



STAFF REPORT

To: Honorable Mayor and Members of Town Council

From: Dan Sailer, P.E., Assistant Public Works Director

Title: **Discussion/Direction:** Overview of Five-Year Transportation Capital Improvement Program and Pavement Maintenance Program

Executive Summary

The Public Works Department has oversight responsibilities for the Town's transportation assets. The largest of these transportation assets is the public street network. The purpose of this item is to provide Town Council with an overview of two programs associated with the public street network: 1) The current Five-Year Capital Improvement Program (CIP), and 2) The Pavement Maintenance Program (PMP).

The Department utilizes two guiding documents when developing both programs. The Town's Transportation Master Plan is a Town Council approved plan which identifies the transportation capital projects that are necessary to support the build out of the Town in accordance with the Town's Comprehensive Master Plan. The Transportation Master Plan is a fiscally unconstrained plan. Each year, staff assesses the five-year revenue forecast to determine what is available for new capital projects. This program area has varying revenue streams available to it. The CIP primarily utilizes dedicated Transportation Impact Fees from new development, and Building Use Tax revenue. Impact Fees are not eligible to be utilized by operations and maintenance activities. Current Impact Fee revenue is not sufficient alone to implement all the necessary projects listed within the Transportation Master Plan within the recommended timelines. Currently, sales tax revenue allocated to the area of transportation is the largest supplemental revenue stream being utilized for CIP implementation. Projects from the Transportation Master Plan are selected for the recommended CIP based on this revenue forecast, and ultimately approved by Town Council as part of the budget process. Currently, staff prioritizes projects based on their ability to assist with minimizing congestion, as well as trying to geographically distribute projects across the town to assist with minimizing disturbances to the traveling public.

For the PMP, the Department utilizes our Strategic Asset Management Plan as the directing resource for developing the annual PMP. Although streets that support a particular development are constructed with private funds, these streets are turned over to the Town for operations and maintenance. Once this transition occurs, these public assets must be managed with sustainable public funds which do not include Transportation Impact Fees. The Strategic Asset Management Plan establishes high level policies and objectives for all transportation infrastructure asset classes, including pavements. These policies and objectives were developed in order to maximize the value that our stakeholders receive from these infrastructure assets. One primary policy

is to maintain our transportation infrastructure assets to their lowest total lifecycle cost. The lowest lifecycle cost is simply all costs, from initial installation through replacement, that go toward an asset. A maintenance schedule for pavements is developed based on this policy, and similar to the CIP, the PMP is developed annually as part of the budget development to fit revenue constraints with recommendations made to the lowest lifecycle costs and geographic location. Revenue associated with operations and maintenance activities, such as the PMP, come primarily from Sales Tax.

Notification and Outreach Efforts

Staff utilized significant public outreach efforts as part of the development of the Council approved Transportation Master Plan. The current plan was updated in 2017. This plan is located on the Town's website for the public to review.

The Department's Strategic Asset Management Plan (SAMP) was developed based on significant public outreach associated with a variety of initiatives including: 1) Biennial Town surveys, 2) Transportation Master Plan updates, 3) Individual transportation projects, 4) Public open houses, and 5) Social media input. Since assets are anything that provide value, these avenues were utilized to gain an understanding of the value that the Town's stakeholders are seeking to receive from the Town's transportation infrastructure assets. In the case of these infrastructure assets, value is subjective. Because of this subjectivity, SAMP policies and objectives were developed to maximize the majority of the stakeholder's values that apply to all transportation infrastructure assets based on this public input. The following are these primary values:

Value applicable to all asset classes:

- ⊕ Lowest total lifecycle cost (total cost)
- ⊕ Reliability
- ⊕ Low downtime
- ⊕ High safety value
- ⊕ Low environmental impacts

Additional value applicable to Roadway Pavements asset class:

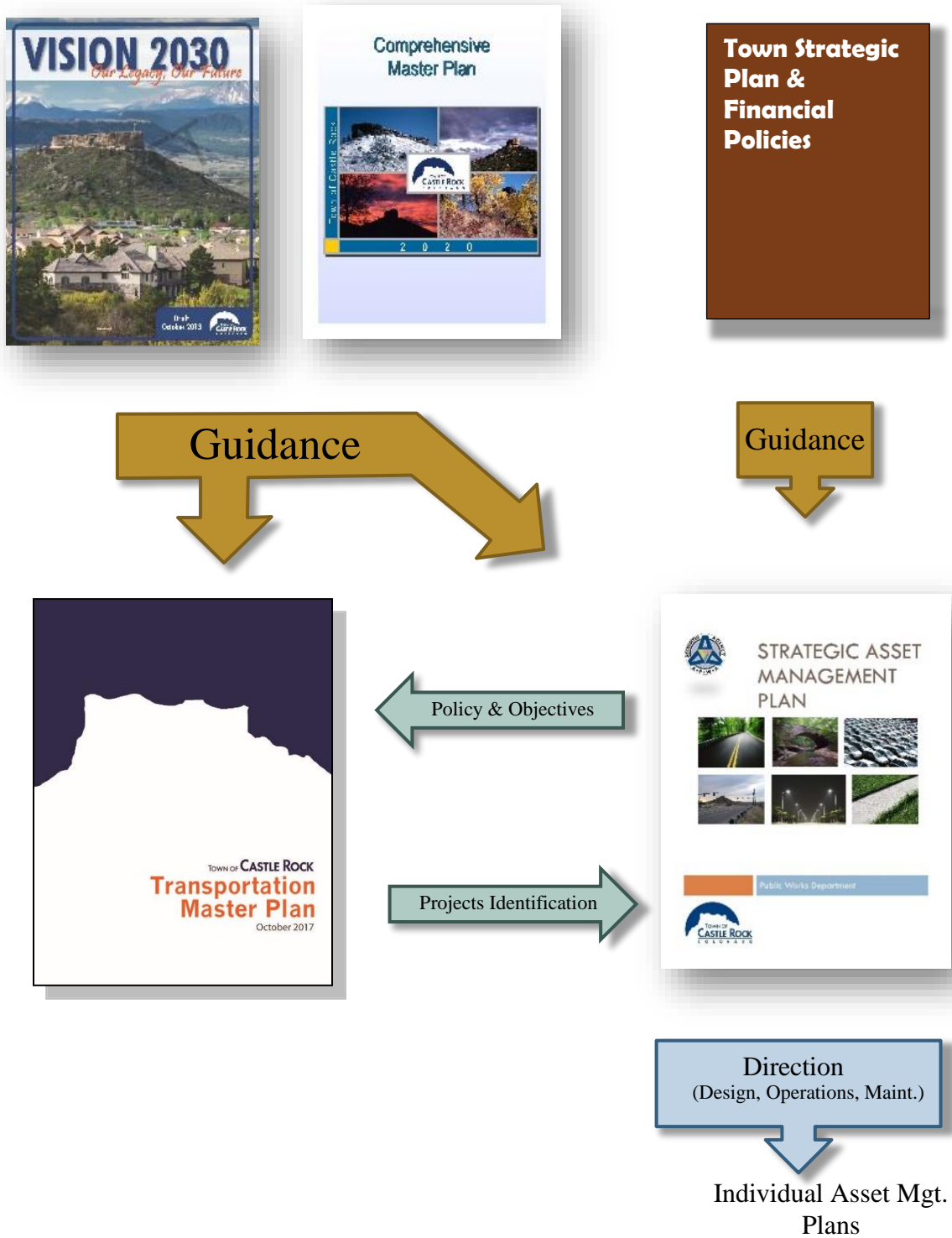
- ⊕ Minimize hazardous conditions (snow, ice, potholes)
- ⊕ Kept clean of debris

Both the five-year Transportation Capital Improvement Program (CIP) and the five-year Pavement Maintenance Program (PMP) are also included within the Town's annual budget document. This also received a significant public input process.

History of Past Town Council, Boards & Commissions, or Other Discussions

The Town's Transportation Master Plan and the Public Works Department's SAMP are the prevailing guidance documents that influence the Department's approach to developing the CIP, and the PMP. Both documents have a direct relationship to higher level Town plans.

This relationship is reflected as follows:



Discussion

Five-Year Pavement Maintenance Program (PMP):

Once streets are constructed by either the Town, or private development, and turned over to the Town, the Department's SAMP provides direction as to how these streets should be maintained. The Department considers the public transportation system as assets. These assets have been classified into eight specific asset classes:



The PMP is the primary program associated with maintenance operations within the Pavements asset class. The SAMP outlines policies and objectives that are applicable to all eight asset classes listed above. The following are two policy element examples that guide maintenance practices associated with the PMP:

Policy Principle: The total life cycle cost of physical assets shall be understood and managed in a manner to minimize this cost.

Policy Principle: Individual Asset Management Plans will be established for each physical asset class that provide comprehensive direction as to how each asset class is to be efficiently managed in alignment with this SAMP.

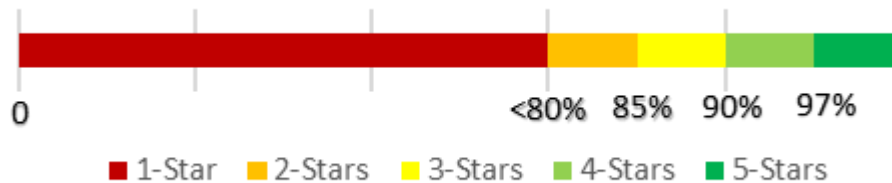
Objective: Individual AMPs will include quantitative Levels of Service (LOS).

To meet the first policy principle listed above, a lowest lifecycle cost analysis is completed prior to construction. This includes not only the installation cost, but the optimum theoretical maintenance schedule in order to identify the pavement material that will provide the Town with the lowest total cost through its lifespan. This provides the Town the best economical value over the long term.

In order to meet the objective listed under the second policy principle above, certain primary levels of service have been recently established to assess how dedicated

resources associated with the maintenance of pavements is meeting the lowest total lifecycle goal. The following is the primary service level associated with the PMP.

Drivability Life: % Reconstructed within optimum window* of end of drivability life:



*Optimum window is defined as the number of years before, or after the end of drivability life. The optimum window and drivability life is defined as follows:

- Primary Streets: 2-years of OCI 60 (1-year before or 1-year after)
- Secondary Streets: 4-years of OCI 55 (2-years before or 2-years after)

Distilled down, if the optimum maintenance schedule is implemented in order to reach the theoretical lifespan, and a pavement is replaced within the right window of this end of life, then the overall “unit cost” is lowest. If a pavement is replaced too early, or too late, then this “unit cost” goes up. This level of service is an excellent gauge to assess if changes in resource allocation, or new resources, are necessary if meeting the lowest total cost is a priority.

Like the fiscally unconstrained list of projects discussed with the CIP, the recommended maintenance schedule for each pavement segment constructed is the fiscally unconstrained list of maintenance needs. This unconstrained list needs to be refined into a fiscally constrained program, which is the PMP. The PMP classifies pavements into two categories:

- Primary Streets: These are higher volume streets such as Plum Creek Parkway, and Front Street.
- Secondary Streets: These are lower volume streets such as those found in residential areas with direct house driveway access.

Secondary streets make up the largest percentage of total pavement area within the network. Staff has divided the Town into five regional areas for purposes of establishing maintenance schedules on secondary streets to limited geographical regions each year. The purpose for this is for cost efficiencies associated with having to get large equipment and material needs moved. It also minimizes disruption to stakeholders from year to year.

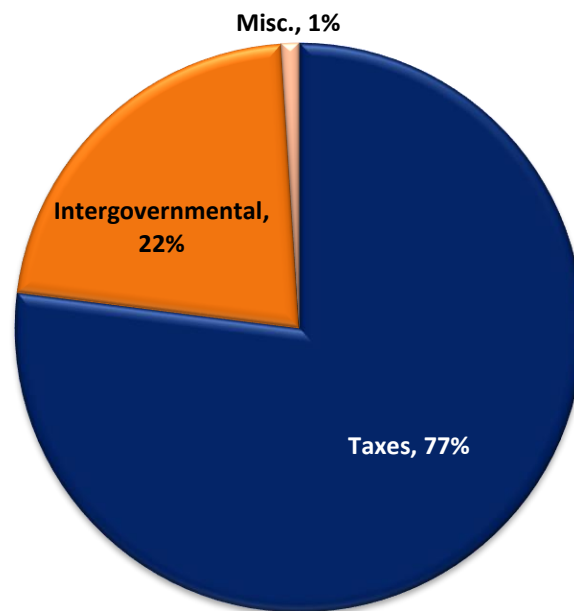
Primary streets are not impacted by the regional area approach. Any primary street is eligible for PMP maintenance in any area based on need. This is due to the impacts

that the larger volume of traffic can have on the deterioration rate of the pavement near the end of its life. The current PMP plan is provided a bit latter in this memorandum.

Current Revenue Streams

Each year as part of the budget process, five-year revenue forecasts are completed on the various revenue streams that are allocated to transportation. This allows for staff to develop fiscally constrained plans for both the CIP and the PMP.

The PMP is part of the Transportation Fund. This fund is primarily utilized for operations and maintenance purposes on existing transportation assets. The revenue that is dedicated to the Transportation Fund comes from various sources. The following chart on the next page summarizes these for illustration purposes with the percentages based on 2018's budget.

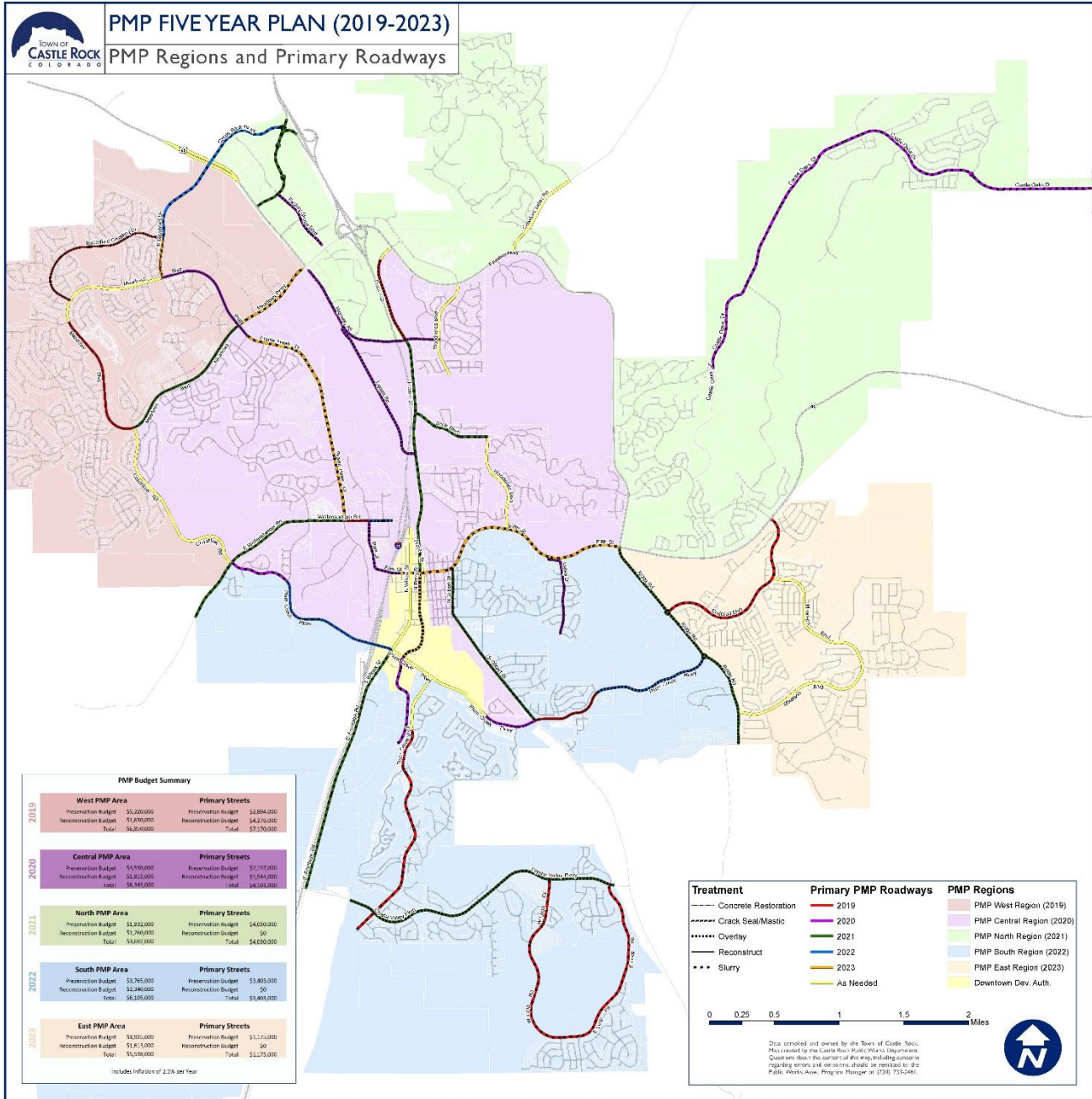


- Taxes: These are sales, building use, and motor vehicle taxes
- Intergovernmental: This includes funds from the Highway User Tax Fund (gas tax), Road & Bridge, and grants
- Miscellaneous: This includes items like investment earnings, charges for service, and contributions and donations

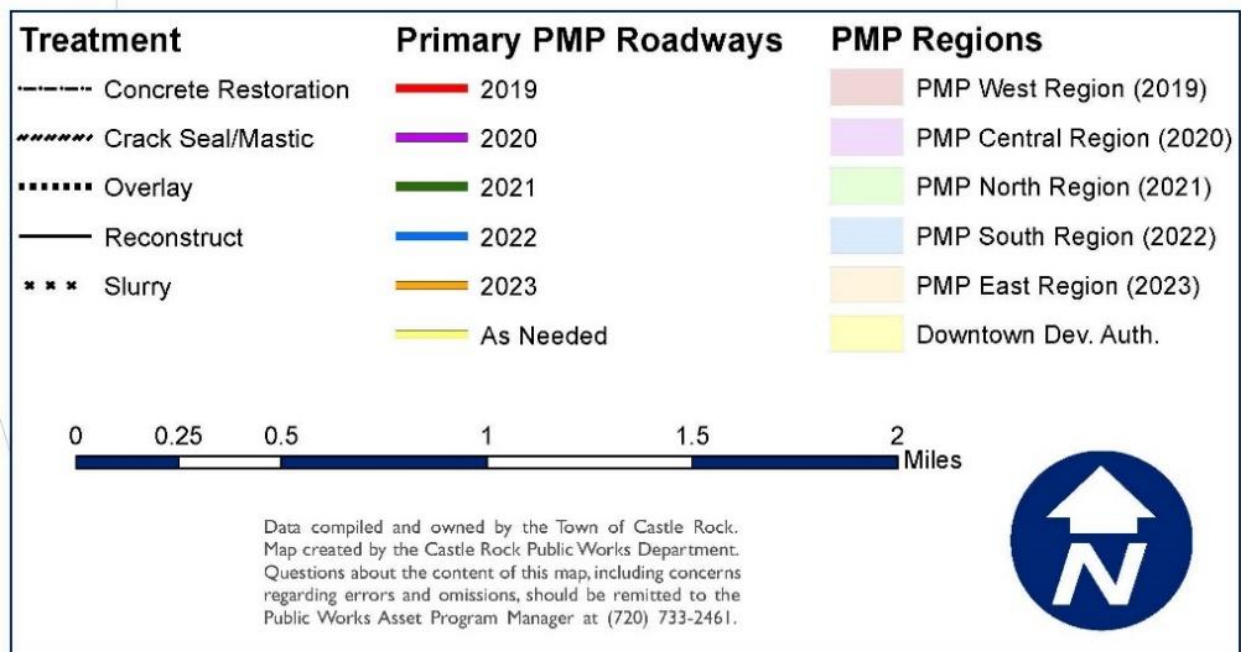
Revenue from the taxes category can be transferred into the Transportation Capital Fund to support new capital projects. This is the current practice over the past several years in order to accommodate the number of new projects that have been constructed. There is risk with continuing this practice however if maintenance of existing assets is to meet desired policy and objectives within the SAMP.

Current Fiscally Constrained Plan

The current fiscally constrained five-year PMP is summarized in the graphic below. This map is meant to illustrate the five geographical regions. The legend information has been enlarged on the following pages to provide a clearer view of associated summary information by each of the five years.



PMP Budget Summary					
2019	West PMP Area			Primary Streets	
	Preservation Budget	\$5,220,000		Preservation Budget	\$2,894,000
	Reconstruction Budget	\$1,630,000		Reconstruction Budget	\$4,276,000
	Total	\$6,850,000		Total	\$7,170,000
2020	Central PMP Area			Primary Streets	
	Preservation Budget	\$4,530,000		Preservation Budget	\$2,157,000
	Reconstruction Budget	\$1,815,000		Reconstruction Budget	\$1,944,000
	Total	\$6,345,000		Total	\$4,101,000
2021	North PMP Area			Primary Streets	
	Preservation Budget	\$1,932,000		Preservation Budget	\$4,030,000
	Reconstruction Budget	\$1,760,000		Reconstruction Budget	\$0
	Total	\$3,692,000		Total	\$4,030,000
2022	South PMP Area			Primary Streets	
	Preservation Budget	\$3,765,000		Preservation Budget	\$3,403,000
	Reconstruction Budget	\$2,340,000		Reconstruction Budget	\$0
	Total	\$6,105,000		Total	\$3,403,000
2023	East PMP Area			Primary Streets	
	Preservation Budget	\$3,925,000		Preservation Budget	\$1,175,000
	Reconstruction Budget	\$1,613,000		Reconstruction Budget	\$0
	Total	\$5,538,000		Total	\$1,175,000
Includes Inflation of 2.5% per Year					



Five-Year Transportation Capital Improvement Program (CIP):

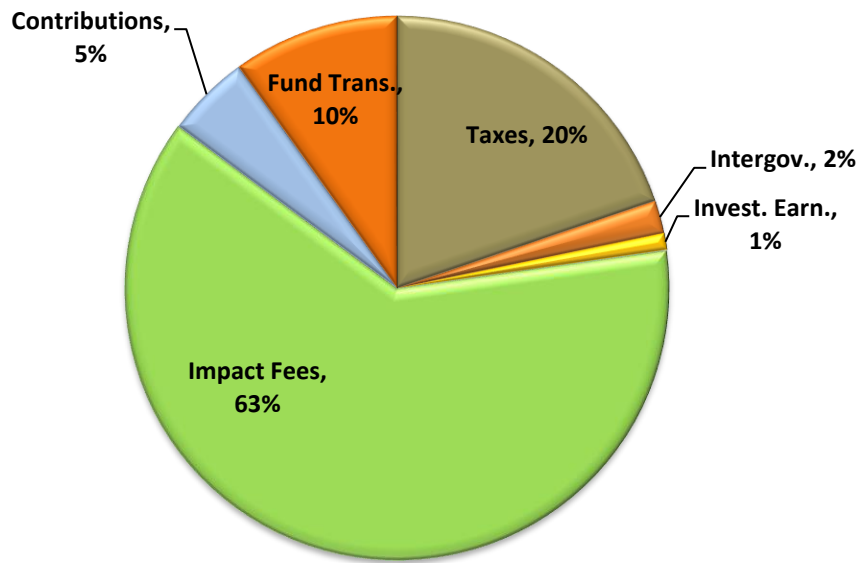
The Transportation Master Plan has a list of projects that are recommended to be implemented by certain timeframes to assist with minimizing congestion as the Town continues to grow toward full build out of existing annexed property. An example of this list of projects is excerpted from the current plan. The full project list can be found within the master plan on the Town's website: www.crgov.com

Project ID No.	Horizon	Roadway	Segment	New Lanes and Functional Classification	Responsibility	Planning Level Cost Estimate
Projects Included in Base Assumptions						
1	By 2022	Crystal Valley Pkwy*	Widen from Idylwood Rd to Frontage Rd	4 lane Major Arterial	Under Construction	NA****
2	By 2022	Fifth St	Complete climbing lane and sidepath along south side of street from Gilbert Street to Founders Pkwy	3 lane Major Arterial	Town CIP	\$6,000,000
3	By 2022	Founders Pkwy**	Widen from Woodlands Blvd to Crowfoot Valley Rd (Note: widening is part of the Founders Pkwy and Crowfoot Valley Rd intersection improvement project)	6 lane Major Arterial	Town CIP/TIP	\$3,500,000
4	By 2022	Lanterns Development	Build development roads	2 lane Collector	Developer Responsibility	NA****
5	By 2022	Plum Creek Pkwy	Widen from Gilbert Street to Ridge Rd	4 lane Major Arterial	Town CIP	\$3,100,000
6	By 2022	Prairie Hawk Dr*	Widen from Meadows Blvd to Melting Snow	4 lane Major Arterial	Developer Responsibility	NA****
7	By 2022	Ridge Rd**	Widen from Plum Creek Pkwy to Fifth St	4 lane Major Arterial	Town CIP	\$4,000,000
8	By 2022	Wolfensberger Rd	Widen from MAC Entrance (west of Coachline) to Prairie Hawk Dr	4 lane Major Arterial	Town CIP	\$7,600,000
9	By 2030	Plum Creek Pkwy	Widen from Wolfensberger Rd to I-25	4 lane Major Arterial	Shared Town and Developer Responsibility	\$6,330,000
10	By 2030	Pine Canyon/ Pioneer Ranch Developments	Build connection from Woodlands Blvd to Front St	4 lane Major Arterial	Developer Responsibility	NA****
11	By 2030	Pine Canyon Development	Build connection from Founders Pkwy to Woodlands Blvd	2 lane Collector	Developer Responsibility	NA****

In addition to the list of projects within the master plan, smaller projects are identified through the course of the year through engineering evaluations. Examples of these types of projects include new traffic signals. All identified projects are prioritized without consideration of available revenue streams (fiscally unconstrained) based their ability to assist with congestion relief. As revenue forecasts are developed as part of the annual budget cycle, projects are selected into the fiscally constrained CIP based on not only their ability to relieve congestion, but also on their geographic location to assist with placing a high density of projects in one area. This assists with over burdening travelers with numerous projects in the same vicinity.

Current Revenue Streams

The new capital projects within the Transportation Master Plan are needed to support growth of the Town. The five-year CIP is the fiscally constrained plan that is part of the Transportation Capital Fund. The revenue streams associated with this fund are summarized in the chart on the next page. These percentages are from 2018 and typically fluctuate based on individual project partnership contributions and desired fund transfers from the Transportation Fund.

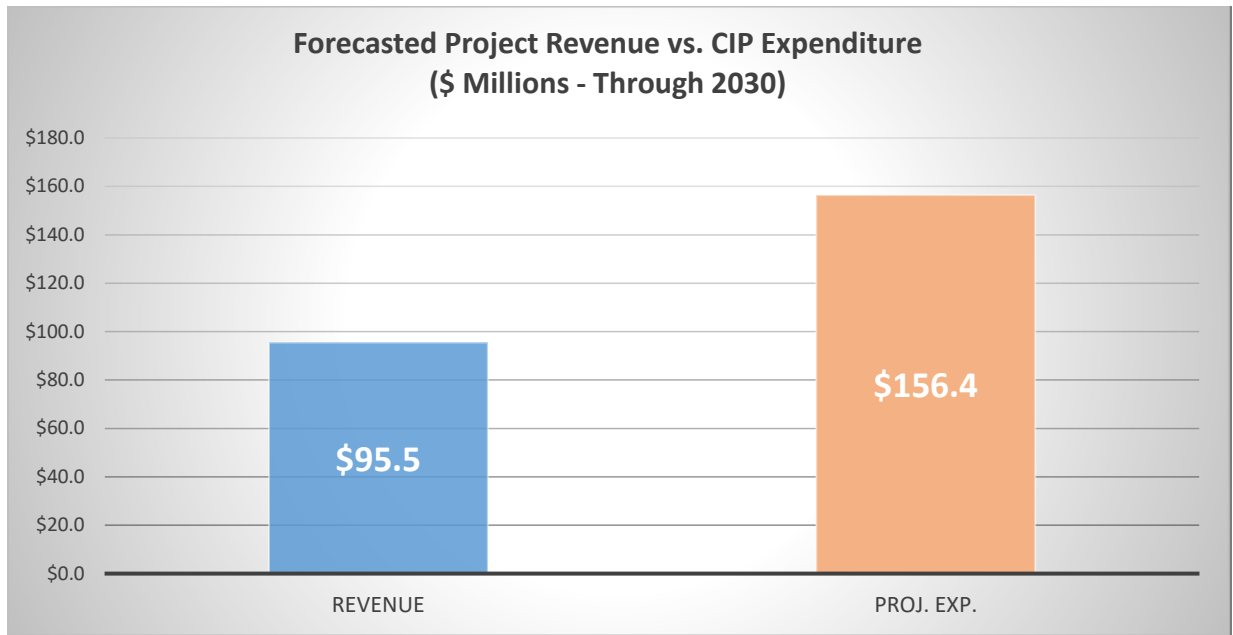


- **Taxes:** These are building use taxes
- **Impact Fees:** These are fees connected to new house and commercial building development. These fees cannot be transferred to another fund (they must be dedicated to new transportation capital projects)
- **Contributions:** These include grants, and specific contributions to projects from developers or other government agencies.

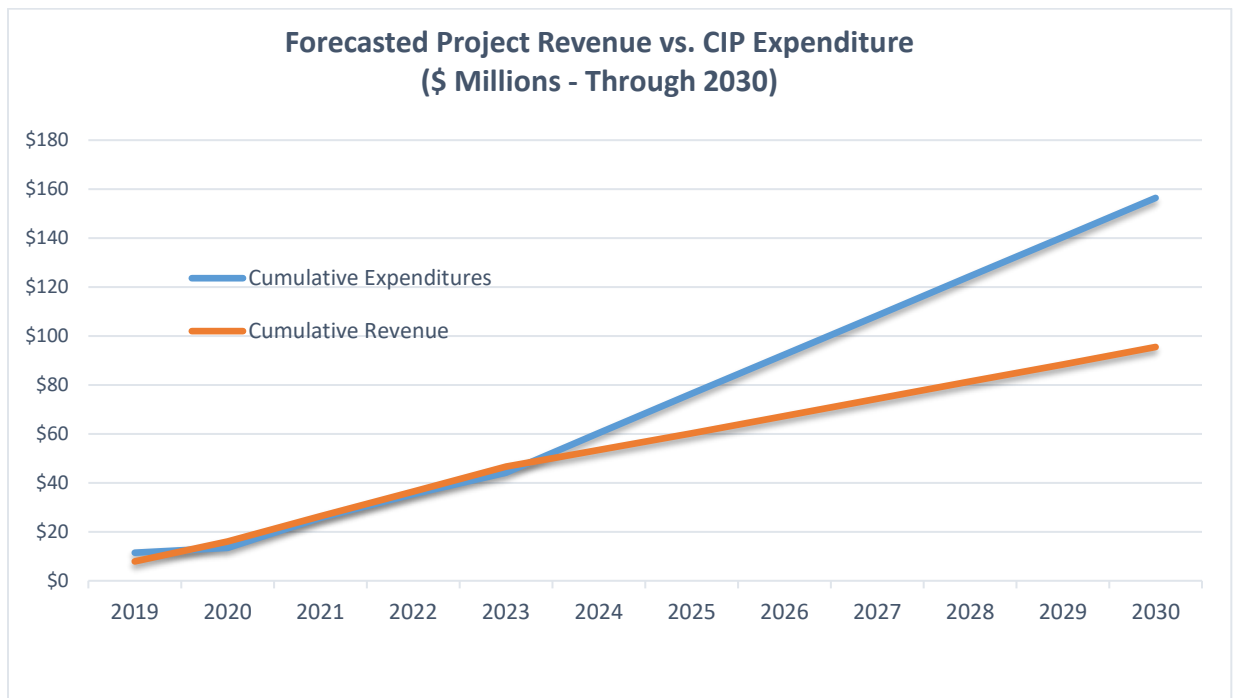
Impact fees alone are not currently enough to fund all projects identified within the Transportation Master Plan. Staff has prepared an estimate of the available revenue for the Transportation Capital Fund (135 Fund) through 2030 for transportation projects using the following assumptions:

1. No changes to our existing levels of service for operations and maintenance are desired, and
2. No changes to our existing debt service, or fund transfers are desired, and
3. Current revenue and growth trends have been extended
4. No changes to existing development impact fees have been made

If these primary assumptions change, then adjustments to the amount of projected funding available for capital projects may be necessary as well as potential changes to project timing. Based on these assumptions, the chart on the following page identifies the existing funding gap.

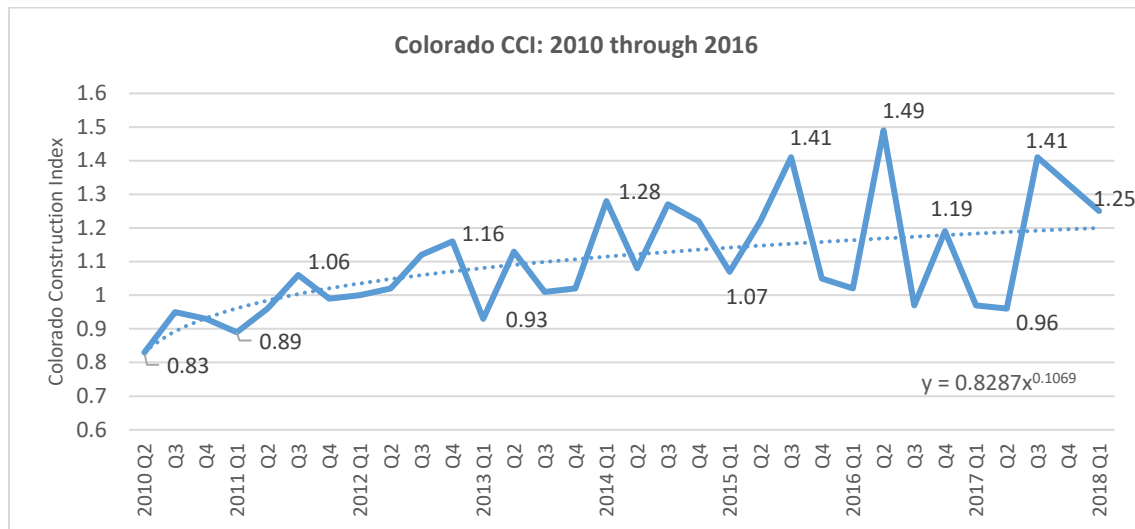


The above information is also shown in the chart below in a linear manner by year. Project expenditures beyond the proposed fiscally constrained five-year CIP have been equally distributed for two reasons: 1) The Town must maintain a balanced budget so expenditures cannot exceed revenues, and 2) Town Council has not provided direction on project priorities for these years. This graph is designed to illustrate the widening trend between forecasted revenues and expenditures.

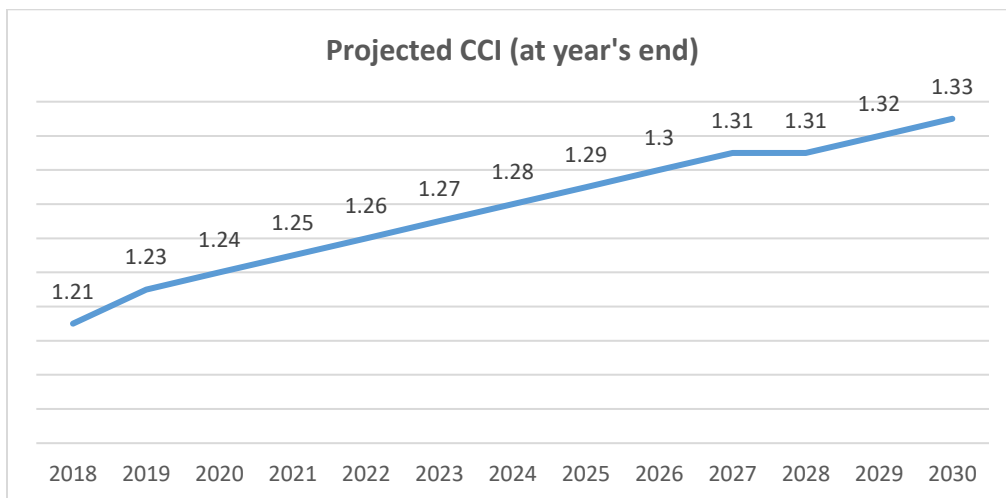


Construction market fluctuations and overall general inflation are considerations that may influence future project selection priorities as well as impacts to Impact Fee

revenue. The following graph shows the recent Colorado Construction Cost Index (CCI), which CDOT utilizes to track cost changes to certain elements associated with highway construction. As can be seen in this graph the fluctuations are volatile with the recent measurements.



Projecting the CCI through 2030 based on the best fitting trend line yields the following outlook.



This trend projects nearly a 1% increase per year. Because the CCI shows such wide variations per quarter, and tracks only certain transportation elements, a 2.5% annual increase to construction costs is recommended to be applied to project expenditures.

Current Fiscally Constrained Plan

The following table on the next page lists the current five-year fiscally constrained CIP that has been approved with the 2019 budget.

Project	2019	2020	2021	2022	2023
PlumCreek/Gilbert Roundabout	\$2,000,000	-	-	-	-
Plum Creek Pkwy Widening (East)	\$2,667,500	-	\$4,320,500	-	-
Ridge Road Widening	-	\$4,540,500	-	-	-
Hwy 86 & 5th Street Roundabout	-	-	-	\$4,000,000	-
5th Street Widening	-	\$537,500	-	\$5,500,000	-
Wolfensberger/RedHawk Roundabout	-	-	-	\$300,000	\$2,325,600
Wolfensberger Widening	-	-	-	\$900,000	\$7,302,000
Plum Creek Widening (West)	-	\$398,000	\$2,757,000	-	-
Crowfoot-Timber Roundabout	\$365,000	-	\$2,660,000	-	-
86 Widening-Ridge to Enderud	-	-	\$576,363	-	\$4,125,625
Wilcox/South Roundabout	\$1,250,000				
Crowfoot Valley Widening				\$653,310	
Prairie Hawk Widening (N. of Wolf.)	-	-	-	\$451,500	\$2,534,500

The highlighted cells in green within the table above indicate preconstruction efforts such as design and any right-of-way acquisition needs.

Crystal Valley Interchange: There has been some recent interest in the potential advancement of the construction of the Crystal Valley Interchange, either as a partial interchange to minimize cost until the full interchange can be built, or the full interchange immediately. The current programming estimates for each are \$55 Million, and \$71 Million respectively. The Town is currently utilizing previously dedicated developer fund contributions toward the acquisition of needed right-of-way. If Town Council desires to advance this project into the fiscally constrained five-year CIP, adjustments to current project timings would be necessary, and/or additional funding partnerships with developers, and Douglas County would be necessary. One advancement option is summarized in (**Attachment A**).

Budget Impact

There is no budget impact with this Study Session item. This item is for discussion and direction purposes.

Staff Recommendation

These are both large subjects, with several variables that will influence both the revenue available for future CIP and PMP projects, and the net expenditure of these projects to the Town. Staff believes however that a significant fiscal constraint exists within the next 12 years that limits the ability to construct projects that will assist with addressing the growing congestion concern. Raising the existing Transportation Impact Fee together with current practices of seeking funding partnerships and internal transfer of funds is likely the best option for reducing this constraint. It should be noted that while the current practice of transferring funds from the Transportation Fund into projects helps with major growth and congestion relief projects, it does inhibit the ability of the Town to use those funds for other projects such as Downtown pedestrian, overall

mobility, and parking enhancements as well as addressing future transit needs, and further consideration of gateway and interchange beautification projects that have been mentioned as desirable for the community's character. Staff recommends that the current approach to the Transportation CIP and PMP be maintained.

Proposed Motion

There is no proposed motion for this item since it is for discussion and direction purposes.

Attachments

Attachment A: Summary of Potential Advancement of the Crystal Valley Interchange Project (CVI)