor vehicles without a vote of the people.
    - Authority of governing body to designate which classes of vehicles registered within the county would pay a VMT fee in lieu of local motor vehicle fuel taxes; any classes of vehicles not

designated to pay VMT fees or vehicles not registered within the county would still be required to pay local motor vehicle fuel taxes.
    - Vehicles subject to the International Fuel Tax Agreement (IFTA), which governs large diesel-powered vehicles engaged in interstate commerce, would not be included in any VMT fee program.
    - Fees would be charged to owners of vehicles of the designated classes registered within the county based upon the miles driven by the vehicle. These miles would be calculated using odometer readings submitted to the DMV at the time of registration.
    - Included vehicles would be given a credit against VMT fees based upon the estimated gallons of fuel consumed for the miles driven and the current local motor vehicle fuel tax rate.
    - Requirement to establish physical, condition, and performance standards for the roadway system as the method to determine costs and revenue needs.
    - Provisions to set and/or adjust fee rates annually based upon needs, current costs, and revenues from other sources.
    - Provisions to allow a component of the VMT fee for the reduction and elimination of backlogged repair and maintenance.
    - Ability to use VMT fee revenues for debt service.

Revenue Potential

- Assumptions:
    - VMT fee charged initially only on light-duty-vehicles (LDVs) registered in Carson City.
    - LDVs typically comprise about 93% of the vehicle fleet and account for about 89% of total VMT.
    - LDVs included in the VMT Fee program would not pay local option fuel taxes.
- A per mile fee of about $0.01 -$0.015 would be about enough to offset the loss in revenue from local option fuel taxes not paid by vehicles enrolled in the VMT fee program.
- A per mile rate of $0.025-$0.03 could gross an estimated $8-$10 million annually. After deducting for the local option fuel taxes that would not be paid by vehicles enrolled in the VMT fee program, the estimated gross new revenue could be about $4-$6 million annually.

Reliability

- Trip generation is relatively inelastic to changing economic conditions so revenue from this source would be largely immune from typical short-term economic cycles.
- Unusual, longer-term economic cycles in which roadway travel is significantly depressed could result in more severe revenue impacts.

Sustainability

- Enabling and implementing language need to allow the annual adjustment of the VMT fee rate to account for inflation.
- This mechanism would be immune from the impacts of increasing fleet vehicle fuel economy, including the impact of all electric vehicles which currently pay no fuel taxes, since the fee is levied on miles driven not vehicle fuel type or efficiency.
- Local option fuel tax rates should also be periodically adjusted to ensure that vehicles not within the VMT fee program are paying an equitable share for road use.

Equity

- Socio-economic equity:

    - Studies have indicated that lower-income individuals tend to drive older, less fuel-efficient vehicles while persons with high-incomes tend to drive newer, more fuel-efficient vehicles. If this is also true in Carson City, a VMT fee could improve the current greater burden being borne by low-income drivers.
- Resident versus business equity:
    - All vehicles of the same class included in the VMT fee system and registered in the county would pay the same rate per mile driven.
    - Presumably, businesses would pass on the additional costs in what they charge for goods and services.
    - Non-resident vehicles and resident vehicles of classes not included in the VMT fee program that fuel in Carson City would continue to pay for the use of the road system though fuel taxes.

Flexibility

- Enabling and implementing legislation should allow use of VMT fee revenue for all facilities of the defined roadway system.
- Enabling and implementing legislation should allow use of VMT fee revenue for all activities including construction, reconstruction, system renewal, system preservation, etc.

Ease of adjusting rates

- Enabling and implementing legislation should include provisions to set/adjust VMT fee rates annually based upon changes in such things as travel demand, federal/state/local funding, and new federal/state/local mandates which increase or decrease the amount of revenue needed for the roadway system.

Administrative Efficiency

- Essential data for administering such a program appears to exist, e.g., vehicle ownership and location of registration, annual miles driven.
- Vehicles in Nevada are registered when ownership changes or annually. When this process occurs, DMV collects the appropriate registration fees. Piggybacking the billing and collection of VMT fees on the largely automated DMV process would require relatively small investments for set up and annual costs. Transactions costs should be negligible with automation.
- The VMT Fee system described assumes a “low-cost/low-tech” approach which would require only periodic odometer readings with no new technology required for vehicle owners.
- Carson City Public Works already undertakes the planning, programming, budgeting, and execution of roadway projects, as well as routine operations and maintenance.

Public Support Potential

- According to national surveys conducted in 2020 by the Mineta Transportation Institute, about half of US adults support a VMT Fee (a.k.a. mileage-based-user fee) of some type.

Bond Potential

- Enabling and implementing legislation should include authority to issue bonds and to pledge VMT fee revenue to service bond debt.

Other issues

- As a new mechanism, it is likely that a VMT fee could face legal challenges.

Transportation Sales Tax (NRS 377A)

Description of mechanism: Using NRS 377A, impose an additional quarter cent sales tax upon all retailers in the business of selling tangible personal property, for the purpose of construction, maintenance, and repair of public roads.

Legislative Authority

- NRS 377A.020(1)(a) authorizes all counties to impose a tax for the construction, maintenance, and repair of public roads, by ordinance and voter approval (NRS 377A.030(2)).
- NRS 377A.030(1)(b) states such a tax would be a Sales and Use tax of up to 0.5%.
- Carson City has already enacted (1987) a transportation sales tax authorized by this statute of 0.25%. (Carson City municipal code, Chapter 21.04.20) meaning that 0.25% is still available.

Revenue Potential

- Per the FY 2020 Comprehensive Annual Financial Report (CAFR), the existing 0.25% levy under NRS 377A generated $3,220,089 in FY 2020.

Reliability

- This mechanism can be subject to the cyclical economy, especially extended periods of recession.
- While this mechanism can be impacted by poor economic conditions, for the period FY2015 through FY2020, revenue from this source has grown at an average of about 8% annually.

Sustainability

- Since a sales tax is based upon the cost of taxable goods and services, revenue from this source would adjust with general inflation.
- This mechanism would be immune from the impacts of increasing fleet vehicle fuel economy since it is not a tax on motor fuels.

Equity

- Socio-economic equity:
    - General sales taxes are generally considered regressive, affecting lower-income individuals disproportionately.
    - Impacts to lower income groups may be minimal given the small tax increment of 0.25%.
- Resident versus business equity:
    - Ultimately, sales and use taxes are passed on to the end consumer so the burden of this tax would be borne by resident and non-resident consumers.
    - Non-residents doing business in Carson City would presumably share some of the burden through what they pay when purchasing goods and services.

Flexibility

- NRS 377A.014 allows revenues to be used on all facilities of Carson City's defined roadway system.
- Proceeds from this tax could also be used for transit; the portion of tax for this purpose would have to be identified in the ballot question.
- NRS 377A.014 allows revenues to be used for all activities on Carson City's defined roadway system, e.g., construction, reconstruction, system renewal, system preservation, etc.
- If changes in travel demand, changes in other federal/state/local funding, or new federal/state/local mandates increase roadway system needs, the current maximum tax rate of 0.5% could not be changed without action by the state legislature.
- NRS 377A.110 allows the BOS to reduce the transportation tax rate to meet reduced roadway system needs unless this would impair outstanding bonds.

- If the tax rate approved by the voters is under the amount authorized by statute, increasing the rate would require voter approval.

Administrative Efficiency

- Carson City and the State already have agreements in place for collection of sales and use taxes so the incremental additional cost would presumably be in accordance with the current agreements.
- Carson City Public Works already undertakes the planning, programming, budgeting, and execution of roadway projects, as well as routine operations and maintenance.

Public Support Potential

- Carson City voters approved a 0.25% tax for public roads in 1986 by a 52% vote.
- Carson City voters approved a 0.125% sales tax for the V&T railroad in 2006.
- The Carson City BOS approved a 0.125% sales tax for infrastructure pursuant to NRS 377B in 2014. Imposing this tax required a 2/3 vote by the BOS. A portion of the proceeds from this tax were used to fund street improvements.

Bond Potential

- NRS 377A.090(3) gives authority to issue bonds and to pledge transportation tax revenue to service bond debt.

Other Issues

- None

Supplemental Governmental Services Tax (NRS 371)

Description of mechanism: As authorized by NRS 371, impose a Supplemental Governmental Services Tax for defraying the costs of the roadway system including construction, reconstruction, system renewal, system preservation, etc. The Supplemental Governmental Services Tax is calculated on the valuation of each vehicle based in Carson City with some minor exceptions. Tax is collected by DMV at first registration and with subsequent annual registrations.

Legislative Authority

- NRS 371.045(1) authorizes imposition of this tax by counties with a population of less than 100,000 and more than 700,000 with at a rate of not more than one cent on each one dollar of valuation of a vehicle with approval of voters.
- NRS 371.045(5) requires proceeds to be used for construction and maintenance of streets, sidewalks, etc.
- NRS 371.043 allows counties with population of 100,000 or more but less than 700,000 (Washoe County) to impose a Supplemental Governmental Services Tax without voter approval.

Revenue Potential

- A 1% Supplemental Government Services Tax would generate an estimated $1-$2 million annually for Carson City.
- For example, a new car with a valuation of $25,000 would generate a supplemental tax of $250, for the first year.

Reliability

- This mechanism would be largely immune from typical short-term economic cycles.
- If during extended periods of recession new car purchases are significantly reduced, the impacts on revenue from this source could be significant.

Sustainability

- This mechanism would adjust indirectly to inflation as the cost of new vehicles entering the fleet increases over time. Such adjustments may or may not be sufficient to keep up with inflation in road system costs.
- This mechanism would be immune from the impacts of increasing vehicle fuel economy since it is unrelated to the sale of motor vehicle fuels.

Equity

- Socio-economic equity:
    - The tax rate would vary based on the value of the vehicle and is not directly tied to income.
    - The relatively small annual amount of this tax may make the regressivity a less significant issue.
- Resident versus business equity:
    - Vehicles owned by businesses and residents would be taxed at the same rate.
    - Presumably, Carson businesses would pass on the additional costs in what they charge for goods and services.
    - Non-residents doing business in Carson City would presumably share some of the burden indirectly through what they pay when purchasing goods and services.

Flexibility

- NRS 371.045(5)(a) allows revenues to be used on all facilities of Carson City's defined roadway system.
- NRS 371.045(5)(a) specifically cites "construction" and "maintenance". While reconstruction, system renewal, system preservation, etc. are not specifically mentioned, use for these purposes would be consistent with the intent of the statute.

Ease of adjusting rates

- There is no provision in the statute for adjusting the tax rate to accommodate increases/decreases in roadway program needs due to changes in travel demand, federal/state/local funding, or new federal state/local mandates.

Administrative Efficiency

- The DMV already collects the Basic Governmental Services Tax with vehicle registration so there would be no significant additional administrative complexity.
- Collection costs should be similar and proportionate to the costs for collecting the Basic Governmental Services Tax which is 6% of revenue.
- Carson City Public Works already undertakes the planning, programming, budgeting, and execution of roadway projects, as well as routine operations and maintenance.

Public Support Potential

- The Supplemental Governmental Services Tax is currently collected in 2 counties: Clark with voter approval, and Churchill without voter approval as a fair-share revenue make-up provision.

Bond Potential

- NRS 371.045(5)(b) authorizes the use of proceeds for debt service on bonds and other obligations.

Other Issues

- Since the tax is based on vehicle valuation, public reception may not support funding on sidewalk and other non-motorized infrastructure.

Property Tax Override (NRS 354)

Description of mechanism: Using NRS 354.5982, impose a new increment of property tax dedicated to transportation that exceeds the current State limitation on year-over-year property tax revenue. While there are still increments of property tax available under the statutory caps, without such an override current limits on the year-over-year increases in property tax revenue severely limit the amount of revenue that can be realized.

Legislative Authority

- NRS 354.5982 authorizes county to levy additional property taxes that would generate revenue that exceeds the revenue limitations of NRS 354.59811.
- While such a tax increment is exempt from the revenue limitations, the total combined tax rate cannot exceed the NRS 361.453 limitations of $3.64 per $100 of assessed valuation.
- Requires a vote of the people.

Revenue Potential

- Per the FY 2020 CAFR, the combined property tax rate for Carson City is currently $3.57 per $100.
- A property tax override, even with the exemption from the year-over-year revenue caps would reportedly not raise significant revenue.

Reliability

- This mechanism would be largely immune from typical sort-term economic cycles.
- If during extended periods of recession property values are significantly reduced, the impacts on revenue from this source could also be significant.

Sustainability

- Property tax is based upon property values which tend to increase over time, typically adjusting with the general inflation.
- This mechanism would be immune from the impacts of increasing vehicle fuel economy since it is not a tax on motor fuels.
- Duration of the tax levy must not exceed 30 years.

Equity

- Socio-economic equity:
    - Property taxes are generally considered regressive, affecting lower-income individuals disproportionately.
    - Impacts to lower income groups may be minimal given the small tax increment.
- Resident versus business equity:
    - Ultimately, property taxes on businesses and rental property are passed on to the end consumer so the burden of this tax would be borne by resident and non-resident consumers.
    - Non-residents doing business in Carson City would presumably share some of the burden through what they pay when purchasing goods and services.

Flexibility

- NRS 354.5982(1) appears to allow revenues to be used on all facilities of Carson City's defined roadway system provided these are identified in the ballot question.
- NRS 354.5982(1) allows revenues to be used for all activities of Carson City's defined roadway system, e.g., construction, reconstruction, system renewal, system preservation, etc.
- Proceeds from this tax could also be used for transit if identified as one of the uses in the ballot question.

Ease of adjusting rates

- There is no provision to increase the additional property tax rate outside of the statutory $3.64 cap to address changes in travel demand, increases/decreases in federal/state/local funding, or new federal/ state/local mandates. Increasing this authorized rate would require action by the state legislature.
- If the tax increase approved by the voters is reduced by the BOS prior to its expiration due to changes that decrease the cost of the roadway system, it could not subsequently be increased unless approved again by the voters.

Administrative Efficiency

- Carson City and the State already have agreements in place for collection of property taxes so the incremental additional cost would presumably be in accordance with the current agreements.
- Carson City Public Works already undertakes the planning, programming, budgeting, and execution of roadway projects, as well as routine operations and maintenance.

Public Support Potential

- City of Reno voters approved an override for streets in 1993, and then again in 2004.

Bond Potential

- Authority exists to issue bonds and to pledge property tax revenues to service bond debt.
- Per NRS 354.5982(1), this type of levy may not exceed 30 years; a 30-year term is very suitable for long-term debt.

Other Issues

- The City of Reno introduced SB73 in the 81st session (2021) of the legislature which included provisions to ask voters to increase property taxes outside the current $3.64 cap and the 6% increase in year-over-year property tax revenue. The bill did not pass. In the future, Carson City could pursue similar relief for this mechanism which could increase the revenue potential.

Fuel Tax Indexing (NRS 373)

Description of mechanism: NRS 373 has a number of provisions authorizing the indexing of motor vehicle fuel taxes. Carson City is currently authorized to index under the provisions of NRS 373.065, but this is not recommended given significant restrictions including: indexing is only allowed based on local option gas taxes not all gas taxes (i.e., federal and state); indexing does not apply to special fuels taxes at any level (federal/state/local); inflationary adjustments are based upon the Consumer Price Index which is inappropriate for reflecting inflation in roadway costs; and indexing must be reapproved by the voters at least every eight years. Indexing under NRS 373.066 would provide much greater revenue and flexibility as it addresses many of the deficiencies of indexing under NRS 373.065, but it is currently available only to counties with population of 100,000 to 700,000. Indexing under NRS 373.0663, which is currently available only to Clark County, is less flexible than NRS 373.066. However, NRS 373.0663 did set a precedent whereby indexing could be implemented for an initial 3-year period by the BOS without a vote of the people, but required voter approval after the initial 3-year period to be continued. If Carson City would like to pursue motor vehicle fuel indexing, it would be advisable to pursue a change to NRS to make it eligible to index under NRS 373.066. Carson City might also want to consider provisions to allow indexing to be implemented by the BOS without a vote of the people for an initial 3-year period followed by voter approval to be continued as was done in Clark County.

Legislative Authority

- New/amended legislative language would be required to allow Carson City to index similar to NRS 373.066 (currently available only to Washoe County). Voter approval is expected to be required by the legislature consistent with past practice.

Revenue Potential

- Indexing is meant to recover the loss in purchasing power from existing motor vehicle fuel revenues due to inflation; if there is no inflation, there is no additional revenue.
- In FY 2021, the 10-year rolling average Producer Price Index used to adjust the indexed fuel tax rate was 2.10%. If indexing had been implemented in 2021 at this rate to recover the purchasing power on all motor vehicle fuel taxes (federal, state, and local) and all types of motor vehicle fuels (gasoline, diesel, and other special fuels), the estimated first year revenue is about $600,000-$700,000. Longer-term projections of revenue from indexed fuel taxes would need to consider both inflation as well as the impacts of increasing fleet fuel economy.
- This funding mechanism will not solely solve the funding shortfall.

Reliability

- This mechanism has shown itself to be largely immune from typical short-term economic cycles since the demand for motor fuels is relatively inelastic.
- With unusual events that significantly reduce vehicle travel such as the COVID 19 pandemic, impacts to revenue could be severe.

Sustainability

- This mechanism addresses the impact of inflation on motor vehicle fuel tax revenues automatically.
- This mechanism does not address the impacts of increasing vehicle fuel economy; real dollar collections per mile driven will continue to decline a fuel economy improves.

Equity

- Socio-economic equity:
    - Fuel taxes, including indexed fuel taxes, are regressive.
    - The relatively small annual impacts that indexing has on fuel prices may make the regressivity an insignificant issue.
    - Increases in state and federal minimum wage rates could offset the regressivity of indexing.
- Resident versus business equity:
    - Both residents and businesses would be subjected to increased fuel costs if there is inflation in roadway costs.
    - Presumably, businesses would pass on the additional costs from indexing in what they charge for goods and services to both residents and non-residents.
    - Non-residents purchasing fuel in Carson City would pay the indexed taxes.

Flexibility

- NRS 373 allows revenues to be used on all facilities of Carson City's defined roadway system.
- NRS 373 allows revenues to be used for all activities on Carson City's defined roadway system, e.g., construction, reconstruction, system renewal, system preservation, etc.

Ease of adjusting rates

- Indexed fuel tax rates do not adjust to changing travel demand and patterns; revenues from indexed fuel taxes could decline with decreased travel demand.

- Indexed fuel tax rates could be adjusted downward if federal/state/local funding increases but could not be adjusted upward to account for decreases in funding from these other sources.
- If federal/state/local mandates increase the costs of the City's roadway system, indexed fuel tax rates could not be adjusted to raise revenue to cover these additional costs.

Administrative Efficiency

- The Nevada Department of Motor Vehicles (DMV) is well versed in administering indexed fuel taxes. The DMV costs for administering indexed fuel taxes are reasonable.
- Carson City Public Works already undertakes the planning, programming, budgeting, and execution of roadway projects, as well as routine operations and maintenance.

Public Support Potential

- Washoe County voters approved indexing in 2004 and an expansion of indexing in 2008. The Clark County Commission approved indexing for a three-year period beginning in 2014. In Nov 2016, Clark county voters approved continuing indexing. These successes were preceded by very extensive public outreach and education efforts over several years.
- Carson City voters failed to approve indexing fuel taxes in 2016 with 65% voting "no".

Bond Potential

- NRS 373 gives authority to issue bonds and to pledge assessment revenue to service bond debt.

Other Issues

- None

Conclusions

It is apparent that a number of options for raising additional revenue for the roadway system are available to Carson City. Table 1 below summarizes the illustrative revenues and rates for the mechanisms discussed in this report. Some of these mechanisms, such as the Transportation Sales Tax and Supplemental Governmental Services Tax, are relatively straight forward in that they would require no new legislation but would require voter approval. A significant disadvantage of both of these revenue mechanisms is that they are taxes with a fixed rate which gives virtually no flexibility to adjust the amounts collected to meet the evolving needs of the community.

If the objective for Carson City is to solve the roadway funding gap with a sustainable, long-term solution, creation of a Road Utility Fee could be a promising mechanism. The primary disadvantage of pursing a Road Utility Fee is that it would require new enabling legislation by the state that could take several years to obtain. An alternative, that has many of the positive attributes of a Road Utility Fee but would not need new enabling legislation and thus could be implemented more quickly, could be to create a General Improvement District (GID) for roadway improvements under the authority of NRS 318.

	Table 1: Illustrative rates and revenues			
Potential funding mechanisms		**Illustrative rate**	**Potential gross first year revenue**	**Notes**
	General Improvement District	$10/month per residential unit Avg. $125/month for comm/indus establishment	$5-$6 million	1. Based upon trip generation by land use category. 2. Assessment against property; statute may allow fee to be charged to "responsible parties" (i.e., parties having control of the premises.)
	Program of local improvements	$10/month per residential unit Avg. $125/month for comm/indus establishment	$5-$6 million	1. Based upon trip generation by land use category. 2. Assessment against property.
	Road Utility Fee	$10/month per residential unit Avg. $125/month for comm/indus establishment	$5-$6 million	1. Based upon trip generation by land use category. 2. Charged against "responsible parties" (i.e., parties having control of the premises.)
	VMT Fee	$.025-$0.03/VMT	$4-$6 million	1. Assumes only LDVs registered in Carson City. 2. Vehicles subject to VMT Fee would pay no local fuel tax; revenue estimate is net of lost fuel tax revenue. 3. Assumes "low-cost/low-tech" odometer based program.
	Transportation sales tax	0.25%	$3.2 million	1. Revenue estimate based on existing sales tax revenue.
	Supplemental Governmental Services Tax	1% of assessed vehicle valuation	$1-$2 million	1. Tax calculated and collected with initial registration and annual renewals based on depreciated value of vehicle.
	Property tax override	Revenue potential reported to be extremely low.		1. Subject to total rate cap of $3.64 per $100 of value. 2. Exempt from year-over-year revenue cap.
	Fuel tax indexing	2.1% annual inflation adjustment	$600,000-$700,000 first year	1. Assumes indexing on all motor vehicle fuel taxes (gas, diesel, etc.) in Carson City at all levels (federal, state, local). 2. Longer-term projections of revenue from indexing would need to address increasing fleet economy. 3. If there is no inflation, revenue will not increase.

In order to identify the “best” funding mechanism(s) for Carson City, it is essential that the political leadership reach consensus early in the process on the objectives they are trying to accomplish, as well as a framework for evaluating and ranking potential mechanisms. In establishing clear objectives, one could consider whether

there is a desire to find a comprehensive solution or a partial solution to the funding shortfalls. If a partial solution is the objective, it should be explicitly discussed which roadway elements and activities would see investments with the new revenue, and what would be the resulting outcomes in terms of roadway system condition and performance. Objectives could also legitimately incorporate social and economic factors, urgency for additional investment, public sensitivities, etc.

Once clear objectives have been established, consensus should be sought on a process for evaluating potential mechanisms. Typically, this involves establishing evaluation criteria and criteria weighting, mechanisms for soliciting funding ideas and feedback, public outreach, etc. This report has identified a number of possible evaluation criteria. While many of these may be suitable to Carson City, they should be refined to provide proper assessment of the ability of a potential funding mechanism to meet the objectives established by political leadership. In so far as discussion and consensus on objectives and the evaluation process can be reached at the front end, this will facilitate a more efficient process with fewer chances of missteps.

Ancillary Considerations

There are a number of issues that should be considered in tandem with the pursuit of additional roadway funding:

Investment in the roadway system has significant local benefits. Most successful efforts to gain public support for sustainable transportation funding identify a near-term list of priority projects and services in which the new revenue will be invested, while noting that investment will continue beyond these initial needs. Carson City has used this approach in its previous successes to increase sales taxes for transportation and infrastructure funding. In addition to the direct transportation benefits, many find it compelling that the majority of money used for building, preserving, maintaining and operating the roadway system is typically spent locally, creating and sustaining well-paying jobs. As this money further circulates through the local economy, the benefits are multiplied. In the immediate future, increasing levels of investment in the roadway system could also help in the community's economic recovery from the impacts of COVID-19.

Local money means local control. The funding mechanisms contemplated generate revenue at the local level. This means that the amount of money diverted to higher levels of government is minimized and economic efficiency is increased. In addition, local money means local control over where and how this money is invested.

Understanding public perception and awareness. Despite our best efforts, we often have a poor understanding of public perception and awareness on a particular issue. Comments from the folks attending meetings, emailing, or tweeting may not represent how the overall public feels. Scientific polling and analysis have been instrumental in many recent successful initiatives to increase transportation funding. Typically, these efforts include polls to establish a baseline including such things as*: Does the public think there is a problem? What do they think is causing it? How important is this issue compared to other community needs?* This baseline with proper demographic cross tabulations can inform an efficient and effective public outreach program to build consensus around transportation funding initiatives.

Implementing new funding sources for the roadway system will not be easy. Every one of the mechanisms considered will require one or more of the following: action by the BOS, new or amended legislation by the state legislature, or a vote of the people. Obtaining sufficient consensus and political will in the applicable venues will be critical to any chance of success.

Expect legal challenges. Given the fact that some of the mechanisms use existing legislation in new ways or they are based on new or amended legislation, there is a high probability that there could be resistance and legal challenges. The BOS must be prepared for this if they are to be ultimately successful.

Comprehensive standards are critical. It is important that Carson City can document, quantify, and explain the level of investments that are necessary to have an efficient, safe, and reliable roadway system. Carson City Public Works currently uses pavement management software to forecast long-term pavement needs. Pavement surveys are typically completed every three years. Carson City's Pavement Management Plan establishes current pavement conditions and performance standards goals for regional roads and local roads. Regional roads are roads that are classified as arterial and collector roadways. The Pavement Management Plan documents baseline conditions, allowing the City to monitor pavement conditions over time. Additionally, a Carson City Pavement Analysis Report has been completed to estimate the cost of the system. In addition to pavements, comprehensive standards for the condition of appurtenant roadway features such as traffic signals, striping, signing, guardrails, sidewalks, curbs, and roadway drainage, as well as activities such as sweeping and plowing should be established and performance tracked. These, coupled with the pavement management system, provide the tools to comprehensively understand the costs and needs of the City's roadway system.

Differentiating between backlog and "steady state" needs can be helpful. It is apparent that there is a considerable quantity of streets, sidewalks, and appurtenant items that are in poor condition. This backlog has built up over decades due in part to the burden that Carson City took on when it merged with Ormsby County followed by decades of underinvestment. It may facilitate the conversation about roadway funding to separately identify and differentiate this backlog from the "steady state" levels of investment that would be necessary to keep the system functioning once the physical, condition, and performance standards are achieved.

Dependence on fuel taxes as primary source of road revenue. The motor vehicle fuel tax system that has been the mainstay of collecting revenue to build, operate, and maintain our streets and highways in the United States is becoming increasingly unsustainable. Increasing vehicle fuel economy, expanded use of alternative fuels including all electric vehicles, and inflation severely erode the revenue being collected for each mile driven. For example, based upon mandated improvements in fuel economy, without an increase in state gas tax rates, Nevada will be collecting approximately 55 percent less from this source for each mile driven in 2030 than was collected in 2008. The aggregate loss in revenue to the State Highway Fund from 2018 through 2030 is estimated at $1.6 billion. This loss is in nominal dollar terms and does not include the decline in purchasing power of the revenue collected due to inflation. Similar losses will occur at all levels of government with the status quo. Lower federal and state revenues mean that fewer dollars from these sources are available for investment in municipalities. While improved fuel economy and the increased use of alternative fuels serve our vital national interests by reducing pollution, mitigating climate change, and reducing our dependence on foreign oil, the resultant decline in fuel tax revenue impedes our ability to effectively maintain and improve the condition and performance of our road system. If adequate funding sources are not identified and allocated, the deterioration of our streets and highways will continue to accelerate and undermine our economic competitiveness, prosperity, and quality-of-life.

Transportation Funding

Our Options and Your Input

Transportation Funding

Our Options and Your Input

- Background on History & Stopgaps
- Revenue Options
- Implementation Approach

Transportation → Not Just Pavement

Maintenance

Signs & Markings
Concrete Repair
Shoulder Maintenance
Street Sweeping
Potholes, Crack Filling

More Maintenance

Weather Events
Tree Pruning
Ditch Clearing
Graffiti Removal
Patching

Pavement

Preservation
Rehabilitation
Reconstruction

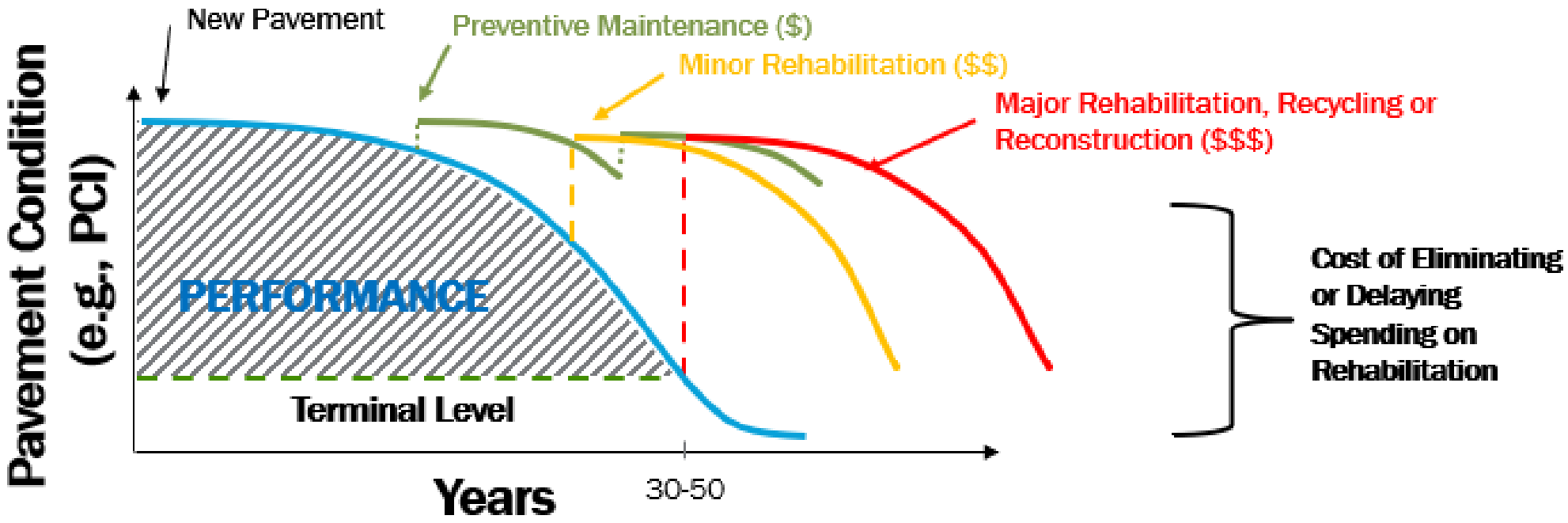
Complete Streets

Lighting & Landscaping
Safety Improvements
Bikes & Pedestrians
Transit

Control Systems

Timing
Coordination
Poles & Supports
Detection

Do Nothing Option
aka "Maintain the Status Quo"



What do we do with the roads we don't maintain?

Transportation Revenues

$ 0.09/gallon gas tax

→ Regional Transportation Fund
NRS 373.030

$ 0.05/gallon diesel tax

→ Regional Transportation Fund
*Sunsets / 2022 General Election
NRS 373.062

$ 0.036/gallon gas tax

→ Streets Maintenance Fund
NRS 365.180

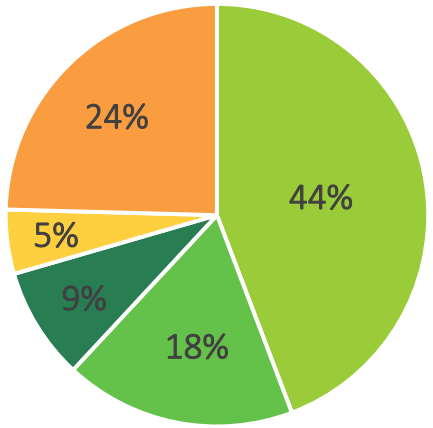
$ 0.0175/gallon gas tax

→ Streets Maintenance Fund
NRS 365.190

$ 0.01/gallon gas tax

→ Streets Maintenance Fund
NRS 365.192

Fuel Tax Revenues per Gallon



Additional Revenue Sources

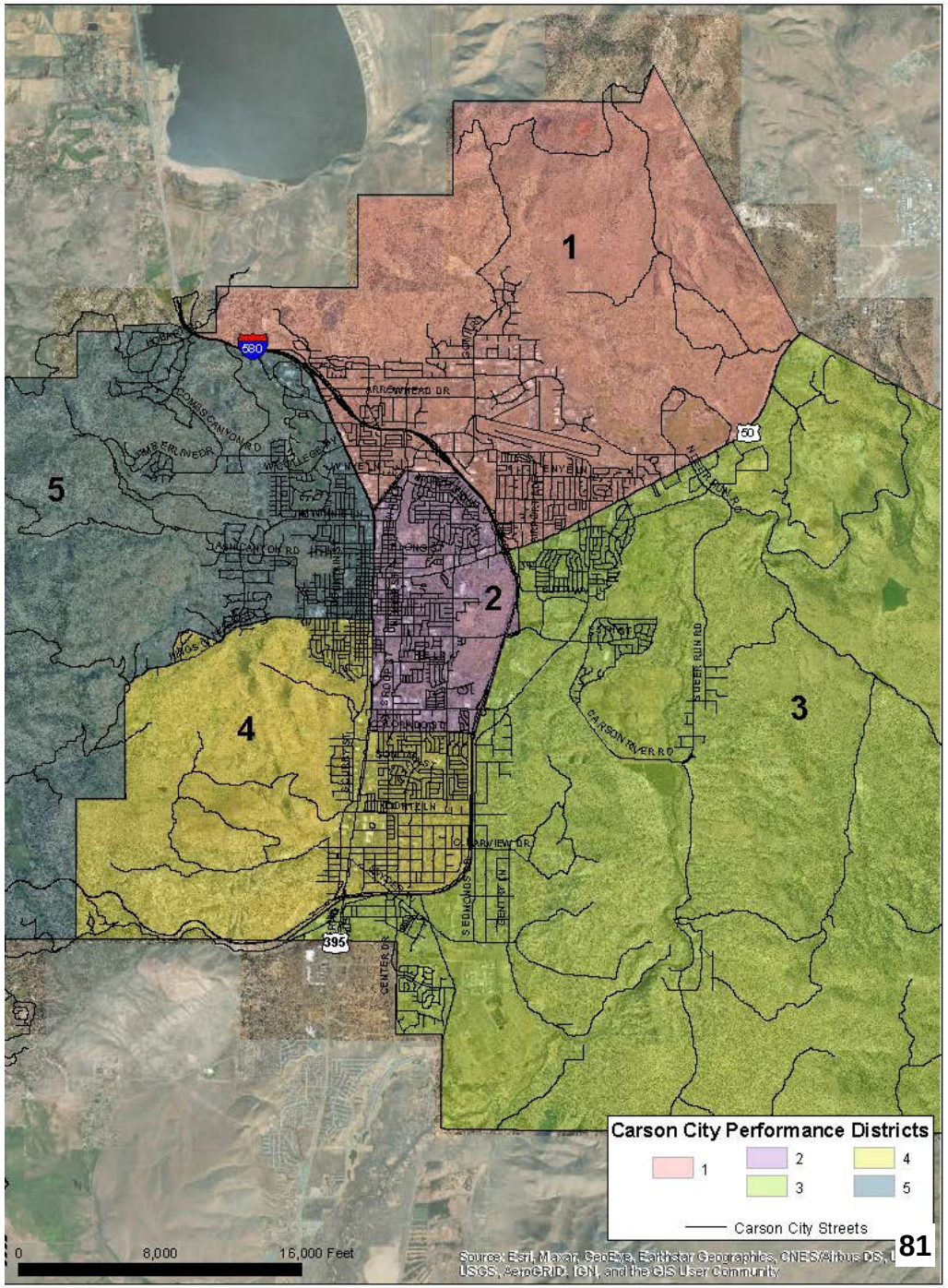
- ✓ V&T Sales Tax (portion after Bond Repayment), Sunsets July 2027
- ✓ Waste Management 3% Franchise Fee
- ✓ Periodic General Fund Transfers: School Zones, Center St., 5th St., Short Line

Leveraging Local Dollars for Capital Improvements

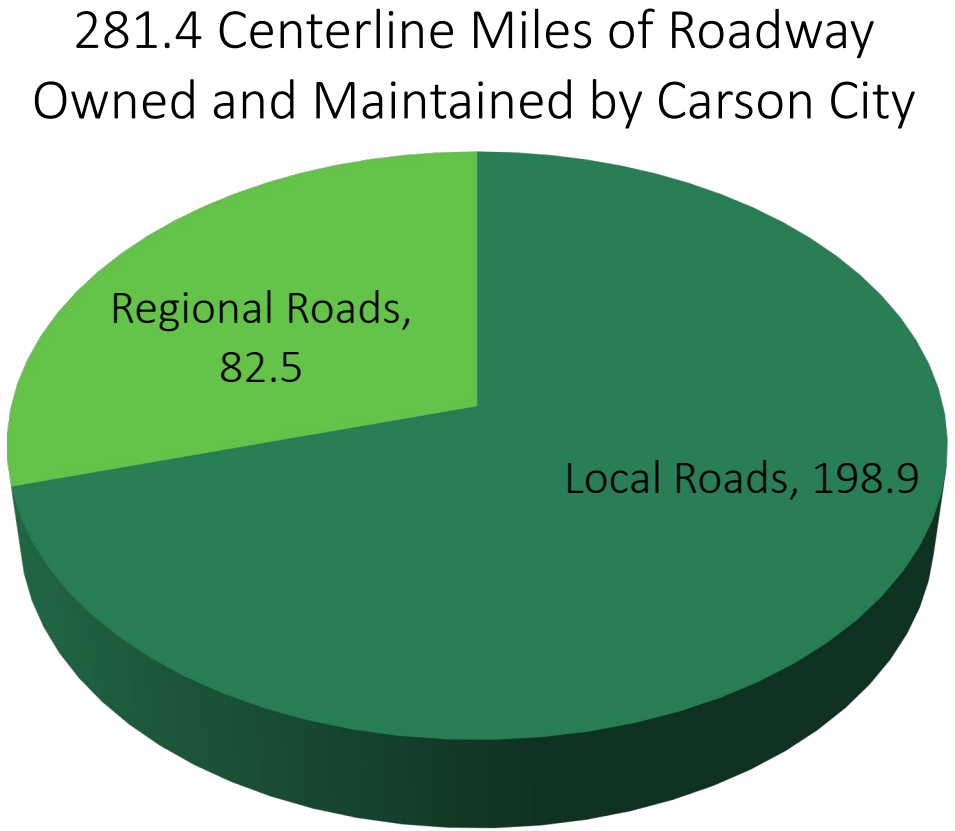
2017-2020 Grant-Funded Projects

	Federal Funding	Local Funding	Total Projects
RTC	$28,557,463	$7,332,244	$35,889,707
CAMPO	$749,211	$0	$749,211
Transit (competitive grants only)	$1,265,636	$456,564	$1,722,200
Total	**$30,572,310**	**$7,788,808**	**$38,361,118**
Local Match % (overall)	***20%***		

2019-2023 Pavement Management Plan Performance Districts

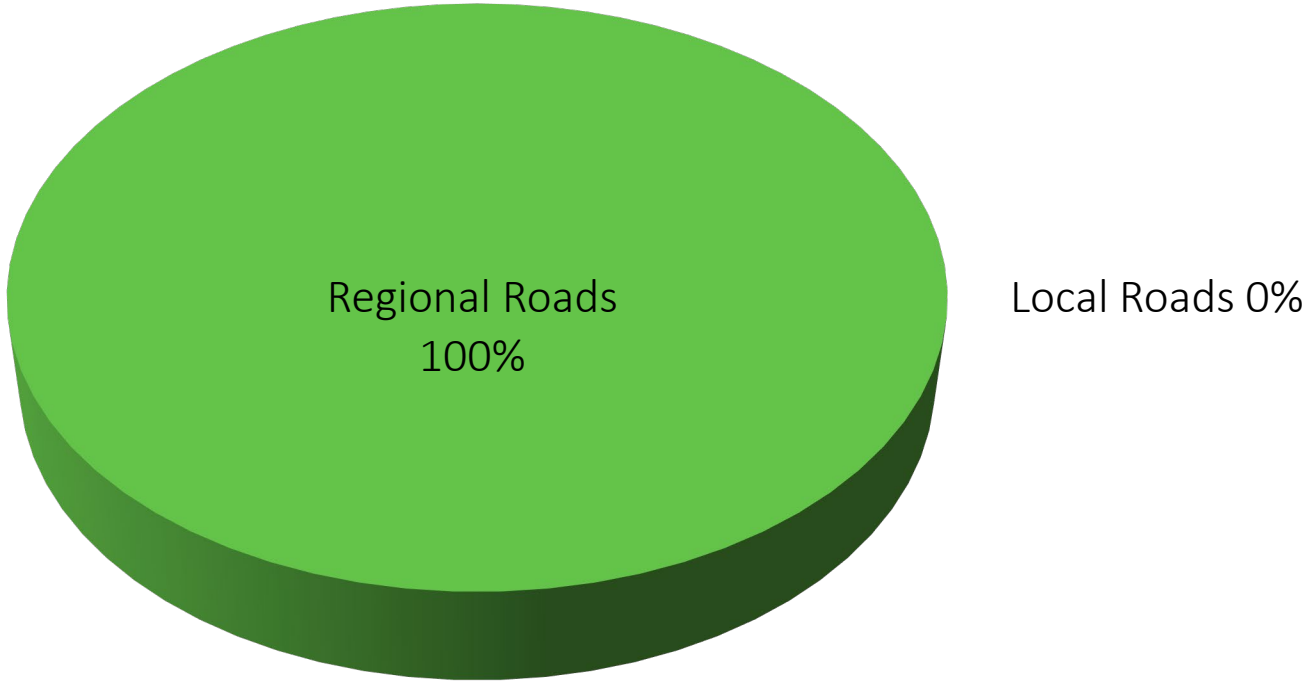


Pavement Preservation & Rehabilitation



Pavement Preservation & Rehabilitation

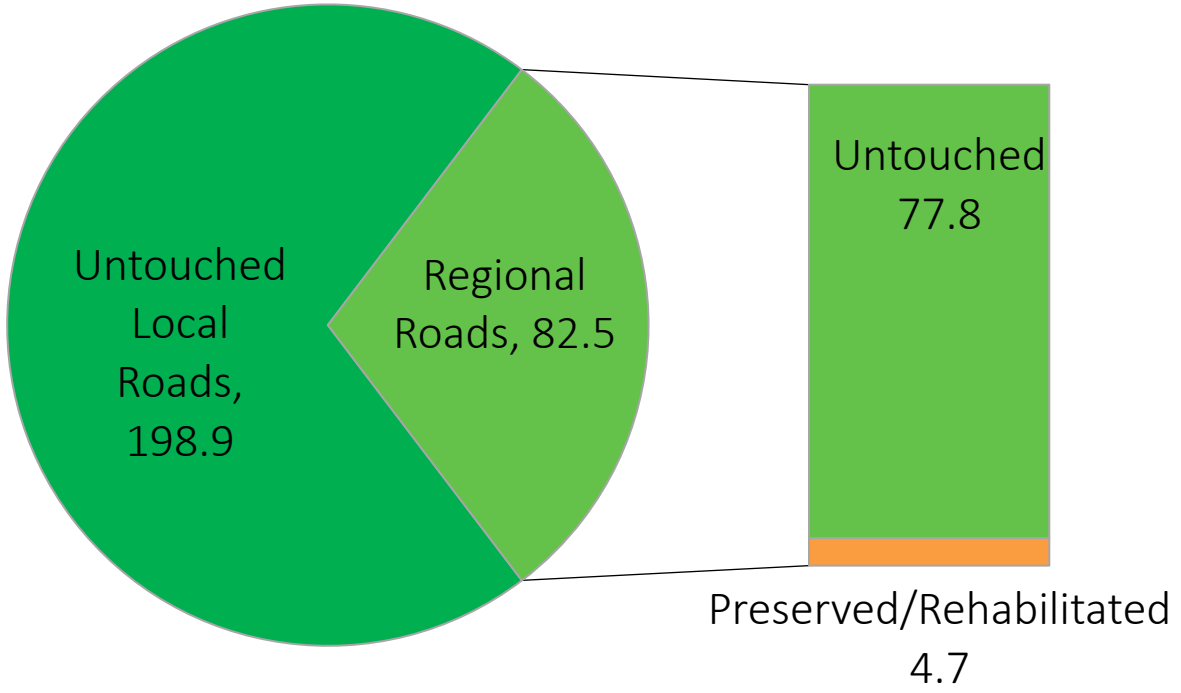
Regional Transportation Fund $ Investment Since 2017



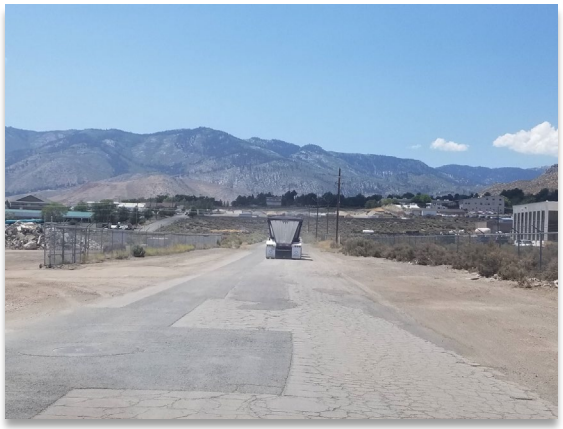
FY 2020 Transportation Investment

1.7% of City-Owned Roadways Preserved/Rehabilitated in FY 2020

281.4 Centerline Miles of Roadway Owned and Maintained by Carson City



Local Roads with Failing Pavement Condition



District 1 – Boeing Dr.

District 2 – Beverly Dr.

District 4 – Willow St.

District 1 – Conestoga Dr.

District 3 – Bighorn Dr./Brick Rd.

District 5 – Combs Cir.

Potential Revenue Options

There is an opportunity for success

Traditional "User Pays"

- Fuel Tax Indexing (NRS 373)
- Vehicle Miles Traveled Fee (new)

Assessments

- General Improvement District (NRS 318)
- Program of Local Improvements (NRS 271)
- Road Utility Fee (new)

Sales/Services Taxes

- Transportation Sales Tax (NRS 377A)
- Property Tax Override (NRS 354)
- Supplemental Governmental Services Tax (NRS 371)

Potential Evaluation Criteria

Evaluation Criteria (weight factor)	Program of Local Improvements	General Improvement District	Road Utility Fee	Government Services Tax	Special Purpose Sales Tax	Property Tax Limit Override	Vehicle Miles Traveled Fee	Fuel Tax Indexing
Legislative Authority (3)	9	9	3	9	9	6	3	6
Revenue Potential (3)	9	9	9	6	6	6	9	3
Reliability (3)	9	9	9	6	6	6	6	3
Sustainability (3)	9	9	9	6	6	3	6	3
Equity (3)	9	9	6	3	3	6	3	3
Administratively Efficient (2)	4	4	4	6	6	6	4	6
Bond Potential (2)	6	6	6	6	6	6	6	6
Flexibility (1)	3	3	3	3	3	3	3	3
Ease of adjusting (1)	3	2	2	1	1	1	2	3
Public Support Potential (1)	3	1	2	2	2	2	1	1
Total	64	61	53	48	48	45	43	37

Illustrative Rates by Funding Option

Table 1: Illustrative rates and revenues

		Illustrative rate	Potential gross first year revenue	Notes
Potential funding mechanisms	**General Improvement District**	$10/month per residential unit Avg. $125/month for comm/indus establishment	$5-$6 million	1. Based upon trip generation by land use category. 2. Assessment against property; statute may allow fee to be charged to "responsible parties" (i.e., parties having control of the premises.)
	Program of local improvements	$10/month per residential unit Avg. $125/month for comm/indus establishment	$5-$6 million	1. Based upon trip generation by land use category. 2. Assessment against property.
	Road Utility Fee	$10/month per residential unit Avg. $125/month for comm/indus establishment	$5-$6 million	1. Based upon trip generation by land use category. 2. Charged against "responsible parties" (i.e., parties having control of the premises.)
	VMT Fee	$.025-$0.03/VMT	$4-$6 million	1. Assumes only LDVs registered in Carson City. 2. Vehicles subject to VMT Fee would pay no local fuel tax; revenue estimate is net of lost fuel tax revenue. 3. Assumes "low-cost/low-tech" odometer based program.
	Transportation sales tax	0.25%	$3.2 million	1. Revenue estimate based on existing sales tax revenue.
	Supplemental Governmental Services Tax	1% of assessed vehicle valuation	$1-$2 million	1. Tax calculated and collected with initial registration and annual renewals based on depreciated value of vehicle.
	Property tax override	Revenue potential reported to be extremely low.		1. Subject to total rate cap of $3.64 per $100 of value. 2. Exempt from year-over-year revenue cap.
	Fuel tax indexing	2.1% annual inflation adjustment	$600,000-$700,000 first year	1. Assumes indexing on all motor vehicle fuel taxes (gas, diesel, etc.) in Carson City at all levels (federal, state, local). 2. Longer-term projections of revenue from indexing would need to address increasing fleet economy. 3. If there is no inflation, revenue will not increase.

November 2016 Gas Tax Indexing Ballot Measure

34.07% Yes / 65.93% No

Why was it that bad?

Time for a Different Approach!

Opportunity in Outreach

Gain the voters' trust and prove what we can do when given the chance

Next Steps

Revenue Approach

- ✓ BOS may select 1-3 mechanisms for further vetting
- ✓ Work through Technical Details:
  - Legal Review
  - Financial Review
  - Policy Alignment
  - Draft Enabling Framework

Implementation Approach

- ✓ Stakeholder Outreach:
  - Survey, Website, Printed Materials, Presentations
- ✓ Work through Details and Documentation:
  - How will revenues be transparently collected and administered?
  - How will investments and projects be prioritized and selected?
  - How will expenditures be monitored and reported?

What do you think?

- Do you agree that the City should explore revenue options to fund our roads?
- How would you prioritize our transportation investments?
- How should we be reporting investments and accomplishments?
  - Printed reports?
  - Mailers?
  - Website?

Please take our survey @ CarsonProud.com

Thank You

Lucia Maloney

(775) 283-7396

lmaloney@carson.org

www.carson.org/transportation