



# STRATEGIC PERFORMANCE REPORT

2021 Report

PREPARED BY

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INTERNATIONAL

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## Executive Summary




The Strategic Performance Report (SPR) reflects the performance and progress made towards achieving the goals set forth in the Pennsylvania Turnpike Commission's (PTC) Strategic Plan 2019-2024 for the 2021 Fiscal Year (FY21) for the period from June 1, 2020 through May 31, 2021. The results are presented in a concise summary on the following page to provide an overview of the PTC's performance relative to the reported measures as part of PTC's Strategic Plan.

As noted in the report, the PTC is in the process of reevaluating and redefining performance measures for its goals and objectives based on 2021 departmental business improvement plans. This SPR addresses the draft measures that PTC has established for certain goals; however, other measures are still being developed as part of the reevaluation process.

Throughout the report, trends were categorized for each measure using color-coded arrows. For purposes of this report, a trend is generally a pattern of gradual change of a series of data points moving in the same direction over three similar time periods. Trends were established by comparing current results to past performance, or defined targets, and were designated with a symbol as shown in the icon key below. Depending on the measure, an upward or downward trend could be adverse or favorable. As a result, measures were assigned one of the following trends: favorable upward, favorable downward, adverse upward, adverse downward, or steady.

TREND						
Favorable			Adverse	 	Steady	

The following color-coded rating scale was used to illustrate the PTC's performance in relationship to each measure:

Performance Rating	Performance
Good	
Fair	
Poor	

The pandemic affected each measure in varying degrees and will influence historic trends measured in future years. The extent of the pandemic impact on each measure is assessed as low, medium, or high and is further described as a factor that affects the results for each measure.

Performance Measure	Trend	FY21 Performance	Pandemic Impact	Comments
Fatal Crash Rate	↑		High	The FY21 fatal crash rate increased, however the 3-Yr average fatal crash rate is below the statewide interstate average rate.
Injury Crash Rate	↑		High	The FY21 injury crash rate increased, however the 3-Yr average injury crash rate is below the statewide interstate average rate.
Reportable Crash Rate	↑		High	The FY21 reportable crash rate increased, however the 3-Yr average reportable crash rate is below the statewide interstate average rate.
Work Zone Crash Rate	↓		Low	The FY21 work zone crash rate is below the 3-Yr average work zone crash rate.
Travel Time Index	→		Medium	TTI results remained steady and are significantly below national averages.
Planning Time Index	→		Medium	PTI results remained steady and are significantly below national averages.
Roadway Clearance Time	↑		Low	RCT is a new measure in FY21. The FY21 average RCT is below the 1-Hr target and is trending upward (adverse).
Incident Clearance Time	↓		Low	The FY21 average ICT is below the 45min target and is trending downward (improving).
Level of Service	↑		High	The FY21 LOS for all segments improved significantly due to pandemic related traffic volumes.
Percentage of Poor Bridges	↓		Low	Trending downward (improving) over the past three years.
Pavement Condition Rating	↓		Low	Slightly declining each year over the last five years but remains above the target.
International Roughness Index	↓		Low	Generally improving trend for the last five years.
Percentage of Operating Budget Growth	↓		High	Trending favorably and within the target.
Variance Between Operating Budget and Actual Expenses	→		Medium	Trending favorably and within the target.
Variance Between Capital Plan and Actual Spending	→		High	Performance is an anomaly caused by a pandemic-related budget reduction and the advancement of major projects at a pace greater than forecasted. FY21 capital spending remained at the same level as the prior fiscal year.





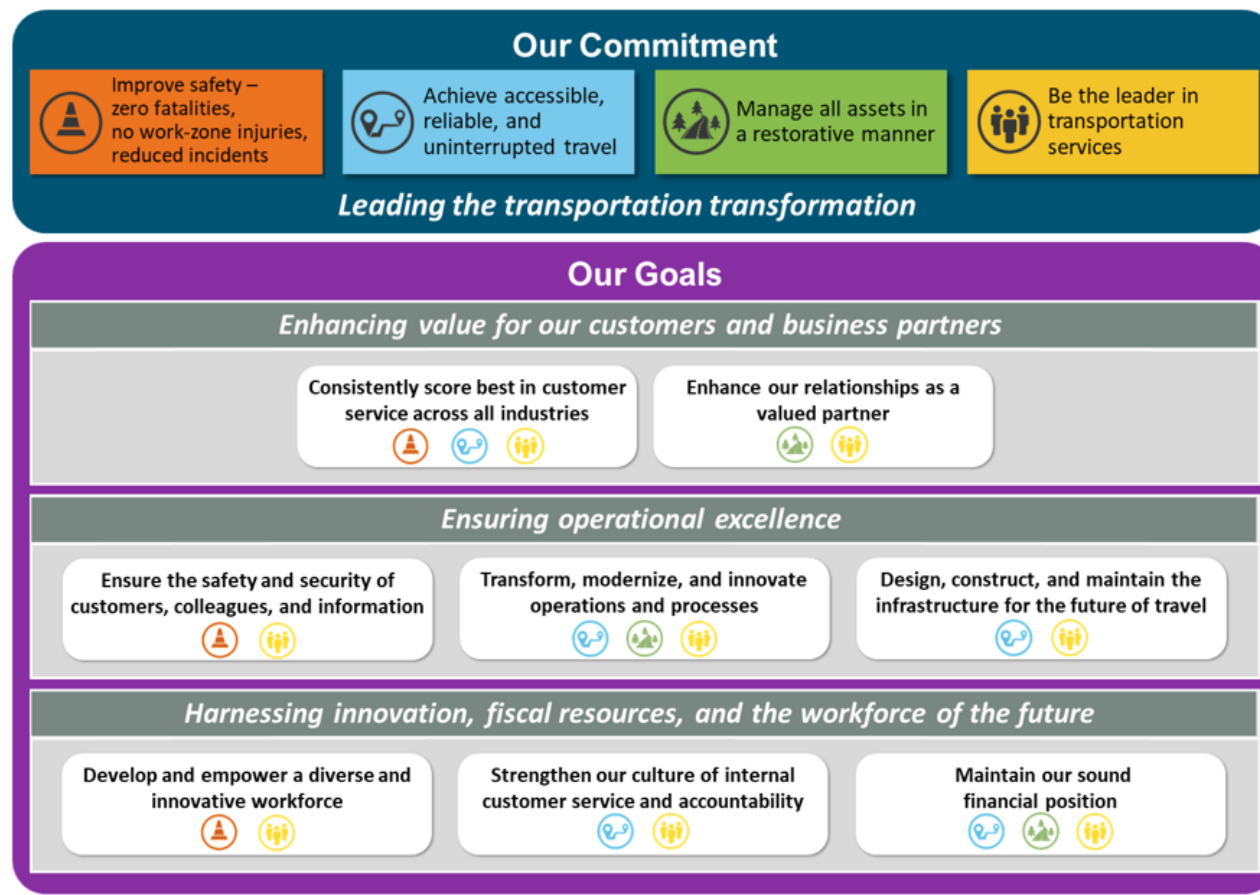
# **PERFORMANCE MEASURES**

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## Strategic Plan 2019-2024

The PTC's Strategic Plan is a five-year plan covering the years 2019 through 2024. The Strategic Performance Report reflects the performance and progress made towards achieving the goals set forth in the Strategic Plan for the period from June 1, 2020 through May 31, 2021. As noted on the following page, the PTC is in the process of reevaluating and redefining all performance measures for its goals and objectives based on 2021 departmental business improvement plans. This Strategic Performance Report (SPR) addresses the draft measures that PTC established for certain goals; however, other measures are still being developed as part of the reevaluation process.

### Strategic Plan Summary





## Strategic Plan Goals, Objectives, and Performance Measures

Goal	Objective	Performance Measures (see note)	
Consistently provide the best customer service across all industries	<ul style="list-style-type: none"> <li>Gain a thorough understanding of our customer's and their satisfaction level to capitalize on new opportunities and add customer value.</li> </ul>		
Enhance our relations as a valued partner	<ul style="list-style-type: none"> <li>Efficiently deliver key initiatives.</li> <li>Meet Diverse Business commitments.</li> <li>Implement collaborative solutions.</li> </ul>		
Ensure the safety and security of customers, colleagues, and information	<ul style="list-style-type: none"> <li>Improve Safety Performance Factors.</li> <li>Mitigate security risks.</li> </ul>	Fatal Crashes Major Crashes	Reportable Crashes Work Zone Crashes
Transform, modernize and innovate operations and processes	<ul style="list-style-type: none"> <li>Increase mobility and reliability.</li> <li>Improve business efficiencies and drive innovative solutions.</li> </ul>	Travel Time Index Planning Time Index Level of Service	Incident Clearance Time Roadway Clearance Time
Design, construct, operate, and maintain a sustainable transportation system for the future	<ul style="list-style-type: none"> <li>Deliver the Capital Plan and Annual Work Plan to maintain and improve assets consistent with the Long Range Plan.</li> <li>Integrate restorative practices to protect resources.</li> </ul>	Variance between 10-Year Capital Plan and Actual Spending Percentage of Poor Bridges Pavement Condition Rating International Roughness Index	
Maintain our sound financial position	<ul style="list-style-type: none"> <li>Educate stakeholders, colleagues, and customers on our financial position.</li> <li>Maximize revenue opportunities in support of the mission.</li> <li>Effectively manage debt service.</li> </ul>	Percentage of Operating Budget Growth Variance between Operating Budget and Actual Spending	
Strengthen our culture of internal customer service and accountability	<ul style="list-style-type: none"> <li>Develop and achieve internal customer service standards.</li> <li>Enhance interdepartmental engagement on critical initiatives and activities.</li> <li>Ensure behavior consistent with the established code of conduct.</li> </ul>		
Develop and empower an inclusive and innovative workforce	<ul style="list-style-type: none"> <li>Recruit and retain a workforce with diverse demographics and professional perspectives.</li> <li>Foster an environment of innovation.</li> </ul>		

Note: Measures included in this report are those that have been determined to date. Other measures are to be determined later based on the reevaluation of the Strategic Plan goals, objectives and measures.

## Fatal Crash Rate, Injury Crash Rate, Reportable Crash Rate

Data Frequency	Annual		
Trends	Fatal ↑	Injury ↑	Reportable ↑
Performance Outcome	Fatal 	Injury 	Reportable 
Pandemic Impact	Fatal High	Injury High	Reportable High

### Why is this Important?

Safety has consistently been, and continues to be, one of the PTC's top strategic and organizational goals. Reducing crash rates along the PTC roadways improves both the safety, and reliability of the transportation system.

### Performance Target:

To reduce the total number and severity of crashes, to maintain 3-Yr average crash rates 10% below statewide interstate averages (Fatality<0.38; Injury<0.17; Reportable<0.32), and to reduce crash rates on the PTC roadway system when compared to the most recent three-year average. Injury and reportable crash rates are depicted per Million Vehicle-Miles Traveled (MVMT), while fatal crash rates are depicted per 100 MVMT.

### How are we doing?

In FY21, the PTC exhibited a lower fatal and injury crash rate when compared to similar roadways throughout Pennsylvania. Reportable crash rates in FY21 were higher than similar roadways throughout Pennsylvania. All three measures observed an increase in the crash rates when compared to the three-year average, indicating the PTC is trending negatively.

### How do we measure it?

The crash analysis is based on a comparison of the average (FY19 through FY21) crash rates for the PTC roadway system versus similar roadways classified as divided, FAC (Full Access Control) obtained from the PennDOT Center for Highway Safety's Homogenous Report for State Road Crashes in Years 2016 to 2020.

### What factors affect results?

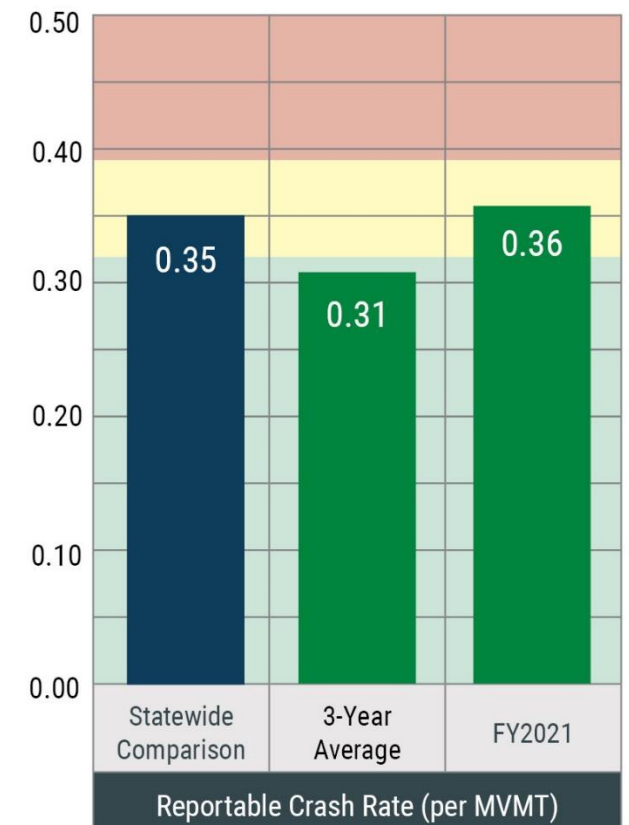
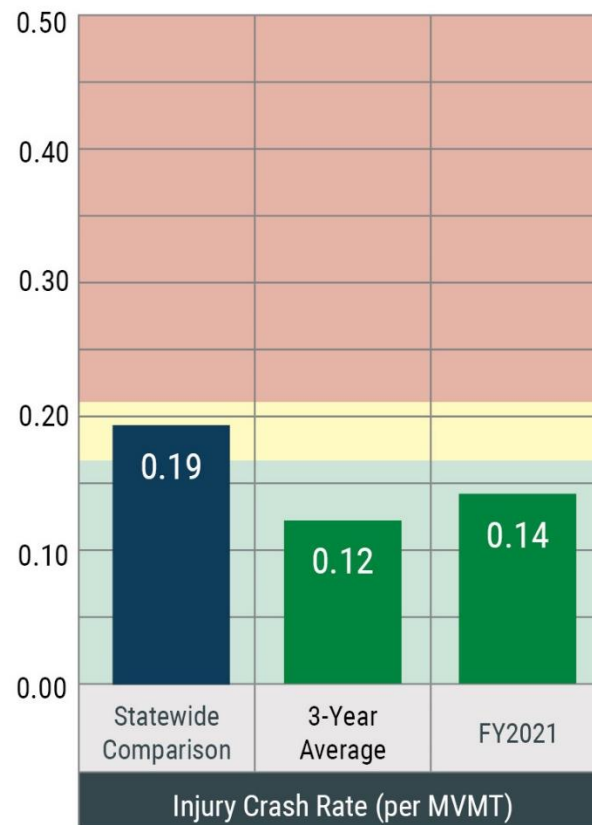
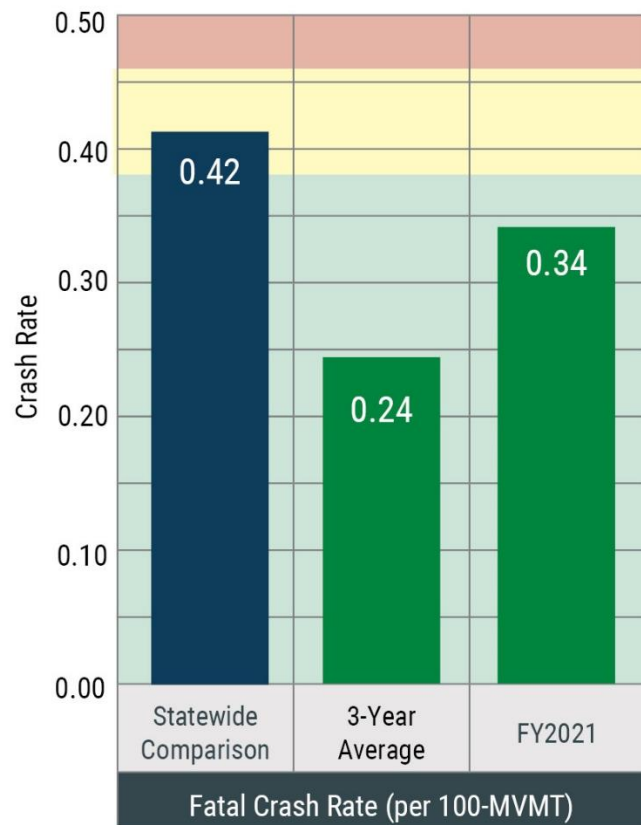
Crashes may be influenced by human, roadway/environmental, vehicle factors, or a combination of these. The pandemic impact for this measure was considered high due to the significant reduction of vehicle miles traveled on the PTC in FY21. Conversely, the number of fatal, injury and reportable crashes remained consistent with FY20, which subsequently increased the crash rates for all categories.

### What are we doing and/or what can we do to improve?

It is unlikely the conditions of FY21 will be repeated, as traffic is anticipated to gradually return to pre-pandemic levels over the next few years. It is noteworthy that crash numbers did not decrease proportionately with traffic volumes in FY21. With the return of traffic on the PTC roadway, it is anticipated that crash rates will adjust accordingly back to typical levels prior to the pandemic. Additionally, through the Systemwide Crash Segment Evaluation, the Incident Management Committee, and the newly formed Traffic Operations Subcommittee, the Traffic Engineering and Operations (TE&O) Department, with support from the Engineering and Maintenance Departments, is utilizing new technology to identify potential improvements to policies, guidelines, materials, equipment, and operations to help lower crash rates. Buy-in and support from all levels of leadership has helped to emphasize the importance of safety in the culture throughout the PTC.





### Crash Rate Summary (FY2019 - FY2021)



■ Fell short of performance target
 ■ Met performance target
 ■ Exceeded performance target

## Work Zone Crash Rate

Data Frequency	Annual
Trends	
Performance Outcome	
Pandemic Impact	Low

### Why is this Important?

Reducing crashes within work zones is one of the highest priorities for transportation agencies. It is essential that the workers are protected from drivers and conversely the public is protected while traveling through the work zone.

### Performance Target:

To facilitate improvements in overall work zone safety and to reduce work zone crashes on the PTC roadway system when compared to the most recent three-year average. Crash rates depicted are per one million dollars in capital spending.

### How are we doing?

The PTC FY21 work zone crash rate is below the PTC three-year average (FY19 through FY21).

### How do we measure it?

The analysis of work zone crash rates is based on a comparison of the FY21 work zone crash rate (Crashes per one million dollars in capital spending) for the PTC roadway system versus the three-year average work zone crash rate (FY19 through FY21). The size of the construction program and the amount of roadway exposure is related to the amount of capital dollars spent on the highway program.

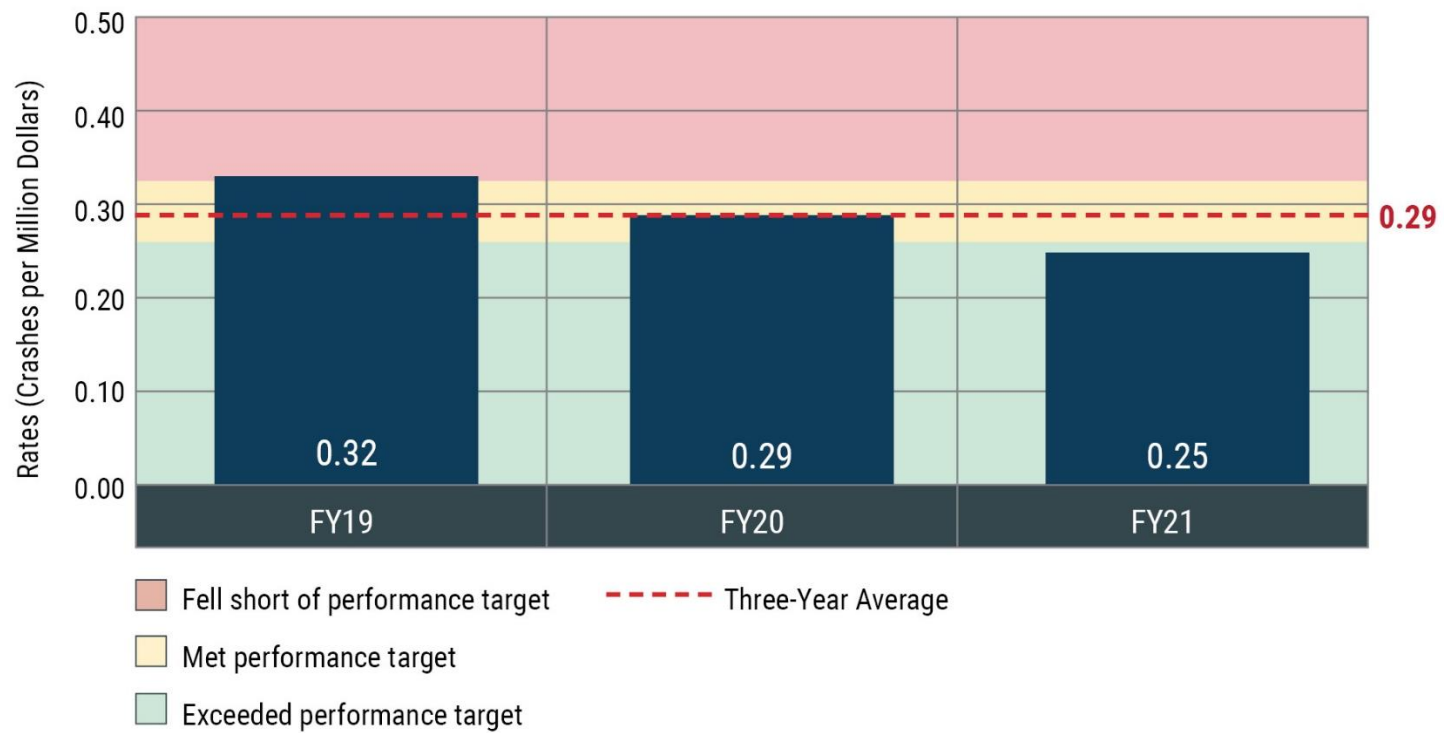
### What factors affect results?

The pandemic impact for this measure was considered low, as the metric's data is based on construction dollars spent rather than vehicle miles traveled. Reduced driver exposure to work zones, better design techniques for long term applications, Automated Work Zone Speed Enforcement (AWZSE) program, constant evaluation and remediation for work zones with high crash rates, standardization of work zones, more efficient work completed, additional advertising to increase awareness, and the effective partnerships with the Pennsylvania State Police (PSP) and Waze® affected the results into a favorable downward trend.

### What are we doing and/or what can we do to improve?



The Work Zone Safety Subcommittee under the Incident Management Committee has facilitated the implementation of new and innovative technologies, equipment, materials, enforcement, and education into the design and construction process to improve customer and employee safety within a work zone. Additionally, the PTC continues to leverage the AWZSE program to improve driver behavior by reducing speeds within work zones.

### Work Zone Crash Rate Summary





## Travel Time Index

Data Frequency	Annual - FY
Trends	
Performance Outcome	
Pandemic Impact	Medium

### Why is this Important?

Travel Time Index (TTI) quantifies the reliability of motorist travel times from one point to another. PTC aims to provide customers with consistent travel times on roadways, especially during morning and afternoon peak periods.

### Performance Target:

The goal of this measure is to maintain a TTI below the national average for all roadway classifications (highly urban, urban, and rural). The 2021 Urban Mobility Report (published by Texas A&M Transportation Institute with cooperation from INRIX) provides 2020 national TTI benchmarks of 1.13, 1.09 and 1.07 respectively for highly urban, urban, and rural areas.

### How are we doing?

The FY21 TTI results are significantly below 2020 national averages for all roadway classifications during both AM and PM peak periods. Compared to the PTC's FY20 data, FY21's overall TTI results (aggregated for the entire system) increased slightly to 0.96 for AM peak hour versus 0.95 in FY20, while the FY21 PM peak hour remained the same compared to FY20 at 0.95. The reduced traffic of the pandemic during FY21 had an impact on TTI across the system - decreasing in highly urbanized areas, but also increasing TTI in other areas. This is likely due to a combination of

factors, but primarily the increased ratio of trucks to total traffic and the ratio of commuter traffic to long-haul/recreational traffic.

### How do we measure it?

TTI is the ratio of the peak-period travel time to the free-flow travel time for a given section of roadway during peak periods. For example, a roadway segment with a TTI of 1.30 during the morning peak period means that a 20-minute trip during normal (free-flow) conditions will take an average of 26 minutes (20 minutes x 1.30 = 26 minutes). INRIX data, via the PTC Mobility Dashboard, was utilized to analyze TTI for comparison.

### What factors affect results?

The pandemic impact for this measure was considered medium as traffic volumes varied from previous fiscal years but did not significantly affect the overall performance of the PTC. Congestion is the main factor affecting travel time reliability. Incidents and work zone/maintenance areas can also prevent customers from traveling at free-flow speeds. Additionally, due to the reduced traffic volumes in FY21, the PTC granted additional allowable working hours for construction projects, subsequently increasing the exposure of traffic to the reduced speed limit within work zones.

### What are we doing and/or what can we do to improve?



On some level, congestion analysis during FY21 will never be relevant again as the conditions are not likely to be repeated. PTC is continuing to use innovative initiatives to respond to safety and congestion issues along its roads. This, along with the continuation of the Total Reconstruction Program, conversion to Open Road Tolling (ORT), the formation of a Traffic Operations Subcommittee and a focus on incident management, will help reduce the traffic impacts. In addition, the utilization of the Advance Traffic Management System (ATMS) in tandem with Intelligent Transportation Systems (ITS), such as Dynamic

Message Signs (DMS), All-Electronic Tolling (E-ZPass and Toll By Plate), and the mobile phone applications such as 511PA (formerly Trip Talk) and Waze, will continue to provide customers with real-time traveler information.

FY21 TTI by PTC District (Mon-Fri)				
District	AM Peak		PM Peak	
	NB/EB	SB/WB	NB/EB	SB/WB
1	0.96	0.97	0.95	0.95
2	0.97	0.97	0.96	0.96
3	0.97	0.96	0.95	0.96
4	0.96	0.96	0.96	0.95
5	0.96	0.95	0.95	0.94
<b>Overall</b>	<b>0.96</b>		<b>0.95</b>	

TAMU 2021 Urban Mobility Report: National Average (2020)	
Classification	TTI
Rural	1.07
Urban	1.09
Highly Urban	1.13
<b>Overall</b>	<b>1.09</b>

## Planning Time Index

Data Frequency	Annual - FY
Trends	
Performance Outcome	
Pandemic Impact	Medium

### Why is this Important?

The Planning Time Index (PTI) measures both typical delay and unexpected delay so that motorists can accurately plan trips during peak periods. The measure shows the variability of travel times based on peak-hour congestion conditions. PTI was evaluated and summarized using PTC's highly urban/urban/rural classification.

### Performance Target:

The goal of this measure is to maintain a PTI below the national average for all roadway classifications (highly urban, urban, and rural). The 2020 PTI measure was not produced as a part of the 2021 Urban Mobility Report (published by Texas A&M Transportation Institute with cooperation from INRIX) due to a slight difference in how the speed data was compiled for the year 2020 and the effect this could have on the percentiles. Accordingly, 2019 national PTI benchmarks of 2.03, 1.68 and 1.27 respectively for highly urban, urban, and rural areas were utilized as performance targets.

### How are we doing?

The FY21 PTI results are significantly below 2019 national averages for all roadway classifications during both AM and PM peak periods. Compared to the PTC's FY20 data, FY21's overall PTI results (aggregated for the entire system) increased slightly to 1.06 for AM peak hour versus 1.05 in FY20, while the FY21 PM peak hour slightly improved to 1.03 versus 1.07 in FY20. The reduced traffic of the pandemic during FY21 had a significant impact on PTI across the system - decreasing in highly urbanized areas, but also increasing PTI in other areas. This is likely due to a combination of factors, but primarily the increase of ratio of trucks to total traffic and the ratio of commuter traffic to long-haul/recreational traffic.

### How do we measure it?

The PTI is defined as the ratio of the 95th percentile travel time during peak periods to the free-flow travel time. The PTI represents the total travel time that should be planned when an adequate buffer time is included. The measure is designed to compare near-worst case travel time to a travel time in light or free-flow traffic. For example, a roadway segment with a PTI of 2.0 during the morning peak period means that a motorist should allow 40-minutes for a trip that would take 20-minutes during free-flow conditions (20 minutes x 2.0 = 40 minutes). INRIX data, via the PTC Mobility Dashboard, was utilized to analyze PTI for comparison.



### What factors affect results?

The pandemic impact for this measure was considered medium as traffic volumes decreased from previous fiscal years but did not significantly affect the overall performance of the PTC. Typical delay, often caused by daily commuters during morning and evening peak periods, and unexpected delay caused by incidents or work zones/maintenance areas are the primary factors affecting PTI. Furthermore, due to the reduced traffic volumes in FY21, the PTC granted additional allowable working hours for construction projects, subsequently increasing the exposure of traffic to the reduced speed limit within work zones.

### What are we doing and/or what can we do to improve?



As with TTI, on some level, congestion analysis during FY21 will never be relevant again as the conditions are not likely to be

repeated. The PTC is continuing to use innovative initiatives to respond to safety and congestion issues along their roads. This, along with the continuation of the Total Reconstruction Program, conversion to ORT, the formation of a Traffic Operations Subcommittee and a focus on incident management will help reduce the traffic impacts. MP 333 to 351 Transportation Improvement Study identifies congestion pricing as a potential solution, which would further improve PTI. In addition, the utilization of ATMS in tandem with dynamic message signs, cashless tolling (E-ZPass and TBP), and the mobile phone applications such as 511PA (formerly Trip Talk) and Waze, will continue to provide customers with real-time traveler information. Performing more maintenance work at night would also help improve PTI by reducing daylight maintenance patterns in high volume areas.

FY21 PTI by PTC District (Mon-Fri)				
District	AM Peak		PM Peak	
	NB/EB	SB/WB	NB/EB	SB/WB
1	1.07	1.09	1.04	1.05
2	1.07	1.06	1.04	1.05
3	1.04	1.03	1.01	1.01
4	1.02	1.03	1.04	1.02
5	1.07	1.06	1.04	1.03
<b>Overall</b>	<b>1.06</b>		<b>1.03</b>	

TAMU 2021 Urban Mobility Report: National Average (2019)	
Classification	PTI
Rural	1.27
Urban	1.68
Highly Urban	2.03
<b>Overall</b>	<b>1.62</b>

## Roadway Clearance Time

Data Frequency	Annual - FY
Trends	
Performance Outcome	
Pandemic Impact	Low

### Why is this Important?

The goal of the Roadway Clearance Time (RCT) measure is to identify the average amount of time it takes for incidents to be cleared from the travel lanes. In other words, RCT is the time between when the incident is detected to the time when all lanes are open to traffic.

### Performance Target:

The target is to maintain the overall average RCT below 60 minutes and to reduce the time year over year.

### How are we doing?

The average FY21 RCT for all incidents is approximately 47 minutes 10 seconds, which is an increase of 4 minutes 29 seconds from FY20. The average RCT has been assigned the “Good” range per PTC performance metrics.

### How do we measure it?

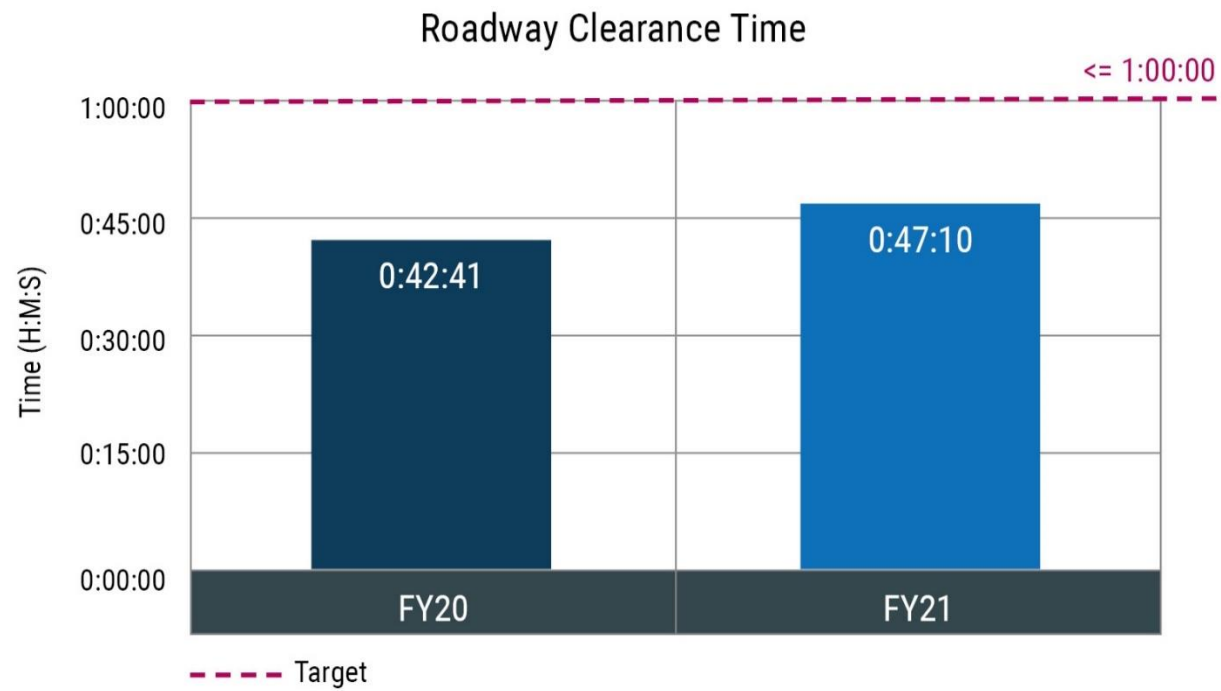
Upon notification of a traffic incident, the Traffic Operations Center (TOC) utilizes its Advanced Traffic Management System (ATMS) to alert customers of any travel lanes closed due to an incident. The RCT is assumed to be the time between when an ATMS event record was created and when all lanes are recorded as open within the ATMS records.

### What factors affect results?

The pandemic impact for this measure was considered low as responders continued to operate in a safe and efficient manner, regardless of PTC policy changes related to limiting the spread of COVID-19. Currently, ATMS is the best way to determine the RCT along its roadway as it actively and accurately records lane closures throughout the system. However, ATMS is considered secondary to the PTC’s CAD system and subsequently relies on TOC staff to update data within the system which can be delayed due to a variety of causes at the TOC such as a high volume of incidents occurring simultaneously, requiring staff attention for communication purposes. Additionally, as with ICT, RCT can be affected by the proportion of incidents with greater severity or complexity within a given year.



### What are we doing and/or what can we do to improve?

The PTC is planning to upgrade its CAD system along with integrating the CAD system with ATMS. This will help to further investigate what affected RCT results year over year. This in combination with work being completed through the Traffic Operations Subcommittee such as dashboard creation and comprehensive efforts to improve traffic operations and traffic incident management will help to improve incident response each year.





## Incident Clearance Time

Data Frequency	Annual - FY
Trends	
Performance Outcome	
Pandemic Impact	Low

### Why is this Important?

The goal of the Incident Clearance Time (ICT) measure is to identify the average amount of time it takes for incidents to be cleared from the scene of the incident. In other words, ICT is the time between when the incident is detected to the time when all responders and all vehicles involved have left the scene.

### Performance Target:

The target is to maintain the overall average ICT below 45 minutes and to reduce the time year over year.

### How are we doing?

The average FY21 ICT for all incidents is approximately 40 minutes 50 seconds, which is a decrease of 2 minutes and 44 seconds from FY20. Due to a slight variation in how ICT is calculated in FY21 compared to previous years, the decrease is more pronounced, but a similar trend would still have been observed through the previous methodologies.

### How do we measure it?

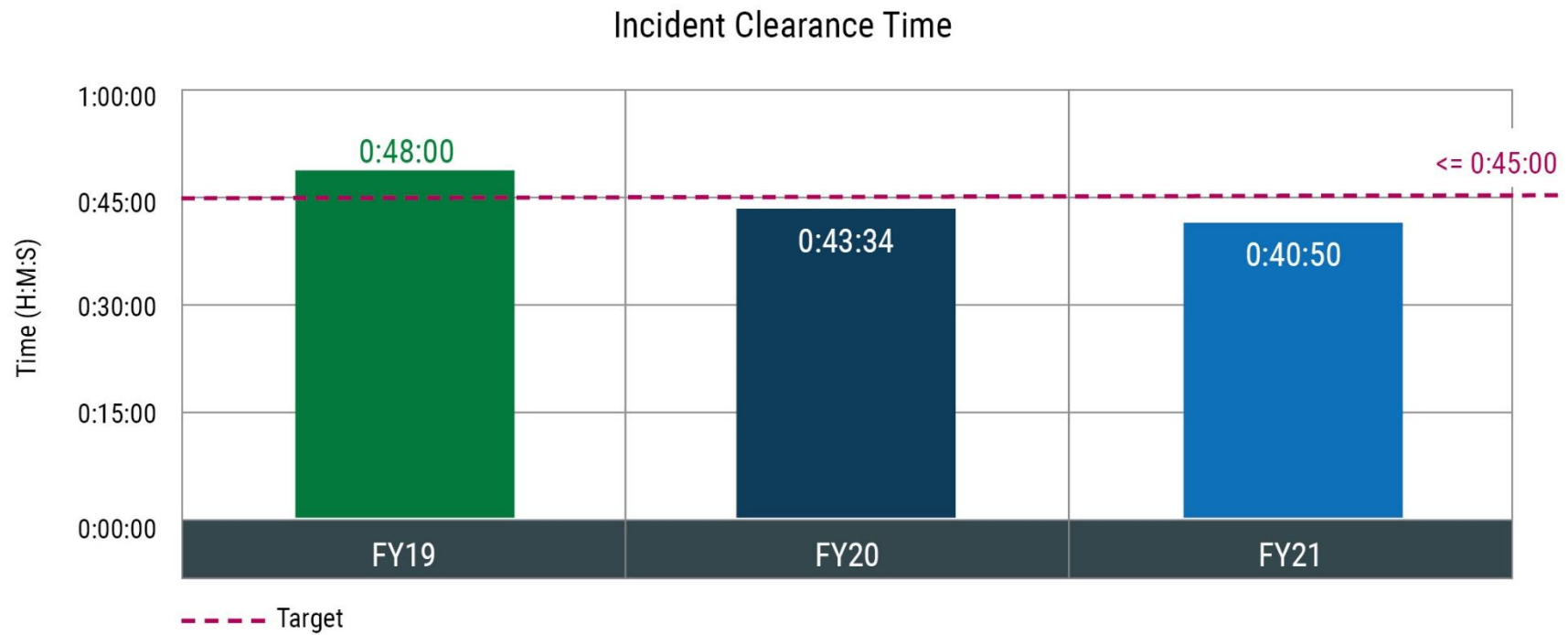
Upon notification of a traffic incident, the Traffic Operations Center (TOC) utilizes its Computer-Aided Dispatch (CAD) system to both document incident details and manage emergency response resources. The ICT is assumed to be the time between when a CAD event record was created and when it was closed. Events are screened for invalid chronological data entries to eliminate skewing of the metric. Additionally, in FY21, incidents lasting over six (6) hours were eliminated from the analysis as the majority of these incidents are left open in the CAD system due to roadway repairs occurring at a later time to avoid peak traffic hours and inclement weather.

### What factors affect results?



The pandemic impact for this measure was considered low as responders continued to operate in a safe and efficient manner, regardless of PTC policy changes related to limiting the spread of COVID-19. The number and subsequent proportion of incidents with greater severity and complexity will affect the overall ICT for all incidents. This is to say that in a year with more fire related incidents or vehicular crashes will likely increase the average ICT, or conversely a year with increased incidents involving the removal of debris on the roadway or towing of disabled vehicles will likely improve the ICT.

### What are we doing and/or what can we do to improve?

Through the Traffic Operations Subcommittee, the PTC has been developing in-depth dashboards to help identify areas to focus improvement efforts to the PTC's incident response. Additionally, the Traffic Operations Subcommittee and the Quick Clearance Pod help facilitate and lead a comprehensive effort in improving traffic operations and traffic incident management to decrease the incident timeline.



## Level of Service

Data Frequency	Annual - FY
Trends	
Performance Outcome	
Pandemic Impact	High

### Why is this Important?

The measure utilizes nationally recognized parameters for traffic flow to track the performance of PTC roadway segments between interchanges. Level of Service (LOS) represents a range of operating conditions and the driver's perception of those conditions.

### Performance Target:

The LOS measure was used to determine what percentage of the roadway system is operating with a "Good" rating (LOS A or B for rural and LOS A, B, or C for urban and highly urban areas), "Fair" rating (LOS C for rural areas and LOS D for urban and highly urban areas), and "Poor" rating (LOS D, E, or F for rural areas and LOS E or F for urban and highly urban areas). The target is to maintain a majority of the roadway system with a "Good" or "Fair" rating and to increase the number of lane miles with "Good" or "Fair" rating year over year.

### How are we doing?

In FY21, there was a significant increase in the percentage of lane-miles operating within the "Good" and "Fair" ratings, subsequently decreasing the percentage of lane-miles operating within the "Poor" rating. The percentage of total lane-miles meeting the goal increased from 53% in FY20 to 76% in FY21.

### How do we measure it?

LOS is calculated based on the volume to capacity (v/c) ratio. Traffic volumes are collected from PTC tolling equipment.

### What factors affect results?

Number of lanes and corresponding traffic volumes determine the level of service for each segment of roadway along the Pennsylvania Turnpike. As traffic volumes increase, the level of service will decline until an increase of capacity, such as widening of a roadway to accommodate additional lanes, is constructed. During FY21, the segment along the Northeast Extension (I-476) from Milepost 31 to Milepost 38 was expanded from two lanes to three lanes in each direction. In total, the systemwide number of lane-miles increased from 1855 in FY20 to 1868 in FY21.

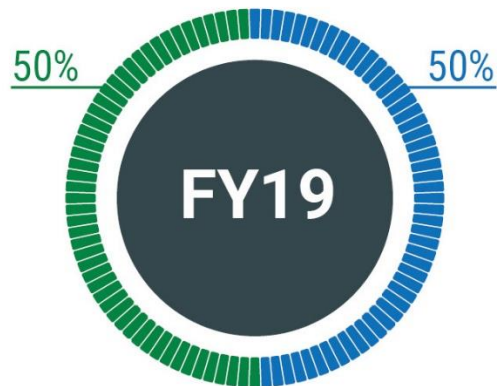
The pandemic impact for this measure in FY21 was considered high due to the reduction of traffic volumes systemwide throughout the fiscal year. The rate at which traffic volumes return to pre-pandemic levels will determine the relevancy of FY21 LOS metrics.

### What are we doing and/or what can we do to improve?

Roadway improvements that enhance LOS include, but are not limited to, adding travel lanes, adding truck climbing lanes, and widening shoulders. However, the primary locations with poor levels of service occur in highly urbanized areas with limited build-out potential due to high costs. Advanced vehicle technology or alternative lane management approaches (hard shoulder running, congestion pricing, etc.) poses the best long-term potential to improve LOS in these areas with limited ability to gain right-of-way.

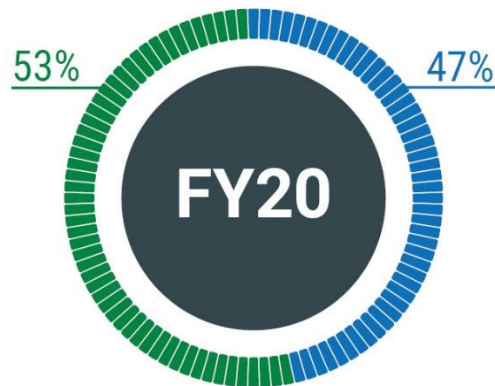


Level of Service – All Segments by Year



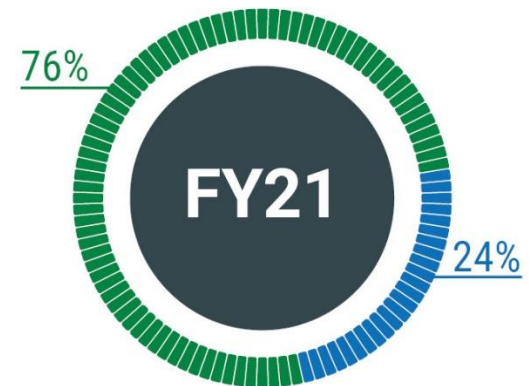
Meets Goal  
919.0

Does Not Meet Goal  
925.7



Meets Goal  
974.5



Does Not Meet Goal  
880.9



Meets Goal  
1415.3

Does Not Meet Goal  
452.8

## Percentage of Poor Bridges

Data Frequency	Annual – FY
Trends	
Performance Outcome	
Pandemic Impact	Low

### Why is this Important?

Bridges are a critical piece of infrastructure that require large investments when major rehabilitation or full replacement projects are required. In addition to ensuring a reliable and safe crossing, regular bridge maintenance is a cost effective and essential component of a long-term asset management plan that prolongs bridge life and minimizes costly repairs.

### Performance Target:

For bridges on the National Highway System (NHS), the PTC's target for Poor bridges is to be less than the Federal Highway Administration (FHWA) average of 4.3% by deck area. For bridges not on the NHS system (Non-NHS), the PTC's target is to be less than the FHWA average of 6.4% by deck area.

### How are we doing?

For FY21, the percentage of Poor bridges by deck area on the PTC system is 1.8% for NHS and 0.8% for Non-NHS. The PTC has been effective in reducing the number of Poor bridges over the past three years. All of the 20 Poor bridges in FY21 are in the Capital Plan. Of the 13 bridges that are funded for design only in the Capital Plan, 7 have poor rating conditions for the deck, 4 for the condition of the superstructures and the remaining 2 have poor substructure condition ratings. This indicates that these bridges

may need some remedial work before construction funds are available.

### How do we measure it?

This measure compares the Poor bridge percentages by deck area for the PTC as of June each year to FHWA averages as of January for that same year. The PTC's bridges are inspected every two years and any bridge with a component (deck, superstructure, or substructure) rating of 4 or less is considered Poor according to the National Bridge Inspection Standards. The bridge inventory data, including the ratings, is kept in the PTC's AASHTOWare Bridge Management software (BrM) system.

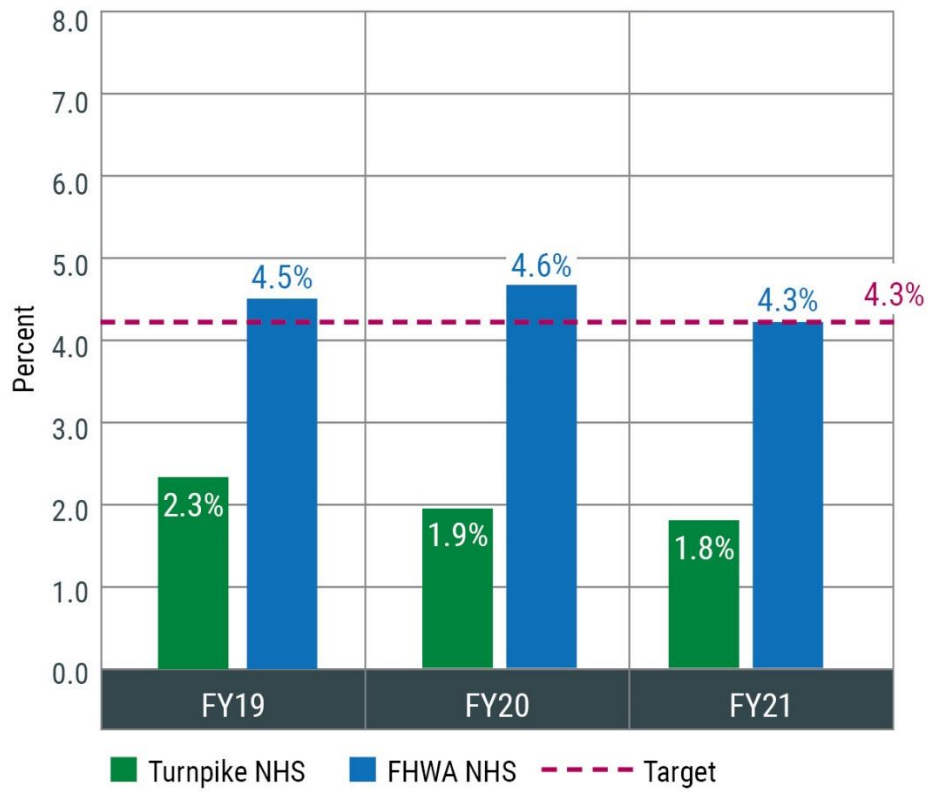
### What factors affect results?

The pandemic impact for this measure was considered low, as funding levels remained relatively consistent over the past couple of years. The main factor that can affect the results is inadequate funding to address the maintenance needs of the bridge deficiencies. Another factor is the age of the bridges. The average age of all bridges is 46.5 years with 55% exceeding 50 years in age.

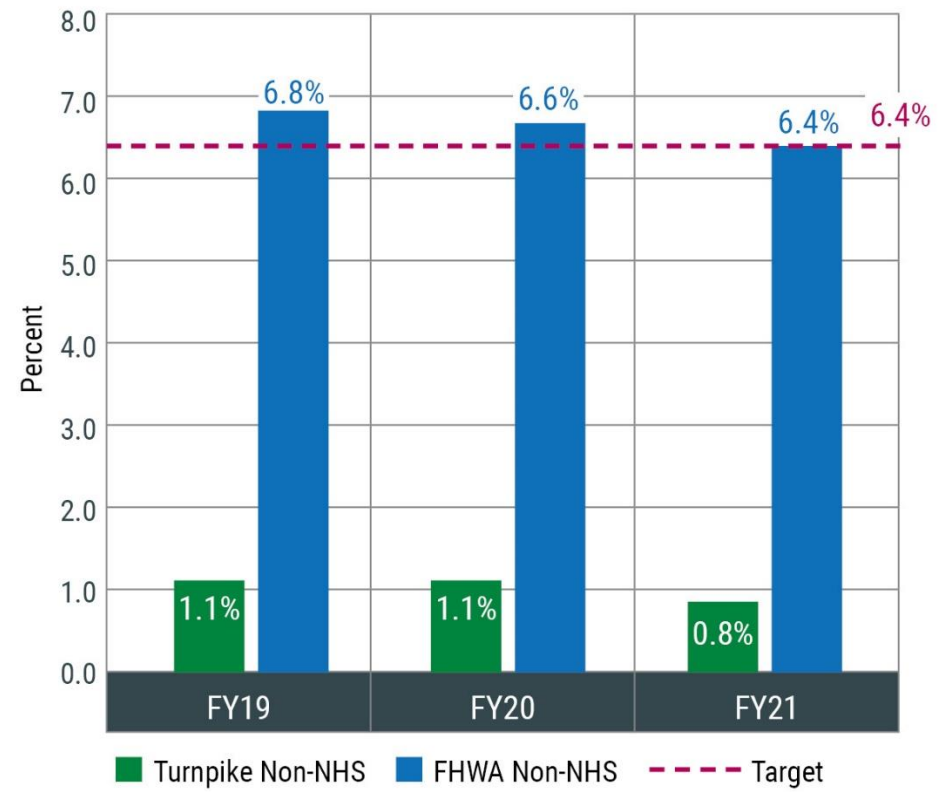
### What are we doing and/or what can we do to improve?

Continue the process of reviewing the bridge condition ratings twice a year and allocate the appropriate funding amounts in the Capital Plan.



Poor Bridges by Deck Area: NHS



Poor Bridges by Deck Area: Non-NHS



## Pavement Condition Rating

Data Frequency	Annual – FY
Trends	
Performance Outcome	
Pandemic Impact	Low

### Why is this Important?

The Pavement Condition Rating (PCR) is the PTC's primary metric to assess the overall pavement system and plays an important role in determining a pavement section's rehabilitation cycle. This rating, supplemented by performance measures for pavement roughness (ride quality), skid resistance, and rutting are necessary for the condition assessment of the roadway and to determine a pavement section's rehabilitation cycle.

### Performance Target:

The target is to maintain an overall average PCR of 80 or better for the entire System with a minimum PCR of 65 for any section. However, these performance targets are currently being re-evaluated by the PTC.

### How are we doing?

The average PCR for the entire System in FY21 was 89.6, which is a decrease from the average PCR of 90.9 in FY20. No section had PCR of 65 or less in the Spring 2021 assessment. Seven sections had PCR values less than 80:

- T123.4 to T128.9 (total section is scheduled for resurfacing in FY22, T126 to T131 is scheduled for Total Reconstruction in FY23)

- T142.0 to T148.1 (T142-T145 scheduled for resurfacing in 2023; T145 to T148.1 scheduled for resurfacing in 2022)
- T179.8 to T186.2 (T179.8 to T184.1 scheduled for resurfacing in FY23; T184.1 to T186.2 scheduled for resurfacing in FY24)
- T312.3 to T319.1 (scheduled for resurfacing in FY22)
- B14.8 to B31.1 (B20 to B26 scheduled for repairs in FY24; B26 to B31 scheduled for repairs in FY26)
- M30.0 to M31.1 (scheduled for repairs in FY26)
- M44.8 to M53.5 (scheduled for repairs in FY24)

For FY21, the measure for PCR continues to meet the performance target, though it has trended slightly downward for the past five years. While the International Roughness Index (IRI) is a measure of the smoothness of the travel pavement, the PCR considers other factors as described below. The slight decrease in PCR for FY21 is due to slightly lower ratings for some of these individual factors.

### How do we measure it?

The PCR for a section of roadway is a weighted value that includes a combination of factors, including the overall ride quality, transverse and longitudinal joint conditions, surface defects, surface deformation, and surface cracking. Visual inspections of the entire Turnpike are typically conducted in the spring and fall of each year, and PCR forms for each section are maintained and updated by the Roadway Engineering Department.



**What factors affect results?**

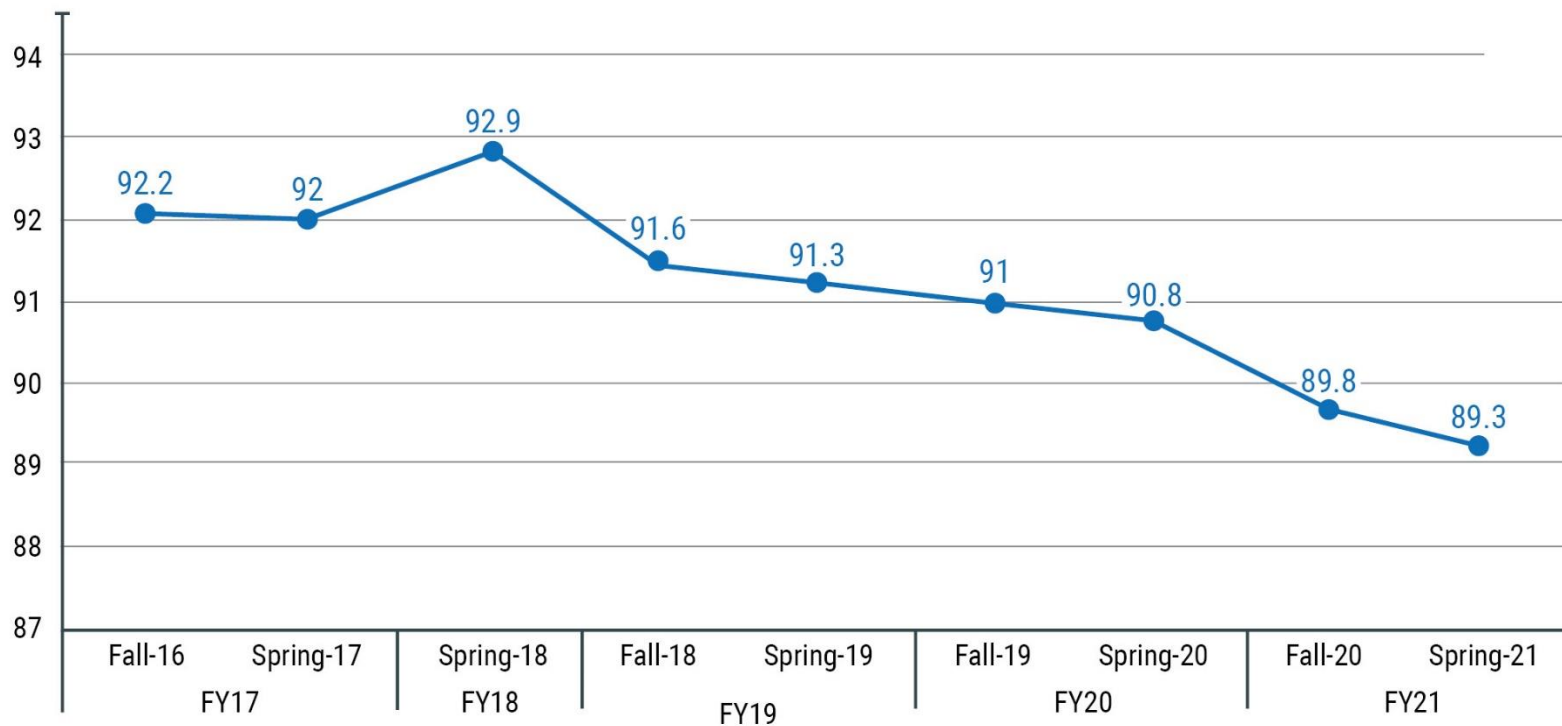
Pavement age and Capital Plan funding levels directly relate to the condition of the pavement. With only 152 of 552 miles of system reconstructed, most of the roadway is over 60 years old, with the original section of the Turnpike over 80 years old. More funding allocated to reconstruction and/or resurfacing projects will result in a higher (better) PCR. With reduced funding in recent years, the PTC had to rely on other preservation strategies which, while extending the life of the pavement, results in a decrease in the PCR. With the proposed increase in the Capital Plan because of the sunseting of Act 44 payments, investments in the roadway, specifically the Total Reconstruction program, should result in an improving PCR.

The pandemic impact for this measure was considered low, as the reduced funding described here is primarily a result of Act 44.



**What are we doing and/or what can we do to improve?**

The PCR has been slightly declining from year to year for the past five years. Continuing to prioritize those segments throughout the System with PCR values approaching or less than 80 will help to improve the overall rating. As the Pavement Asset Management System becomes more relied upon for data and analysis, a quantitative approach toward addressing pavement condition should be implemented.

Overall PCR for Past 5 Fiscal Years



## International Roughness Index

Data Frequency	Annual – FY
Trends	
Performance Outcome	
Pandemic Impact	Low

### Why is this Important?

IRI is measured to assess the smoothness of the pavement for the entire System, which equates to ride quality. When the ride quality of a section of pavement approaches or exceeds the established metric for roughness, the roadway is identified for resurfacing. As a condition of contractual acceptance, a newly placed roadway surface must meet or exceed prescribed IRI ratings by specification. IRI results are required for data provided to the FWHA.

### Performance Target:

The metric established for ride quality is to maintain an overall median IRI less than 95 for the entire System with a maximum IRI of 170 for any section.

### How are we doing?

The median IRI for FY21 was 73, which is worse from the median IRI of 68 in FY20, but still shows an improving trend over the past 5 years. The FY21 IRI data identified two sections of roadway as poor (>170 IRI): H40.9 to H43.4 along the I-95 section of the mainline and M34.6 to M35.6 along the Mon-Fayette Expressway. The section along I-95 will be improved as part of the overall I-95 project, and the section of Mon-Fayette is currently under

construction. Overall, the measure for IRI continues to meet the performance target.

### How do we measure it?

PTC contracts a firm to collect the data annually in the fall. A specialized vehicle measures pavement roughness along the roadway profile for the entire System in inches per mile. The lower the IRI number, the smoother the ride. The national criteria for an interstate highway prescribe a rating of below 95 as “Good”, greater than or equal to 95 to less than or equal to 170 as “Fair”, and above 170 as “Poor”.

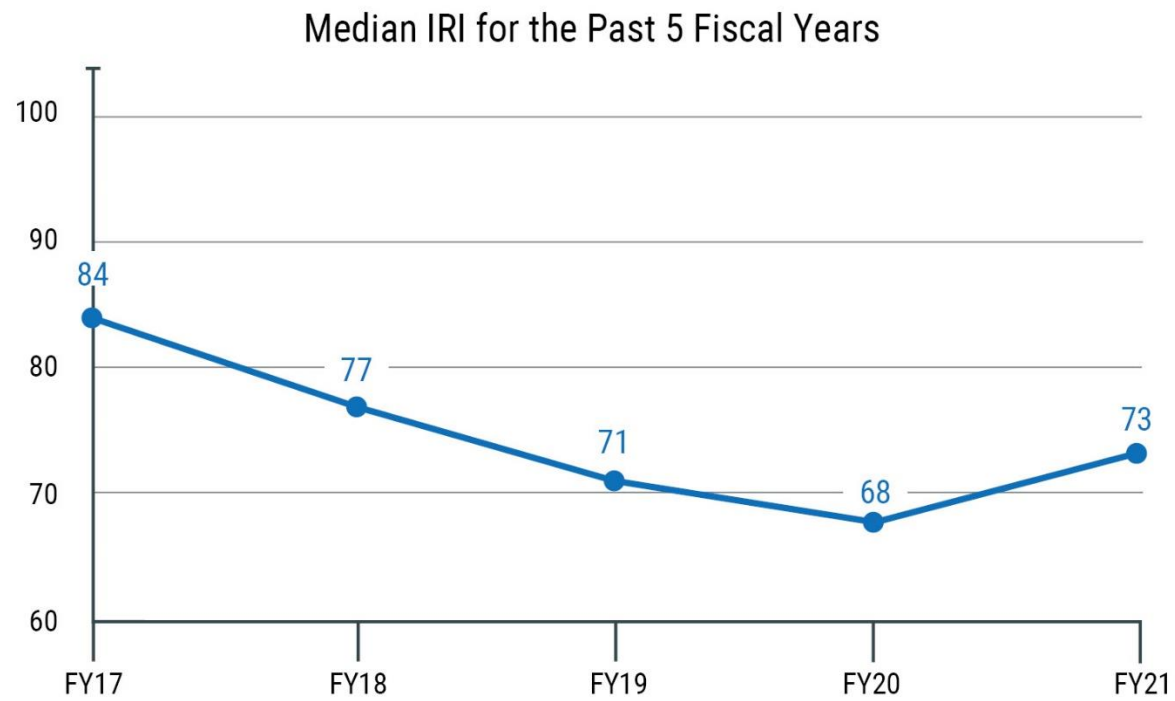
### What factors affect results?

Similar to PCR, pavement age and funding levels on the PTC’s Capital Plan for the Total Reconstruction and the Roadway/Safety categories directly relate to the ride quality of the pavement. More funding allocated to reconstruction and/or resurfacing projects will result in a lower (better) IRI.



The pandemic impact for this measure was considered low, as the reduced funding described here is primarily a result of Act 44.

### What are we doing and/or what can we do to improve?

PTC should continue to use the collected IRI data as a tool for project prioritization, especially for those projects with IRI values at the higher end of the “Fair” rating. Similar to the findings for the PCR, as the Pavement Asset Management System becomes more relied upon for data and analysis, a quantitative approach toward addressing pavement condition should be implemented.



## Percent Growth in the Operating Budget

Data Frequency	Annual - FY
Trends	
Performance Outcome	
Pandemic Impact	High

### Why is this Important?

The Finance Department strives to adhere to the Act 44 Financial Plan by following the cost-containment measures of maintaining a five-year average annual operating budget growth at or below 4.0%.

### Performance Target:

Maintain a five-year annual operating expense growth rate equal to or less than 4.0%.

### How are we doing?

The five-year (FY17 – FY21) annual growth rate was 0.0%, which is 4.0% below the target.

### How do we measure it?

A percentage of the five-year annual growth rate of actual operating expenses from FY17 – FY21 is compared to the target growth rate equal to or less than 4.0%.

### What factors affect results?

The pandemic impact for this measure is considered high because the operating budget was reduced due to the occurrence of layoffs sooner than planned and reduced traffic levels. Operating expenses in FY21 were \$14.3M (3.8%) lower than in the prior fiscal year. Expense categories that were substantially

higher in FY21 than FY20 include materials and supplies (\$6.1M); retiree benefits (\$2.9M); professional fees and services (\$2.6M); collections and unrecoverable fees (\$2.2M); PA State Police (\$2.1M); and computer software (\$2.0M). Categories that were substantially lower in FY21 than FY20 include wages and salaries (\$21.5M); employee benefits (\$7.8M); bank and investment fees (\$1.9M); legal contingency/ tort (\$1.4M); and advertising and publicity (\$1.0M).

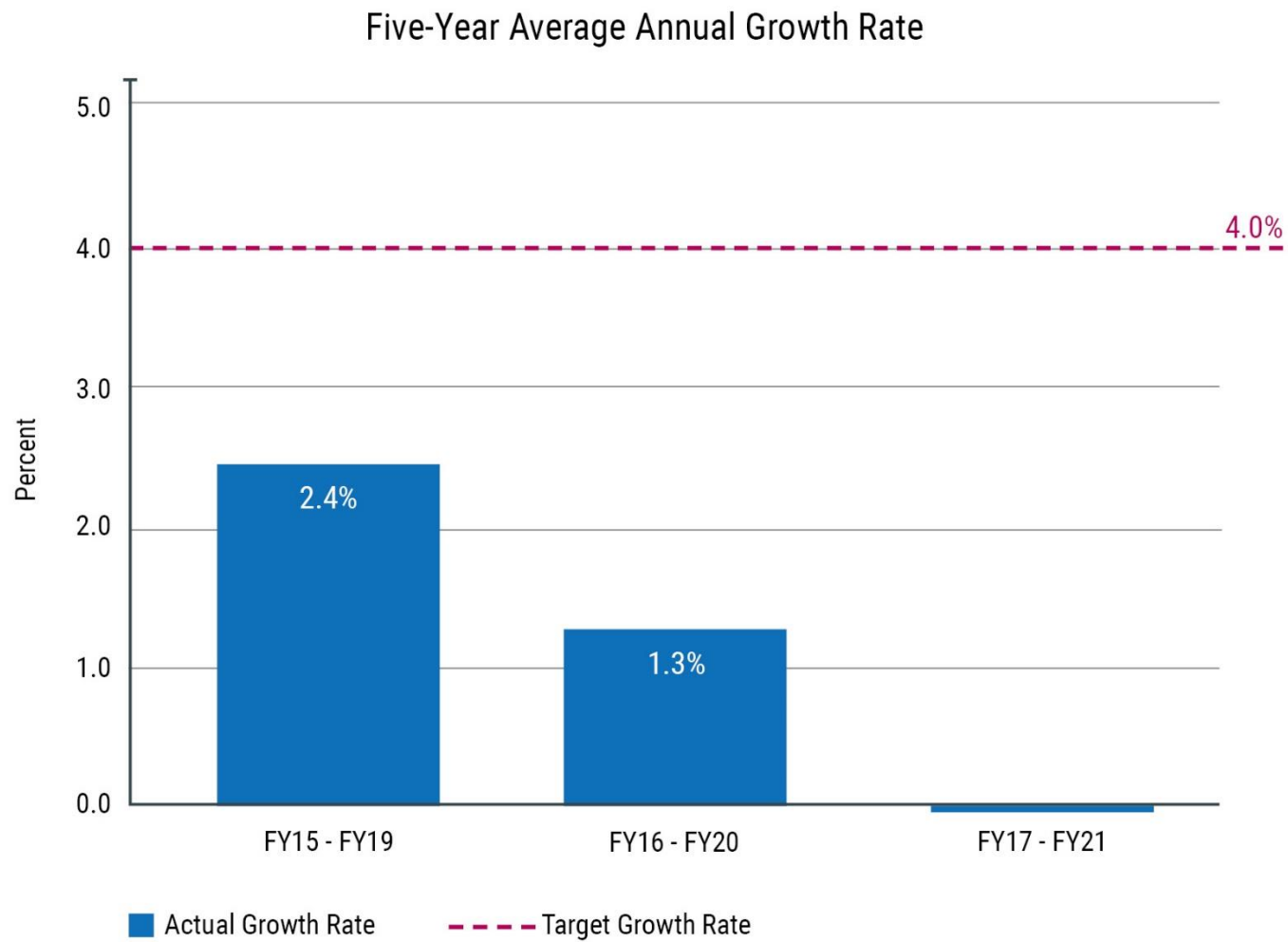
The five-year FY17 – FY21 average growth rate was 0.0%, which is 1.3% lower in comparison to the five-year average for FY16 – FY20.

The 5-year compound average annual growth rate achieved for the past three years is well below the 4% target. Additionally, it has been decreasing, largely due to reduced pension costs.

### What are we doing and/or what can we do to improve?



The PTC actively manages its operating costs and continuously looks for ways to decrease its operating expenses. Salaries, benefits, and advertising costs were significantly reduced in FY21 partially in response to the pandemic and projected reductions in revenue. However, a substantial portion of the operating budget is driven by external uncontrollable cost drivers such as pension expense and PA State Police costs. The PTC strives to hold growth to below the 4% target and to maintain spending within the amounts of the Act 44 plan.

*Note: FY21 financial information is preliminary and unaudited.*





## Overall Variance Between Approved Operating Budget & Actual Expenses

Data Frequency	Annual - FY
Trends	
Performance Outcome	
Pandemic Impact	Medium

### Why is this Important?

The Finance Department strives to adhere to the Act 44 Financial Plan by following the cost containment measures of maintaining a five-year average annual operating expense growth at or below 4.0%.

### Performance Target:

The actual operating expenditures are at or below the adopted operating budget.

### How are we doing?

The operating expenditures for FY21 were \$361.8M, which is \$64.4M (15.1%) less than the adopted budget of \$426.2M.

### How do we measure it?

Actual operating expenses are compared to the adopted operating budget.

### What factors affect results?

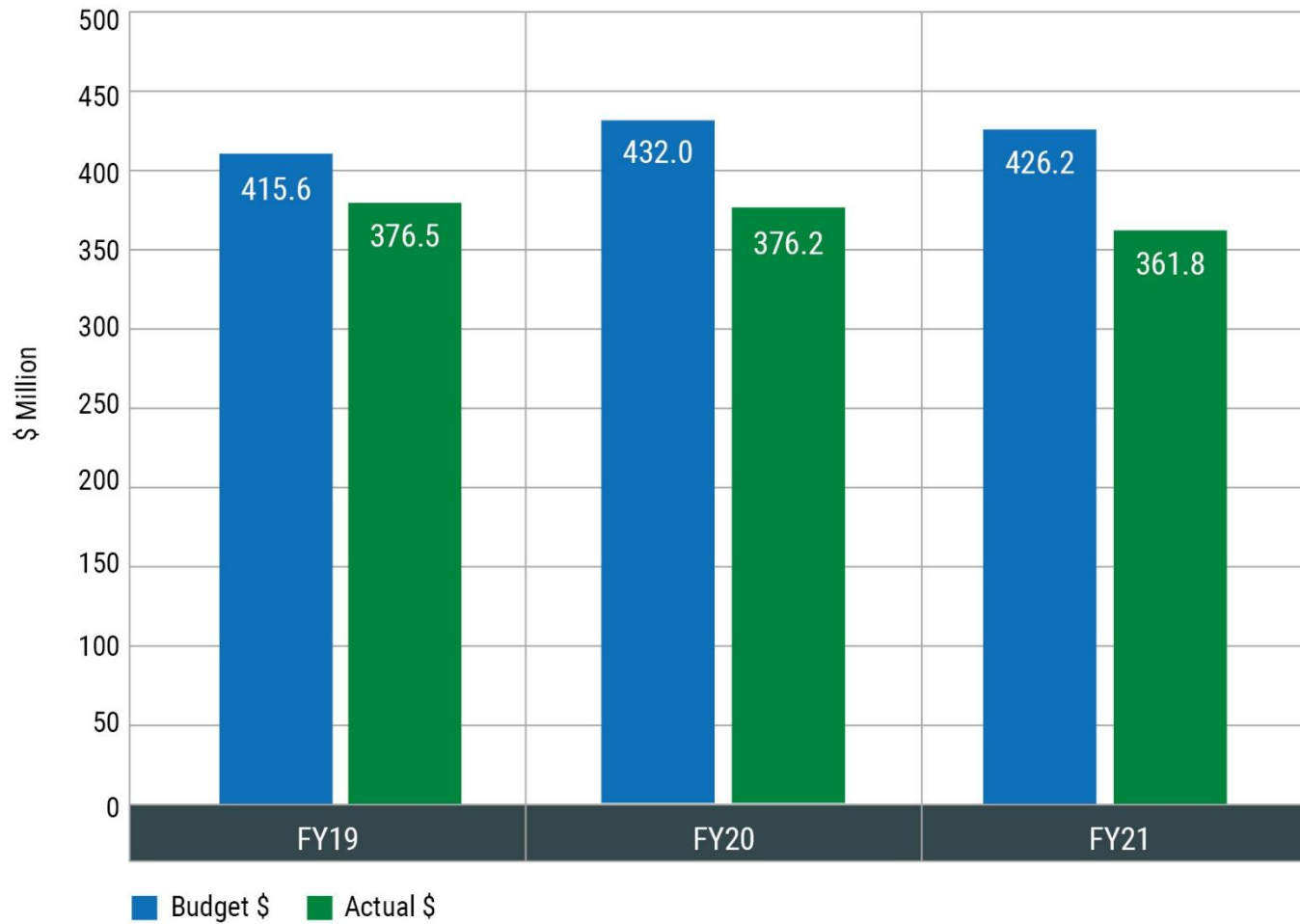
The ability to manage costs within the adopted budget is heavily influenced by the knowledge of future conditions when budgets are developed and the ability to adapt to changing conditions to maintain expenditures within the budget. The pandemic impact is considered medium due to the reduction in the pension expense resulting from employee layoffs and a decrease in the PTC's proportional share in the SERS liability and expense. Other expenses for wages, salaries, and overtime were also moderately lower due to the pandemic. In FY21, expense categories that exceeded the budget by more than \$1.0M include collections (\$2.7M); telephone & communications (\$2.2M) due to increased bandwidth requirements for cashless tolling; and materials and supplies (\$1.7M) due to a more severe winter than anticipated. Expenditures that were under budget include employee benefits (\$44.6M) due to the annual adjustment of pension expense; professional fees (\$6.4M) due to fewer costs for fare collection equipment repairs and Service Center fees; legal contingency/tort (\$6.0M) which is an annual adjustment based on actuarial valuation; bank and investment fees (\$3.6M); PA State Police (\$2.3M) due to less overtime and benefits; fewer miscellaneous expenses (\$2.0M); wages and salaries (\$1.6M) due to funded job vacancies not filled; and fewer advertising expenses than budgeted (\$1.3M).

### What are we doing and/or what can we do to improve?



For the past four years, the PTC has actively managed operating costs to result in expenditures within the adopted budget. The PTC has limited the rate of growth of its Operating Budget by minimizing staff growth, bank and investment fees, and advertising expenses.

**Note:** FY21 financial information is preliminary and unaudited.

### Budget vs. Actuals



## Variance Between Capital Plan & Actual Spending

Data Frequency	Annual - FY
Trends	
Performance Outcome	
Pandemic Impact	High

### Why is this Important?

The PTC strives to maintain an acceptable spending variance for its Capital Plan spending. Capital Plan monies are used to construct or preserve the Turnpike's infrastructure, and bond revenues fund the Capital Plan. There are four programs (Highway, FEMO, Fleet Equipment, and Technology) that comprise the overall 10-Year Capital Plan. Maintaining an acceptable variance provides reliability to the customers and accountability to the investors.

### Performance Target:

The target is to achieve a Capital Plan variance of less than or equal to 7.0%.

### How are we doing?

In response to pandemic-related construction delays and limitations, the PTC reduced the FY21 10-Year Capital Plan projection by 17.4%, from \$566.9M projected in the FY20 plan for FY21, to \$468.5M in the adopted FY21 10-Year Capital Plan. However, the PTC resumed construction activity and accelerated spending on critical technology initiatives and facilities projects, which resulted in a rate of spending that substantially exceeded

projections. As a result, capital expenditures exceeded the FY21 10-Year Capital Plan budget by 15.5%, which is above the 7.0% target variance. ***Despite more than doubling the target variance, Capital Plan spending is on a steady trend when compared to spending in the previous year.*** Actual capital expenditures in FY21 of \$541.3M increased 0.9% over the FY20 actual expenditures of \$536.3M.

### How do we measure it?

The spending variance of the Capital Plan measure is the difference between the value of the overall Capital Plan that is adopted by the PTC at the beginning of the fiscal year and the value of the actual Capital Plan spending at the end of the fiscal year.

### What factors affect results?

Key factors that impact variances between the adopted 10-Year Capital Plan and actual expenditures include the quality of data available when the Plan is developed, the extent to which letting/purchasing schedules are adhered to throughout the year, and changes in industry sectors caused by economic conditions or technology trends.

The impact of unforeseen spending in one of the four programs varies based on the proportion of the program to the total 10-Year Capital Plan. In FY21, total expenditures were comprised of 85.4% Highway, 6.1% Technology, 4.8% FEMO, and 3.7% Fleet Equipment.

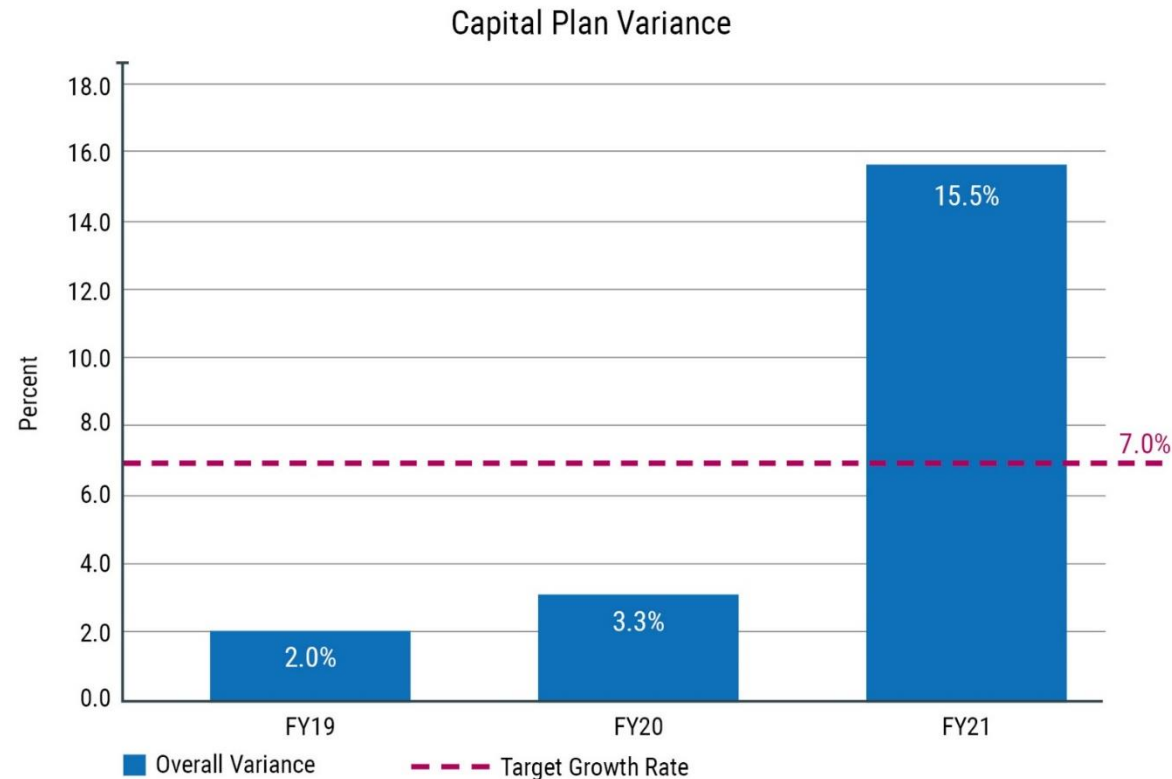
The pandemic impact for this measure is considered high due to uncertainties in the construction industry which impeded the accuracy of the projected Highway capital expenditures for FY21. More specifically, two factors that contributed most significantly to the 15.5% variance were the previously mentioned 17.4% reduction to the plan and the successful return to construction activities at a rate quicker than anticipated amid the pandemic.

The top three Highway projects that were delayed and resulted in significant underspending include the Design-Build Fiber Optic Network Installation and total reconstruction projects at mileposts (MP) A31-A38 and MP T28-T31.

The Technology program experienced 10-Year Capital Plan variances by spending less than projected for Emerging Technologies and Contact Center Modernization and more than projected on the Personal Computer Refresh project. FEMO projects with the greatest variances include spending more than budgeted on the Allegheny Tunnel Lighting Replacement and other Design and Construction projects and spending less than budgeted on Facility Repairs. The Fleet Equipment program was under budget by 1.5%.

### What are we doing and/or what can we do to improve?

Tracking of the overall 10-Year Capital Plan is an ongoing process, reviewed monthly with Program Managers, and re-forecasted quarterly. The Capital Plan dashboard is used for viewing, tracking and decision making. Adjustments to the Capital Plan are made monthly, such as accelerating or delaying the letting of projects. The goal of the monthly reviews is to proactively manage the programs.



## Summary

Overall, the PTC's performance for FY21 remains favorable. Out of 15 total performance measures evaluated, 14 were rated "Good," zero were rated "Fair," and one was rated "Poor." The only measure with the "Poor" rating (Variance Between Capital Plan and Actual Spending) was classified as an anomaly due to pandemic-related budget projections that underestimated the PTC's ability to return to work and advance major projects.

Although performance measure targets were met or exceeded in nearly all categories, adverse trends were noted for the following five measures:

- Fatal Crash Rate
- Injury Crash Rate
- Reportable Crash Rate
- Roadway Clearance Time
- Pavement Condition Rating

Performance measures that are trending steady include:

- Travel Time Index
- Planning Time Index
- Variance Between Operating Budget and Actual Expenses
- Variance Between Capital Plan and Actual Spending

Positive trends were observed in the following measures:

- Work Zone Related Crashes
- Incident Clearance Time
- Level of Service
- Percentage of Poor Bridges
- International Roughness Index
- Percentage of Operating Budget Growth



# Acronyms

The following is a summary of acronyms that are used within the Strategic Performance Report

<b>BrM</b>	Bridge Management
<b>CAD</b>	Computer-Aided Dispatch
<b>DMS</b>	Dynamic Message Signs
<b>FEMO</b>	Facilities and Energy Management Operations
<b>FHWA</b>	Federal Highway Administration
<b>FY</b>	Fiscal Year
<b>ICT</b>	Incident Clearance Time
<b>IRI</b>	International Roughness Index
<b>ITS</b>	Intelligent Transportation Systems
<b>LOS</b>	Level of Service
<b>MVMT</b>	Million Vehicle Miles Traveled
<b>NHS</b>	National Highway System
<b>ORT</b>	Open Road Tolling
<b>PCR</b>	Pavement Condition Rating
<b>PSP</b>	Pennsylvania State Police
<b>PTC</b>	Pennsylvania Turnpike Commission
<b>PTI</b>	Planning Time Index
<b>SPR</b>	Strategic Performance Report
<b>TBP</b>	Toll By Plate
<b>TE&amp;O</b>	Traffic Engineering and Operations
<b>TOC</b>	Traffic Operations Center
<b>TTI</b>	Travel Time Index



# STRATEGIC PERFORMANCE REPORT

Fiscal Year 2021

PREPARED BY: **Michael Baker**  
INTERNATIONAL

NOVEMBER 2021