



# RCIS REFINEMENT AND STRATEGY EFFECTIVENESS

## DRAFT TECHNICAL MEMORANDUM TASK 1



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WSP  
WSP.COM



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# PRODUCTION TEAM

## WSP

Project Manager

Scott Trommer

Project Lead

Bryan Kiel

Project Support

Nina Mantegna

## SUBCONSULTANTS

Project Support

Tina Lund, Urbanomics





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# 1 INTRODUCTION

This technical memorandum was developed to provide an overview of the North Jersey Transportation Planning Authority's (NJTPA) Regional Capital Investment Strategy (RCIS) as presented in Plan 2050, provide an analysis of how well it met its stated purpose, and provide recommendations about where refinements might be made in its investment principles, investment categories, or allocations to create a more cohesive and representative document.

The objective of the project is to obtain greater transparency for the RCIS, with the goal of increasing its accessibility to the community, improving how the impacts of various types of transportation investments are assessed, and refining the project categories, recommended funding allocations, and project prioritization guidelines contained within to support the advancement of the NJTPA's planning priorities and desired performance outcomes. For Task 1, the objectives were to:

- Assess whether the existing investment categories effectively distinguish between different types of projects and programs in a manner that is useful for the NJTPA's planning and project prioritization decisions.
- Explore how different RCIS categories interact with each other and consider principles and category guidelines for possible refinement.
- Consider how or whether spending on projects and programs that do not fall under a current RCIS category should be incorporated into existing or new RCIS project categories.

Ultimately, these high-level recommendations will be the starting point for the literature review and analysis of measures of effectiveness undertaken in Task 2, which will inform the detailed recommendations to be completed in Task 3.

## 2 RCIS OVERVIEW

First developed in 2005 for the NJTPA 2030 Regional Transportation Plan (RTP), the RCIS has acted as the NJTPA’s guideline to meeting the region’s competing demands and opportunities through a balanced, realistic approach to transportation regional spending.<sup>1</sup> Since the formulation of the 2017 RTP, known as Plan 2045, the RCIS puts forth nine investment principles that support the continued development of a regional economy with strong community centers, improved public health through active transportation, increased traveler satisfaction, and higher levels of environmental and economic sustainability.

In order to pair transportation spending with these investment principles, the RCIS created target allocations for twelve categories of capital investment from general purpose transportation funding sources. These allocations, or percentage of spending by category, were updated for Plan 2045 and reflect both the investment principles described in Table 1, while also mirroring past spending patterns to reinforce the NJTPA investment decisions.

**Table 1: NJTPA RCIS Investment Principles**

Help Northern New Jersey Grow Wisely	Expand Public Transit	Manage Incidents and Apply Transportation Technology
Make Travel Safer	Improve Roads but Add Few	Support Walking and Bicycling
Fix it First	Move Freight More Efficiently	Increase Regional Resiliency

**Table 2: RCIS Investment Categories and Allocations**

INVESTMENT CATEGORY	ALLOCATION (TARGET PERCENTAGE)	INVESTMENT CATEGORY	ALLOCATION (TARGET PERCENTAGE)
Road Maintenance and Preservation	17%	Roadway Enhancements	3%
Bridge Maintenance and Preservation	20%	Roadway Expansion	1%
Public Transit Maintenance and Preservation	36 %	Dedicated Freight Facilities	3%
Public transit enhancement	4%	Intelligent Transportation Systems (ITS)	4%
Public transit expansion	4%	Bike and pedestrian facilities	2%
Direct Safety Improvements	4%	Travel Demand Management	2%

The twelve categories, shown in Table 2 with their set allocation targets, reflect the importance of preserving the existing transportation systems (roads, bridges, and public transit facilities) achieving a sustainable state of good repair, while also enhancing and expanding parts of the system that might help improve the regional economy. Still other categories reflect more targeted areas of investment to achieve regional goals such as direct safety

<sup>1</sup> NJTPA. Plan 2050 Appendix C: The Regional Capital Investment Strategy for the NJTPA Region. 2020. <https://www.njtpa.org/NJTPA/media/Documents/Planning/Plans-Guidance/Planning%20for%202050/draft%20final/C-RCIS-Policy-Document.pdf>



improvements, technology improvements and other optimization approaches to improve mobility for travelers and freight, and investment in bike and pedestrian facilities to serve existing active transportation populations and expand its feasibility.

The RCIS sits at the nexus of many planning processes that the NJTPA and its partners conduct. As part of the long-range RTP, the RCIS guides the suite of projects and programs that are part of the Plan 2050 financial plan in its medium-case Plan scenario. In this scenario, which considers reasonable increases in general transportation funding over the 28-year planning horizon, the allocations act as a reasonable target that blends past spending patterns and the types of projects that are needed to meet regional goals. Two other scenarios were run: the first, the aspirational scenario, funding is assumed to be at higher than average levels, leveraging the potential for more projects to be funded. In the limited scenario, funding is assumed to be constrained, forcing tough decisions on which projects may be put forward. In both aspirational and limited funding scenarios, it is shown that RCIS allocations may need to shift, with greater amounts for system enhancement and expansion in the aspirational scenario, and greater amounts of preservation in a limited scenario.

The RCIS's guidance role in pairing regional goals with investment categories also demonstrates its role as a way to measure system performance. Since the category allocations connect to the investment principles mentioned above, the RCIS additionally provides guidance on how to measure the effectiveness of the suite of transportation spending in meeting regional goals. This guidance supplements federal standards on measures of effectiveness (MOEs) and helps create a system performance report that is tailored to the needs and vision of North Jersey, as described in Chapter 4 of Plan 2050.<sup>2</sup>

The RCIS has undergone some changes since its development in 2005 to reflect changing needs of the region and challenges and opportunities that have risen in importance. In this regard, the RCIS has an important connection with other regional planning efforts like Together North Jersey, subregional plans and strategies that reflect more local goals for development, and other regional and state-wide goals that may relate to areas outside of transportation, like multi-hazard resilience. The RCIS ultimately considers these together in its guidance for investment allocation.

This tech memo serves to summarize a quantitative and qualitative evaluation of the existing RCIS investment principles and allocations. The quantitative evaluation reviews the alignment of RCIS allocations with actual spending in the past and with the most recent TIP, highlighting areas of consistent alignment and categories that have not met the targets often. The qualitative evaluation focuses on the alignment of the current investment principles and their relationship to regional, statewide, and subregional planning processes, especially in cases where performance key metrics, goals, and objectives of those plans have changed in recent years. The qualitative analysis relied on the documents listed in Table 3 and notes specific areas where the refinement process should be focused. Finally, this tech memo notes other recommendations for the RCIS refinement process to explore, such as potential changes to categories, investment priorities, and other potential improvements.

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<sup>2</sup> NJTPA. Plan 2050 Chapter 4: Transportation System Performance. 2020.  
[https://www.njtpa.org/NJTPA/media/Documents/Planning/Plans-Guidance/Planning%20for%202050/final%20pdfs/njtpa\\_plan2050\\_final2.pdf](https://www.njtpa.org/NJTPA/media/Documents/Planning/Plans-Guidance/Planning%20for%202050/final%20pdfs/njtpa_plan2050_final2.pdf)

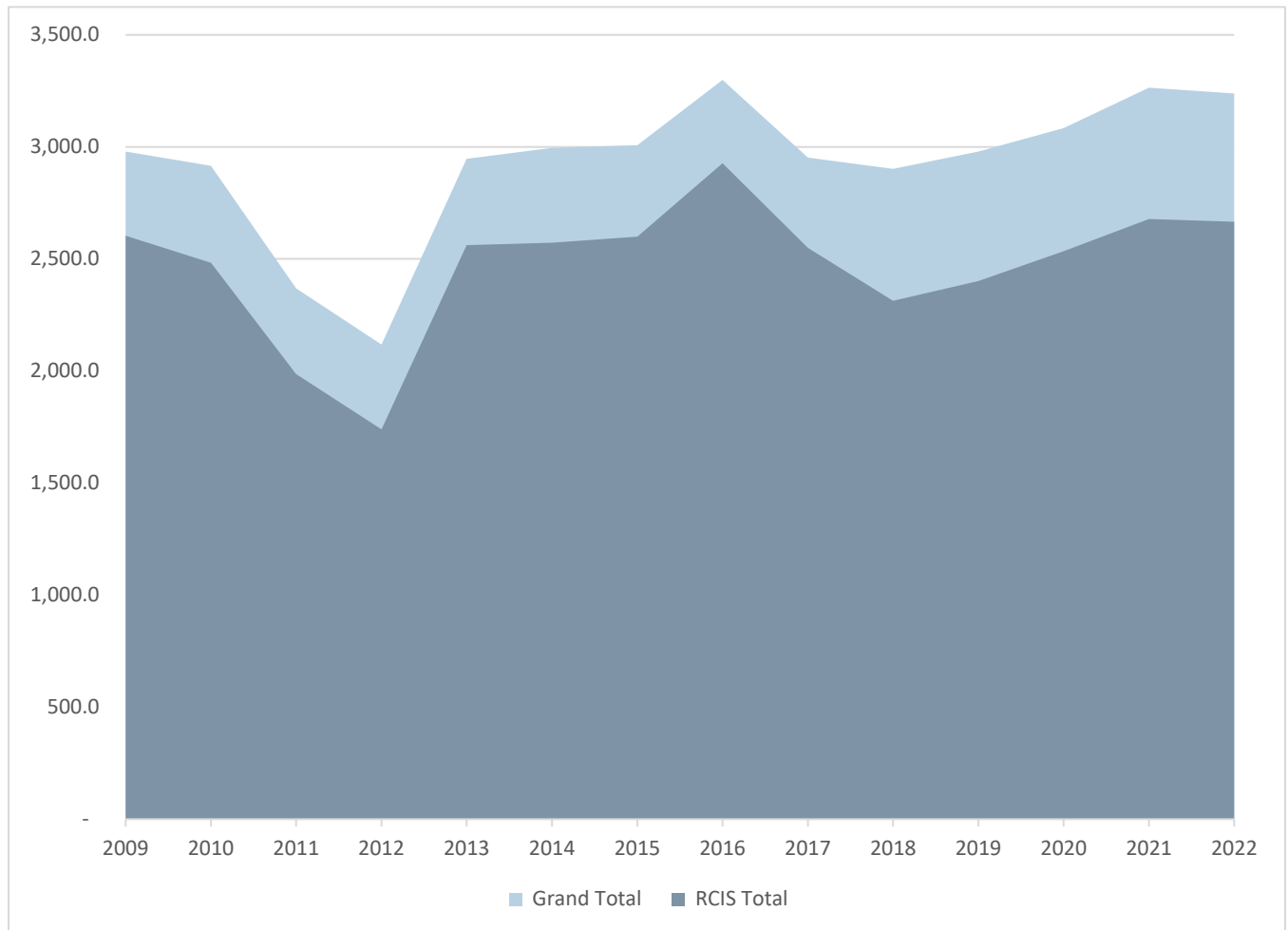
**Table 3: List of Planning Documents Reviewed**

<b>DOCUMENT/PLAN REVIEWED</b>	<b>PURPOSE</b>
2022-2025 TIP	Current four-year documentation of fiscally constrained projects
2024-2027 TIP	Draft future four-year documentation of fiscally constrained projects
Plan 2050	The NJTPA regional transportation plan, setting a regional vision for the transportation system and aligning those goals with transportation investment over 28 years
NJTPA Performance Metrics	Metrics set by the NJTPA to measure the performance of projects and ultimately select the fiscally constrained projects
State Capital Investment Strategy	NJDOT’s investment strategy, focused on roadway-based goals and improvements across the state
NJ TRANSIT Capital Plan	NJ TRANSIT’s recent strategy and fiscal plan focused on public transit preservation, enhancement, and expansion
Oct 2020 NJTPA RCIS Review	The NJTPA “in-house” review of the RCIS-TIP relationship, used as background for the quantitative analysis
NJTPA RCIS-based Scenario Planning (Plan 2050)	Three situation-based financial plans that include or remove projects based on the fiscal outlook of transportation funding
Together North Jersey	Regional vision for sustainable economic development, with strategies for program development and implementation
NJTPA subregional studies	Various subregional studies identified local priorities and strategies to implement long-range planning, in line with RCIS investment principles

### 3 QUANTITATIVE EVALUATION

Figure 1 presents total Authorized TIP and RCIS spending from 2006 to 2022.<sup>3</sup> As shown, TIP spending in the last 17 years peaked in 2009 at \$4.988 billion dollars, the RCIS share of which was \$4.612 billion. The lowest TIP and RCIS expenditures in this period were in 2012 when TIP spending was only \$2.118 billion and RCIS spending was \$1.740 billion. In the last 10 years, TIP spending has averaged \$3.067 billion, the average RCIS amount being \$2.580 billion. As a distinction, the “Grand Total” funding category includes authorized projects related to aviation, economic development, environment, security, transportation enhancements, overhead and other various projects that do not fall in RCIS funding categories.

**Figure 1: Authorized TIP and RCIS Expenditures 2006-2022 (\$millions)**



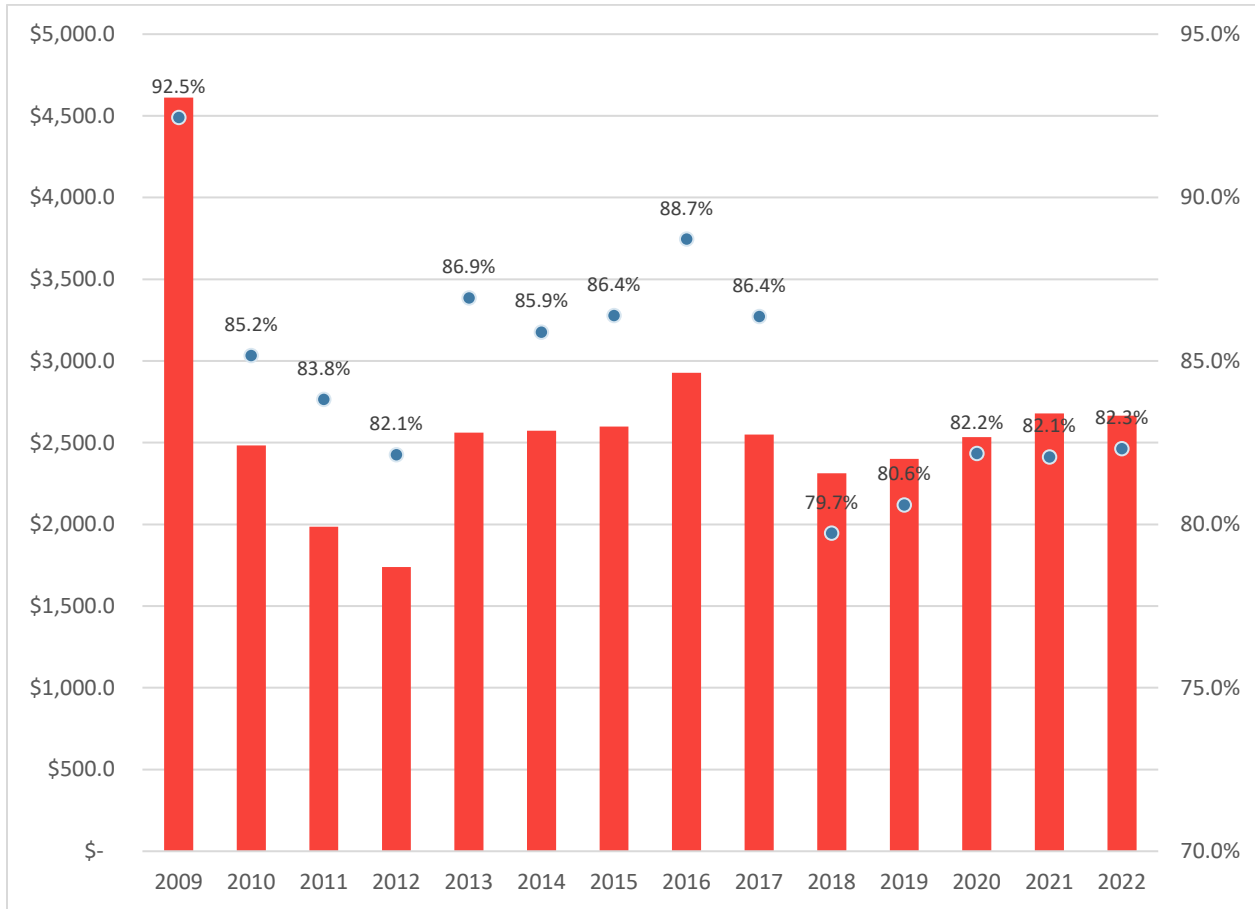
Source: NJTPA Rawdata Rerun June2023.xlsx

The RCIS expenditures and share of TIP has varied over time as shown in Figure 2, which shows the RCIS authorized spending and the RCIS share of the TIP total by year for the past 14 years. As previously noted, 2009 saw the greatest RCIS spending at \$4.612 billion. That was also the peak of the RCIS share of TIP expenditures at 92.5 percent. Between 2010 and 2017, RCIS authorizations ranged from \$1.740 billion (2012) to \$2.927 billion

<sup>3</sup> 2023 Authorized spending was not available as of July 28, 2023.

(2016), averaging \$2.427 billion while the RCIS share of TIP averaged 85.7 percent. After 2017, RCIS expenditures remained at similar levels, averaging \$2.519 billion each year; however, the RCIS share of TIP spending decreased noticeably, averaging only 81.4 percent.

**Figure 2: Authorized RCIS Expenditures and Share of Total Authorized TIP Expenditures, 2009-2022**



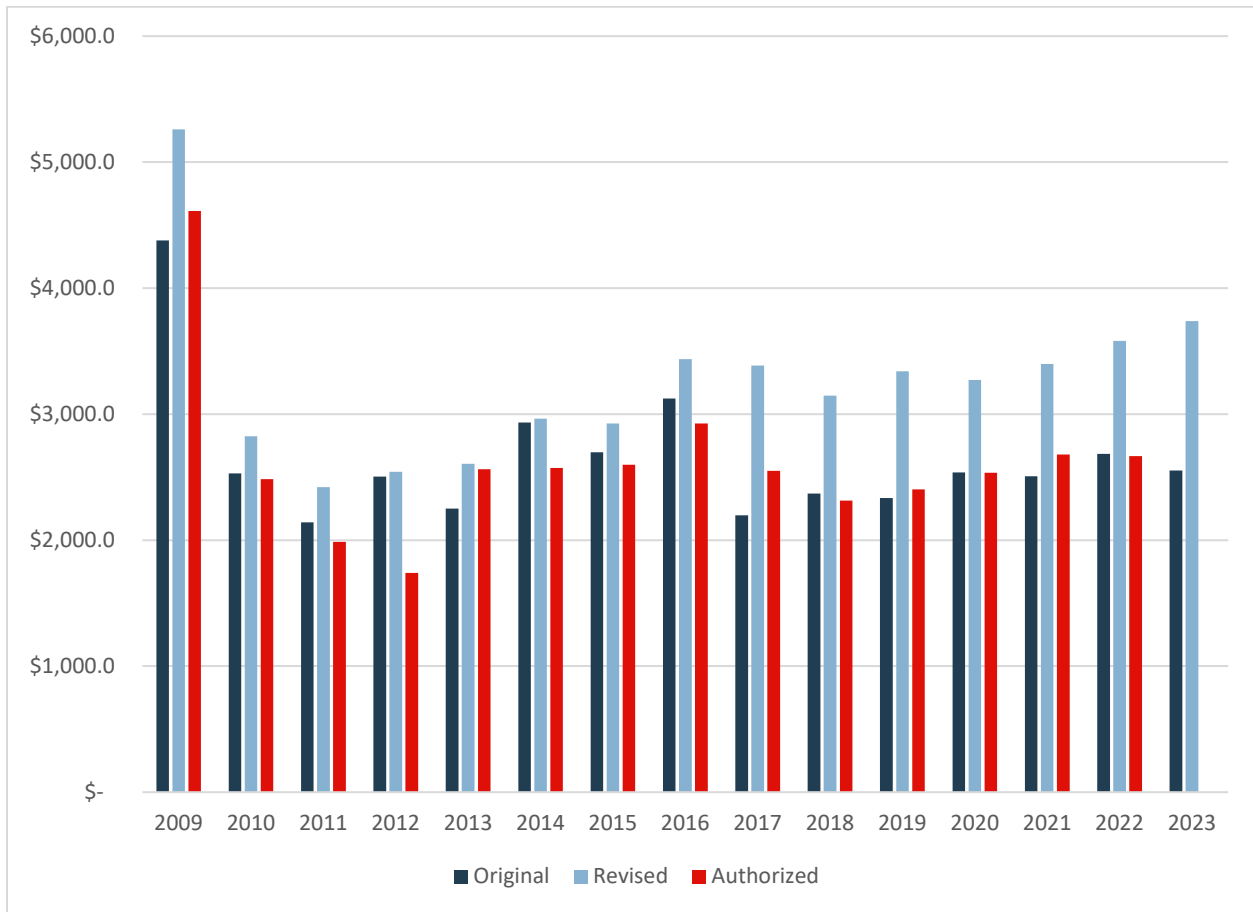
Source: NJTPA Rawdata Rerun June2023.xlsx

The TIP budgeting process has three distinct phases: the original draft (Original), revisions (Revised), and then the final authorized (Authorized) amounts. Figure 3 presents the total Original and Revised amounts for each part of the process by year from 2009 to 2023 and the Authorized amounts for 2009-2022<sup>4</sup>.

As shown, the revised budget is always greater than the original budget put forth as TIP amendments are made throughout the year (sometimes moving funding from other years, other times adding additional funding sources). As seen, the final authorized spending is almost always closer to, and often less than, the Original than the Revised, with the exception of 2013, when the Authorized RCIS was within \$45 million of the Revised, and \$300 million greater than the Original, exclusive of additional Sandy funding. Note that authorization is often delayed, which results in the authorized spending being lower than the original (or revised) budget.

<sup>4</sup> 2023 Authorized amounts were not available as of 2023.

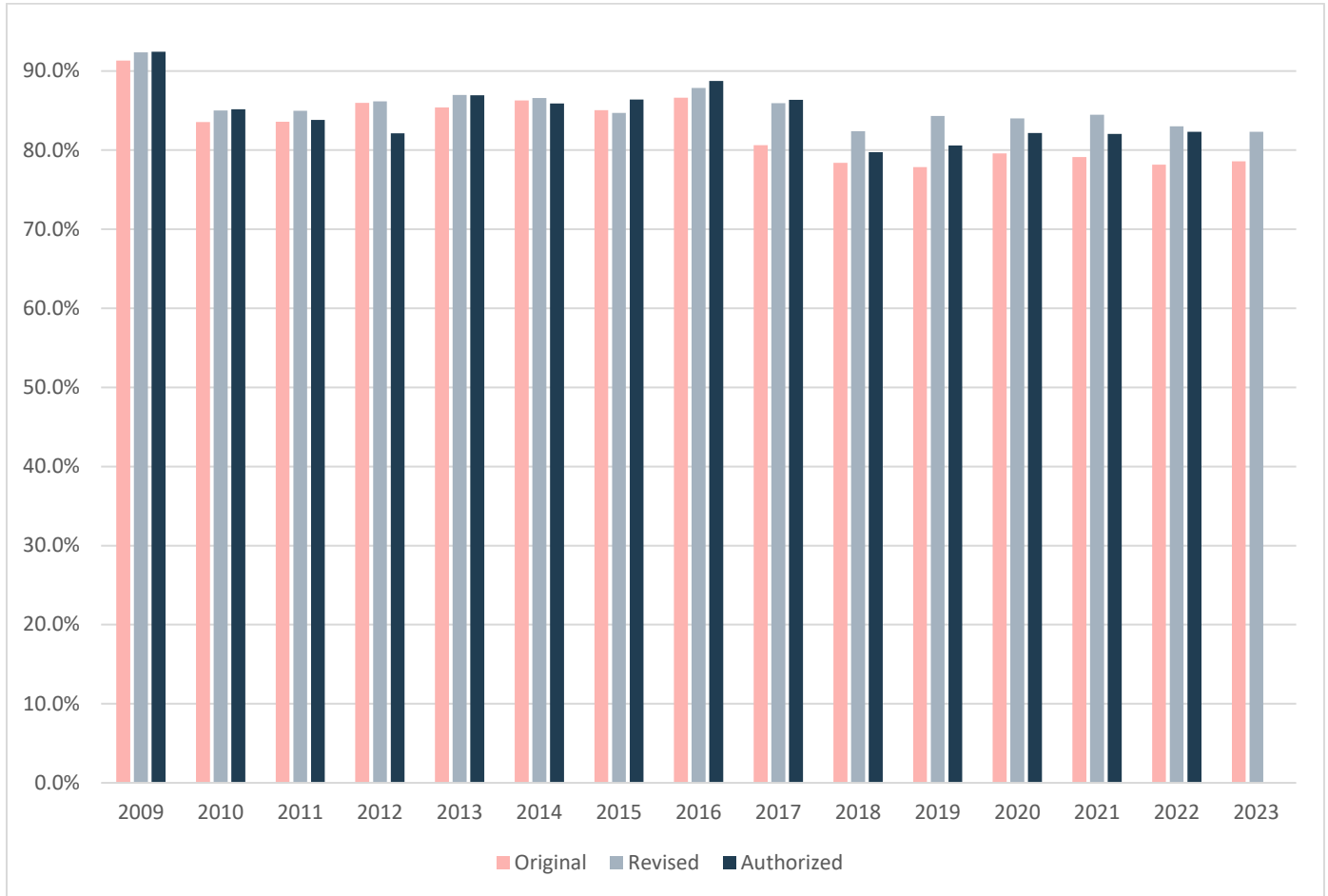
**Figure 3: Original, Revised and Authorized RCIS Expenditures (\$millions)**



Source: NJTPA Rawdata Rerun June2023.xlsx

The fluctuations in funding by amount throughout the process are extensive; Figure 4 presents the variation in RCIS by year and phase as percentages of the corresponding TIP budgets. The Original budgets average 82.7 percent of TIP; Revised averages 85.4 percent.

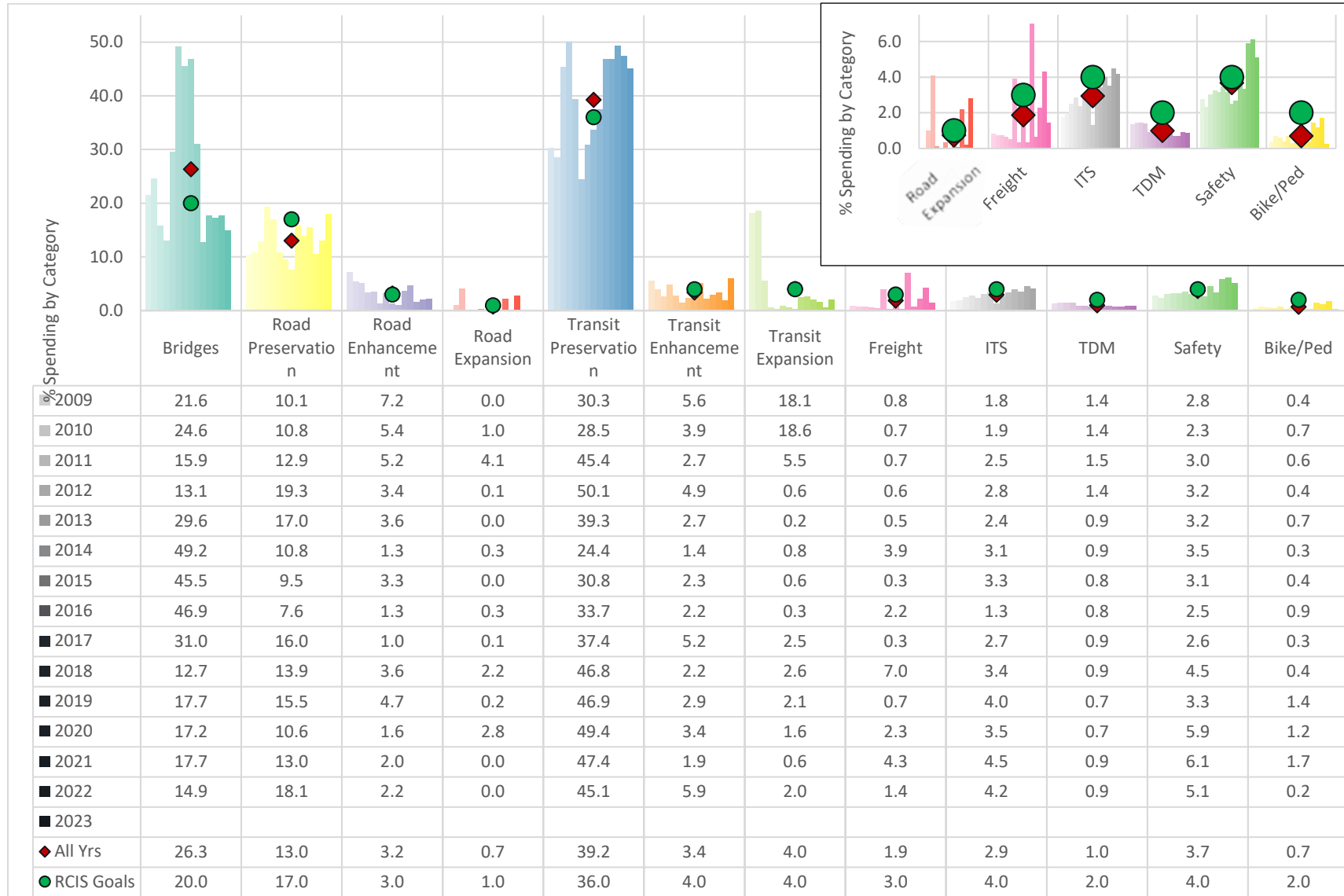
**Figure 4: Original, Revised and Authorized RCIS Expenditures as Percentages of TIP**



Source: NJTPA RawData Rerun June2023.xlsx

Figure 5 presents authorized RCIS expenditures by category as percent of total RCIS expenditures per year (columns) compared to the expenditure goal and average percentage as indicated by the dots. Authorized funding best represents the final policy action by the NJTPA to allocate funds and is thus the most appropriate measure to compare against RCIS expenditure goals. The inset table in the top-right of Figure 5 re-displays the same data on authorization and targets for those categories that have less than 5% of average spending authorization (Roadway Expansion, Freight, ITS, TDM, Safety, and Bike/Ped) to provide better visual clarity.

**Figure 5: Authorized Expenditures by RCIS Category 2009-2022**



## **BRIDGES**

The RCIS goal for Bridges is 20 percent. As shown, the 15-year average of Bridge expenditures is 26.3 percent, largely due to significant Sandy-related project expenditures from 2013 to 2017. From 2018 to 2022, the share of the RCIS budget ranged from 12.7 percent in 2018 to 17.7 percent in the years 2019 and 2021, with an average of 16.04 percent.

## **ROAD PRESERVATION**

Road Preservation shares of the RCIS budget have ranged from 7.6 percent to 19.3 percent of the RCIS total over the course of the last 15 years. Only in the years 2012, 2013 and 2022 did authorized expenditures meet or exceed the 17 percent goal.

## **ROAD ENHANCEMENT**

The RCIS goal for Road Enhancement is 3 percent. The 15-year average of these expenditures is 3.2 percent largely due to TIGER-grant investments in 2009-2011 that brought the Road Enhancement budget up to 7.2 percent, 5.4 percent, and 5.2 percent, respectively. Looking at the more recent past, while the 2018 and 2019 shares of the budget exceeded the RCIS goal at 3.6 percent and 4.7 percent, respectively, the last three years of authorizations has ranged from 1.6 percent to 2.2 percent.

## **ROAD EXPANSION**

Road Expansion has a target goal of 1.0 percent of the RCIS budget. Since 2009, authorizations have averaged 0.7 percent, while ranging from 0.0 percent to 7.2 percent. Road Expansion expenditures are large priority project-specific as evidenced by spending spikes in 2011, 2018, and 2020. The authorized budget for Road Expansion for 2021 and 2022 (the last two years of Authorized data) was 0 percent.

## **TRANSIT PRESERVATION**

The RCIS goal for Transit Preservation is 36 percent of the total budget. Actual authorized expenditures average out at 39.2 percent from 2009 to 2022. While the Transit Preservation share of the RCIS budget dipped below the target five times since 2009, the average differential was less than 7 percentage points. The last five years of available data show that expenditures have exceeded the RCIS goal by more than 10 percentage points each year.

## **TRANSIT ENHANCEMENT**

The goal for Transit Enhancement is 4 percent. As shown, the 15-year average of Transit Enhancement expenditures is 3.4 percent, with greater shares following TIGER grant releases.

## **TRANSIT EXPANSION**

The average share of the RCIS budget for Transit Expansion over the past 15 years is equal to the target goal of 4.0 percent. However, meeting the goal is largely due to large-scale investments of over 18 percent of the RCIS budget in 2009 and 2010. During this time, significant funding for the Access to the Region's Core (ARC) was obligated and included in the RCIS calculations. When the project was cancelled in 2010, transit expansion funding for 2011 was diminished, and reduced by an order of magnitude in FY2012. Other projects, such as the 8<sup>th</sup> street extension of the Hudson-Bergen Light Rail, were also completed by FY 2011. In the wake of the ARC project cancelation, progress on several other transit expansion initiatives that were contingent on the ARC project slowed. In the 10 years since this period, the level of investment has been significantly less, ranging from only 0.4 to 3.0 percent each year and averaging 1.4 percent.



## DEDICATED FREIGHT

Freight infrastructure investments have ranged from a low of 0.3 percent (2015) to 7.0 percent (2018) between 2009 and 2022, averaging 1.9 percent of the authorized RCIS budget. The stated RCIS goal is 3 percent of the budget. As shown in the chart, the freight infrastructure budget vacillates greatly from year to year, while most other RCIS categories have fewer extreme transitions. This likely indicates that much of the budget is derived from individual priority projects rather than sustained maintenance.

## INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

ITS investments have a 4 percent of RCIS goal. The average ITS expenditure over the past 15 years has been 2.9 percent. However, as shown, the average authorized budget share since 2019 totals 4.25 percent.

## TRANSPORTATION DEMAND MANAGEMENT (TDM)

The average share of RCIS expenditures for TDM over the past 15 years is 1 percent, or half of the RCIS goal of 2 percent. TDMs share of the budget was highest between 2009 and 2012 when it ranged between 1.4 and 1.5 percent of the total RCIS budget. In all subsequent years, it has hovered between 0.7 percent and 0.9 percent.

## DIRECT SAFETY

The expenditure goal for Direct Safety is 4 percent of the RCIS budget (note that this only accounts for projects whose primary purpose is improving safety; many other projects include safety components). This line-item has ranged in value from 2.5 to 6.1 percent, averaging 3.7 percent over the 15-year span. It is notable that safety expenditures have exceeded the RCIS goal in four of the past five years, indicating increased priority for safety investments and corresponding increases in funding.

## BIKE AND PEDESTRIAN IMPROVEMENTS

The RCIS goal for Bike and Pedestrian improvements is 2 percent. The 15-year annual average for Bike/Ped expenditures is only 0.7 percent. Between 2019 and 2021, Bike/Ped expenditures made up more than 1 percent of the RCIS budget each year; however, in all other years, these shares of expenditures ranged from only 0.2 to 0.9 percent.

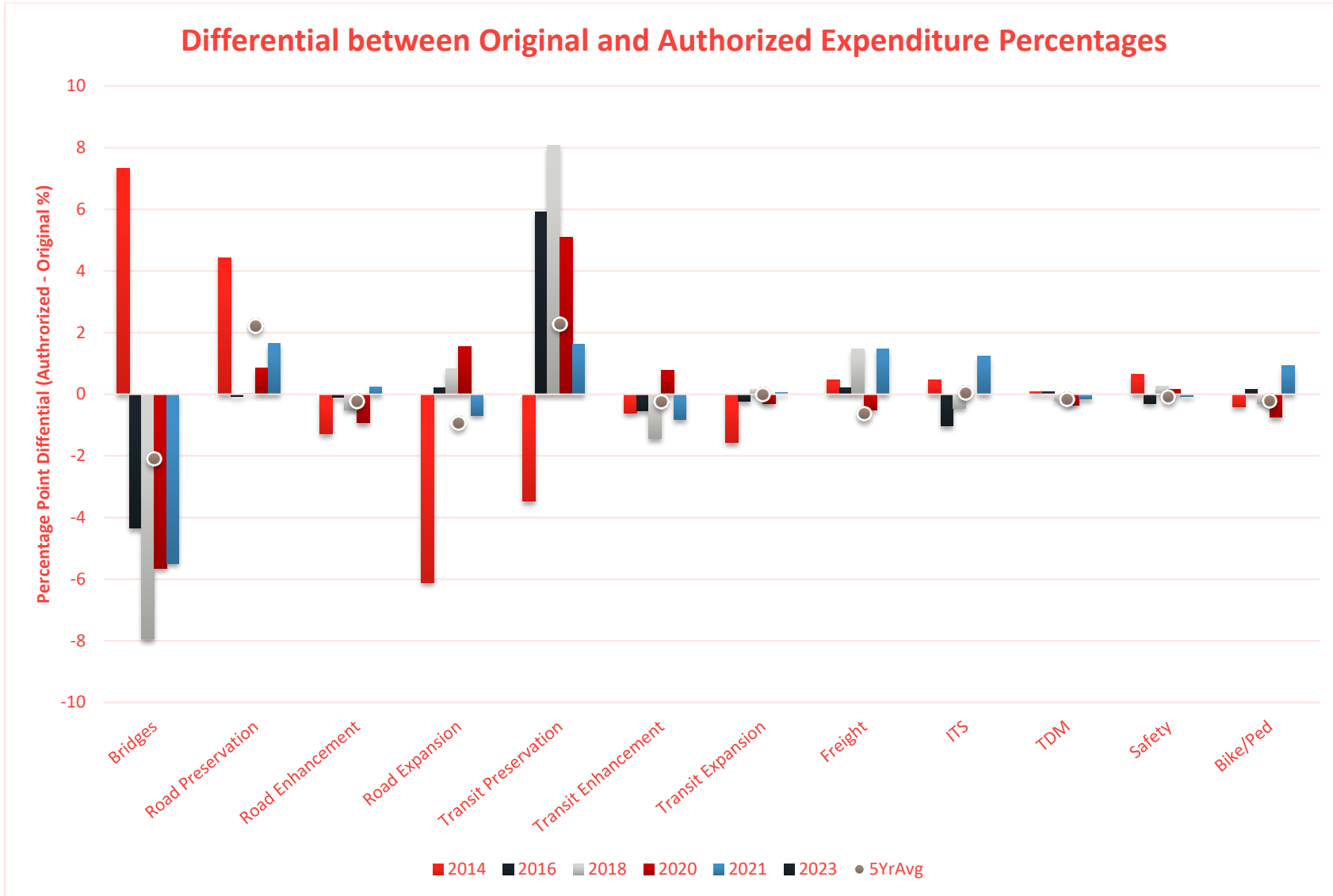
## QUANTITATIVE ANALYSIS FINDINGS

Figure 6 illustrates the difference between the Original planned share of RCIS expenditures and the Final Authorized share of expenditures by category from 2014 to 2023, as well as the 3-Year, 5-Year, and 10-year averages. If the column is above the horizontal axis, it indicates that the final authorized expenditure was greater than the original proposal; if it is below the axis, it indicates that the final authorized expenditure was less than initially planned. As illustrated, there is fluctuation within each category, although by no more than 9 percent in either direction.

There are definite patterns of habitual givers and takers. As shown, the Bridges, Road Enhancement, TDM, and Bike/Ped investments often lose funding to Road Preservation and Transit Preservation projects. This may indicate that investments in improvements are redirected to provide emergency repair and maintenance to existing infrastructure. Alternatively, it may be a reflection of the fact that authorization for system preservation is often times simpler and encounters fewer delays than other types of projects.



Figure 6: Differential between Original and Authorized Expenditure Percentages



Source: NJTPA RawData Rerun June2023.xlsx

# QUALITATIVE EVALUATION

To understand how the RCIS relates to other planning processes, each investment principle is explored and aligned with other regional and statewide planning efforts. Investment principles have been developed to succinctly describe the RCIS policy guidance, and to help associate project categories with different types of regional goals. Importantly, for this latter purpose, it should be recognized that several principles cut across the twelve investment categories. For example, the first principle, regarding smart growth, is overarching and has implications for virtually all types of transportation investments. Nonetheless, for each investment principle, its purpose and explicit association with specific RCIS categories are indicated, and corresponding guidelines are compared or contrasted with aspects of other regional and statewide planning documents.

Finally, next steps by the consultant team and through the technical advisory committee are identified. These next steps are expected to be expanded upon in the subsequent tasks of the project.

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## 3.1 HELP NORTH NEW JERSEY GROW WISELY

The RCIS states that investments should encourage economic growth while protecting the environment and minimizing sprawl in accordance with relevant state and federal plans and guidance. This has ramifications across all investment categories, such as supporting public transit and minimizing roadway expansions. In addition, the travel demand management investment category is specifically aligned with this principle. Through this, the RCIS encourages fewer motor vehicle trips (supporting a 2 percent allocation of transportation funds to travel demand management) and generally supports planned urban development, limitation of sprawl, and equitable distribution of funding within lower income communities.

This investment principle remains on target with a number of regional plans. In particular, the RCIS echoes many of the focus areas of the Together North Jersey Plan, which seeks to make the region more competitive, livable, efficient, and resilient. Together North Jersey focuses on sustainable development, highlighting the need for environmental considerations in socioeconomic development as part of its strategies for regional coordination. Other regional and statewide plans like NJ TRANSIT's 10-year strategic plan also provide recent visions for more efficient transportation systems that meet areas of growing density in cities. A number of subregional plans have also focused on smarter growth, such as Passaic County's ongoing Strategic Infrastructure Investment Study, and Supporting Priority Investment in Somerset County.

### NEXT STEPS FOR REFINEMENT

Smart growth is clearly a theme of New Jersey's forecasted development, and thus should continue to be a key part of the RCIS. However, further refinement should focus on specific applications of what "smart" growth means. During the Technical Advisory Committee (TAC) held on August 16, 2023, it became clear that "smart growth" is a catch-all term that doesn't adequately explain the desired outcomes of associated projects. Examples may come from other plans like Together North Jersey, which identifies specific examples of infrastructure types and programs that can help meet the vision of the investment principle, like transportation oriented development and initiatives that drive economic growth and minimize environmental impact. As discussed below in section 3.9 on resilience and climate adaptation, the RCIS refinement should identify whether projects that seek to mitigate climate change should be more explicitly associated with this principle, its own group, or a theme of all investment principles and RCIS categories.

Given the importance of climate goals and recent funding from the IIJA and the Inflation Reduction Act (IRA), next steps for this investment category should explore whether the 2 percent allocation could be increased, and/or investments in other categories may contribute toward this investment principle. This may result from general funding going to "sustainable transportation" initiatives like EV charging, or reclassification of other projects that might suit emissions

reductions and climate mitigation depending on changes to classifications of the projects or if new technologies in demand management curtail the need for expansion elsewhere.

There is an opportunity to consider how programs not in the TIP but funded through the NJTPA Unified Planning Work Program (for example Planning for Emerging Centers or Transit Hubs) can support and be referenced by RCIS policies such as “wise” regional growth. Overall, further exploration should be done to see how “smart growth” has been applied in other investment strategies as part of the literature review, and projects and programs that do not fall under current RCIS categories should be dissected to see whether they in fact meet the guidelines of a more sustainability-focused investment principle.

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## 3.2 MAKE TRAVEL SAFER

The RCIS calls for investments that explicitly include improvements in safety and security in design and implementation of all investments. To this end, it calls for the allocation of 4 percent of funding for direct safety improvements and encourages all other spending to include requisite safety measures. The RCIS recognizes the need for reducing priority crash types, including the particular vulnerability of pedestrians and seniors. It finally calls for the consideration of national security and disaster response in capital spending.

The RCIS calls out statewide programs like NJ TRANSIT’s safety program, but notes that the safety investment principle is largely general to any project and program development. NJDOT published the Highway Safety Improvement Program Manual, which notes other programs that focus on high priority crash locations, as the RCIS calls for. It has also published the Strategic Highway Safety Plan with the expressed purpose of taking a coordinated, multi-faceted approach to safety improvements with educational, engineering, enforcement, emergency service, and equitable programs and projects. Many of the projects in the TIP have been selected because of their major safety benefits, demonstrating the RCIS’ effectiveness in highlighting measures of effectiveness that highlight safety. Subregional studies in particular have had a strong emphasis on safety-based plans, with a number of bike, pedestrian, and corridor-based plans including safety best-practices as part of their findings. These subregional projects are important as they complement county-based transportation plans that typically include some of the roadways most in need of safety improvements.

### NEXT STEPS FOR REFINEMENT

While the RCIS calls for 4% of direct safety investment, it’s unclear how well the RCIS is driving key safety features in all projects independently from other federal and state requirements. Performance measures put forth in the RCIS should better map out the efficacy of certain improvements and incorporate other measures of effectiveness if needed. Furthermore, it is unclear how well national safety and security is tied back to actual investment, though previous studies like a review of coastal evacuation routes do show how the RCIS can have a role in ensuring transportation system redundancy in the face of natural disasters.

As part of the TAC meeting, the need to address safety was counterbalanced by overhead issues like staffing and documentation that can slow the implementation of direct safety projects. Further analysis should seek MOEs that try and measure how project delivery, specifically for safety projects, can be improved, and whether those initiatives should be incorporated into the safety guidelines of the RCIS. In addition, the TAC noted how these direct safety investments are supplemented substantially by safety components of system preservation and other projects, and thus 4% of spending does not provide a good representation of safety investment across the RCIS. As part of the refinement, further emphasis should be placed on whether the safety category should include these projects, and whether segmentation of projects by category is useful in the face of overhead and backlog issues.

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### 3.3 FIX IT FIRST

The RCIS reserves the bulk of its expenditure allocation targets to system preservation for bridges, roads, and public transit. Recognizing the slow deterioration of infrastructure, the RCIS targets 36% of expenditures to public transit maintenance and preservation, 20% of expenditures to bridges, and 17% to roads. The Fix it First principle aligns with the federal vision for transportation spending since the passage of the Infrastructure Investment and Jobs Act (IIJA) in which the bulk of allocated funding, both from reauthorized programs and new programs signed as part of the Act is directed toward infrastructure preservation.

Fix it First is a principle that is present in much of the capital plans for NJDOT, NJ TRANSIT, and their strategic visions. NJDOT's 2023 updated State Capital Investment Strategy (SCIS) includes targets for both bridge preservation and pavement preservation, while the NJ TRANSIT 10-year strategic vision and general capital plan includes many projects designed to rehabilitate stations, tracks, and other projects to meet their system performance goals. The NJTPA TIP has also heavily featured preservation projects in each cycle, noting the need to rehabilitate and preserve functional systems in order to meet stated performance goals.

### NEXT STEPS FOR REFINEMENT

The composite 73% expenditure allocation for preservation and maintenance is reasonable for the near future as the needs highlighted in the TIP and list of projects in Plan 2050 are large. However, the refinement process should attempt to forecast how much additional funding might be slated for system preservation from the IIJA that could potentially front-load system preservation needs quicker than expected. If it can be reasonably assumed that much of the preservation needs can be done in the near future with this added federal investment, there may be a possibility to devote more general funds to system enhancement and expansion than in the past, thereby potentially lowering system preservation allocations.

A key next step in the refinement of system preservation and the fix it first principle is to understand what the desired outcomes of these projects should be. As discussed during the TAC, system preservation projects can have many outcomes in addition to maintaining designed operations, such as safety improvements, capacity, or facilities for other users. These other outcomes can help meet the guidelines of other investment principles (such as a "complete street" redesign of a roadway), but may also counteract others (such as lane expansions that can increase vehicular use). Both MOE assessment and refinement tasks should consider how existing preservation projects meet other needs, and whether changes are needed in project categorization and investment targets to align with planning goals of the region.

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### 3.4 EXPAND PUBLIC TRANSIT

Through the regional vision espoused in Plan 2050, Together North Jersey, and other documents, a robust public transit system is essential for a sustainable and efficient transportation network that can meet envisioned economic development and population growth. This principle applies to the transportation system overall, including configuring roadways to support public transit service and Complete Streets approaches. The RCIS targets 4 percent of general funding to operational and performance enhancement for public transit, and another 4 percent of funding to transit network expansion.

Because transit is largely handled by one major operator, it is envisioned that much of this funding would be in line with the NJ TRANSIT Capital Plan, which includes a number of enhancement projects to add capacity and faster service to the rail, light rail, and bus network. Because the transit network is largely handled by one major operator, it is envisioned that much of this funding would be in line with the NJ TRANSIT Capital Plan, which includes a number of enhancement projects to add capacity and faster service to the rail, light rail, and bus network. Importantly, a large amount of funding has been authorized for public transit expansion outside the scope of the RCIS through the development of the Gateway

Program. However, other RCIS-aligned projects like the Newark Penn Station Modernization and other station improvements, interlocking improvements, and mainline improvements would help capitalize on these major projects to add capacity and help meet regional goals.<sup>5</sup> Other multi-state transit options, like PATH, also have long-term expansion goals that align with the RCIS principle.

## NEXT STEPS FOR REFINEMENT

The bulk of new planning approaches since the last RCIS review highlight the need for low-carbon transportation approaches, with expanded public transit options being a leading alternative. The NJ TRANSIT capital plan and larger strategic vision provides an unconstrained expenditure list that may exceed the current allocation targets. As such, the refinement approach should work with TAC members to understand whether RCIS allocations should be adjusted to align with the capital plans of transit providers.

As with other investment categories, conversations around transit expansion with the TAC involved key themes that should weave all investment principles together, including investments that target underserved communities. Knowing that public transit plays an important role in areas of prior disinvestment, a review of MOEs should include whether other investment strategies track funding based on proportion of underserved communities, and whether implementation of a new capital investment approach led to changes in where funds were applied, such as transit expansion. In cases where capacity is expanded, some research on MOEs that track the corresponding need for increased operational funds should be conducted.

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## 3.5 IMPROVE ROADS BUT ADD FEW

Roadways serve the majority of travelers throughout the region today and the existing roadway system provides extensive accessibility and mobility for the region. Road expansion, however, comes with numerous costs that can hinder environmental quality and social equity. Concurrently, safety and efficiency enhancements at strategic locations can save lives and time for travelers. This investment strategy notes the importance of strategic enhancement by allotting a target of 3 percent of funding for roadway enhancements, and 1% for expansion projects in the most needed locations.

With an ever-increasing focus on environmental sustainability and emissions reductions in the 21st century, the RCIS and virtually all other transportation planning documents used in North Jersey discuss the need to better manage vehicle miles traveled within the region. The NJTPA's 2021 Transportation Demand Management (TDM) & Mobility Plan notes a key goal of TDM planning is to reduce vehicle travel (discussed further in following sections). More directly, Plan 2050 notes in its environmental chapter that transportation is a leading contributor of greenhouse gas emissions (GHG) and that the NJTPA planning and programs help support development in forms and locations that offer travel alternatives, reduce trips, and minimize environmental impacts. As such, the RCIS aligns itself with many of these goals to reduce auto dependence by allocating a small percentage of funding to roadway expansion.

The focus on roadway enhancement, too, has alignment with the goals of almost all regional, statewide, and local planning documents. Safety is a leading theme in roadway projects in the TIP. Though direct safety spending is covered elsewhere in the RCIS, roadway enhancements covered in the Draft 2024 TIP provide funds for safety improvements at high-crash intersections, highway ramps and points of conflict, and improve other issues that don't meet safety standards. Of the 30 roadway improvement projects in the 2024-2027 TIP, nearly two-thirds mention safety or crash reduction as a key outcome.

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<sup>5</sup>[https://content.njtransit.com/sites/default/files/njtplans/NJ%20TRANSIT%20Capital%20Plan%202022%20Update\\_Appendix%20B%20Project%20Sheets\\_7-24-23.pdf](https://content.njtransit.com/sites/default/files/njtplans/NJ%20TRANSIT%20Capital%20Plan%202022%20Update_Appendix%20B%20Project%20Sheets_7-24-23.pdf)

The RCIS notes that congestion management is also a key goal of roadway enhancement and strategic expansion, appropriately undertaken in conjunction with the NJTPA's federally required congestion management process (CMP). Congestion management through geometric improvements of the roadway network has many benefits that meet system efficiency and emissions goals. Congestion relief is almost always a goal in roadway expansion and most enhancement projects, and expansion in chronic congestion areas, such as the widening of Rt. 17 in southern Bergen County over the next 10 years, is intended to address current bottlenecks that affect quality of life, not necessarily to expand already-sprawled residential and commercial development.

## NEXT STEPS FOR REFINEMENT

As shown in the quantitative analysis, actual roadway enhancement and expansion spending has typically held close to the 3 percent and 1 percent targets, respectively. While these relatively low targets echo the more important goals of system preservation and smart growth focused on expansion of alternative transportation projects, the refinement process should dive into completed roadway enhancement and expansion projects to understand how well they've achieved stated goals. The refinement process should also consider whether other improvements that don't inherently entice the growth of vehicle trips might equally serve these goals. Finally, it is important to note that while the RCIS target of 1 percent for roadway expansion (approximately 30 million per year based on the average TIP/RCIS annual expenditures), capital projects across all funds that expand roadway capacity greatly exceeds this target.

During the TAC meeting, it was noted that many aspects of system preservation projects for roads or bridges have an intended or unintended outcome of expanding capacity, which demonstrates that actual funding for roadway enhancement exceeds what is listed. Additionally, it was stated during the TAC meeting that while recent initiatives like USDOT's Reconnecting Communities have focused on projects that mitigate the impact of highways, there is no RCIS category for projects that might serve this purpose. These projects, like highway capping, capacity reduction, and certain complete street transformations may serve multiple investment principles, even though no target is allocated towards them. The refinement process may consider the outcomes of these major projects and whether changes to RCIS targets are warranted given their impact.

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## 3.6 MOVE FREIGHT MORE EFFICIENTLY

The RCIS recognizes the importance of goods movement through this principle, with application in general roadway investment categories accommodating truck movement and by targeting 3 percent of spending on dedicated freight improvements that improve goods connectivity on the road, intermodally, and equitably among urban and rural freight needs. As the region continues to be a national leader in international goods movement and a critical bottleneck in freight movement on the eastern seaboard, spending on freight efficiency relates to larger mobility, economic, and environmental goals that have been set forth in the region.

Goods movement in North Jersey uses a variety of modes and facilities, including ports, rails, trucks, air, and industrial properties.<sup>6</sup> Because of this, the NJTPA and the state have led a number of services and programs focused on integration and efficiency. NJDOT's 2023 Statewide Freight plan outlines some of the critical needs facing freight movement, including air quality concerns, congestion management, transportation delays and their costs, and interagency cooperation for easier movement. The Port Authority of New York and New Jersey, one of the biggest stakeholders in goods movement, has included guiding principles in their 2050 Port Master Plan that focus on sustainability, economic growth, and better integration among public and private stakeholders.<sup>7</sup> A number of subregional studies have focused as

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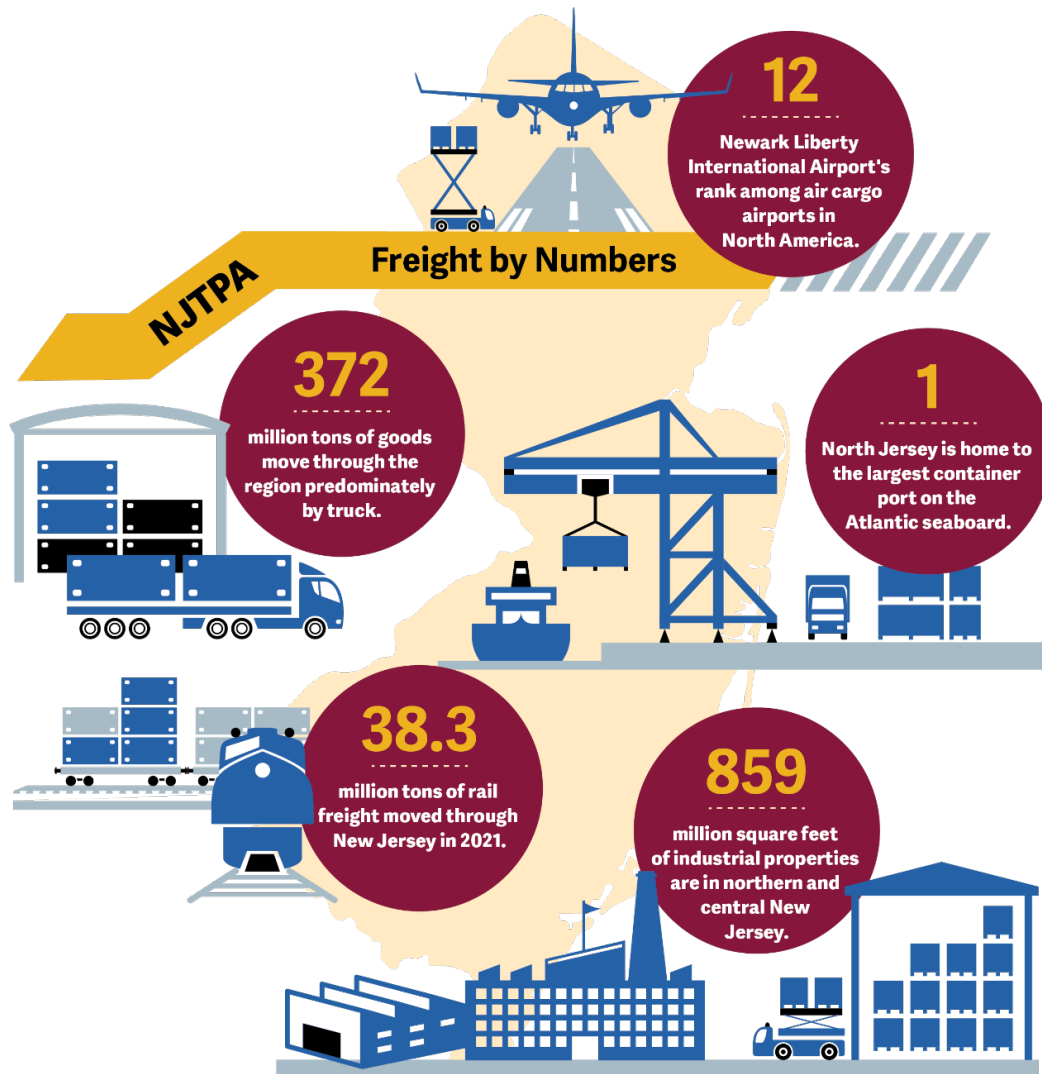
<sup>6</sup> NJTPA, "Freight Regional Programs" <https://www.njtpa.org/Planning/Regional-Programs/Freight.aspx>

<sup>7</sup> PANYNJ, "Port Master Plan 2050 – Five Guiding Principles" <https://www.panynj.gov/port/en/our-port/port-development/port-master-plan.html>



well on truck mobility that put forth best practices on safety and quality of life in regards to freight movement in local communities.

Figure 7: Freight by the Numbers



Source: NJTPA

## NEXT STEPS FOR REFINEMENT

The RCIS generally references these needs, while remaining flexible to the shifting trends and acute concerns that affect goods movement. Projects in the FY 2022 TIP that are part of the Freight category highlight key concerns regarding delays near New Jersey seaports that have economic and air quality consequences. However, the current RCIS does not specify how freight improvement projects have multi-faceted benefits, and consequentially makes it difficult to judge whether the target allocation represents the benefits these projects have. As part of the RCIS refinement, the project team should work with planners who have contributed to freight strategy in the region to understand opportunities in dedicated freight funding. Particularly with regard to goods movement, opportunities for public-private partnerships are important, and the RCIS refinement can provide the opportunity to further describe how the NJTPA can leverage investments and complement appropriate private expenditures.

As part of the TAC meeting, it was noted that direct investments in freight by the NJTPA are minimal, and usually focus on technical assistance for communities. Some of these best practices note that traditional “efficiency” goals need to be clearly stated, as common action measures like shifting freight modes may not meet the right outcomes. As part of the

measures of effectiveness review, the team will try and identify more specific MOEs that focus on topics that are most important to freight's role in the regional economy and social/environmental needs, such as travel time reliability or emissions reductions. Ultimately, the refinement process should consider whether freight improvement is a principle in and of itself, or part of the strategy for other investment principles.

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### 3.7 MANAGE INCIDENTS AND APPLY TRANSPORTATION TECHNOLOGY

In line with global standards on infrastructure planning, the RCIS recognizes the outsized value that technology-based investments currently have on the operations of a safe and efficient transportation system. The RCIS targets 4 percent of funding dedicated to a variety of tech-based projects that touch on topics like emergency response, congestion and parking issues, wayfinding and variable messaging, and cross-agency coordination. The RCIS notes the value of pilot programs and explores in this principle how targeted investments can help ease the region into a number of trends in future mobility like first-mile-last-mile services that complement public transit or the future of connected and automated vehicles.

The NJTPA's technology program has largely focused on traveler information systems, traffic management systems, and incident management systems to ease drivers and traffic operators' response to unforeseen changes. Plan 2050's background paper on Transportation Technology went further by outlining the key technology developments and issues that the region may face over the next 30 years, highlighting the need for continued investment in hardware for transportation agencies, consider how technology can address mobility gaps, and long-term planning for more automated transportation network.

#### NEXT STEPS FOR REFINEMENT

As with any industry, technology in transportation is a rapidly evolving topic, with emerging issues and platforms changing on a frequent basis. Topics relevant currently such as data privacy and artificial intelligence have largely been absent in recent planning documents, given their rapid rise in importance. As such, this investment principle may serve well to not be as specific to specific technologies that deserve investment, but target investments in technology that could produce significant improvements to specific goals or overall system performance. The refinement of the RCIS should work with the TAC and other stakeholders to understand what technology concerns they've had that have been enduring, and what investments do they expect will have long-lasting relevancy.

As technology development draws more and more attention, the refinement process should recognize cross-cutting investments. Safety improvements, Complete Streets, and facility maintenance can incorporate or support new vehicular and communications technology. Examples of overhead spending that cover the procurement of new technology for operators may be informative. Some non-RCIS categorized costs may involve benefits that meet performance metrics identified in other categories. A decision should be made on whether recategorization of these expenses would help connect technology improvements with other goals.

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### 3.8 SUPPORT WALKING AND CYCLING

As the built environment has grown more dense and recreational opportunities remain important to quality of life, walking and cycling have grown into an important part of not only exercise, but of transportation as well. The RCIS targets 2 percent of funding on walking and bicycling facilities, including the redesign of existing facilities and the creation of new ones to facilitate and expand local connections.

Active transportation is a key part of regional planning, and especially important in urban areas of the region where non-motorized options can be the quickest way to travel. As such, many aspects of planning for bikes and pedestrians involves understanding where current users are and enhancing facilities to make that journey safer and more convenient. The recently completed Regional Active Transportation Plan goes one step further in addressing critical gaps that inhibit active transportation between different parts of the region. Other subregional plans have attempted to form a master plan for greenways and regional facilities that combine recreational benefits with access for sustainable transportation. The RCIS identifies the need for both investment in local projects that meet existing needs of pedestrians and cyclists, as well as larger regional plans which could spur growth in active transportation and make it a viable mode in more locations.

## **NEXT STEPS FOR REFINEMENT**

While the RCIS keys in on the importance of active transportation in a regional network, other capital investment strategies not specifically focused on bike and pedestrian safety typically don't mention it as a key principle. As shown above, typical spending has generally not met the 2 percent target either. As such, the RCIS should be reviewed to consider whether capital projects not including bike and pedestrian facilities might better meet regional goals by their inclusion. Additionally, performance metrics for other goals like efficient goods and vehicular movement should be assessed to see whether they might hinder the inclusion of active transportation features.

Bike and pedestrian improvements discussed in the TAC have a need that is most likely greater than 2% of funding for the region. The refinement process should tailor the target allocation not to federal investment dollars currently being allocated, but rather represent the need to plan for and expand the bike/ped network across the region, for current users and potential growth. The data needs, such as existing conditions mapping for sidewalks or bike lanes, should also be explored.

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## **3.9 INCREASE REGIONAL RESILIENCY**

As a new principle added in Plan 2045, increasing regional resiliency deals with the need for reliability in the regional transportation system, even in the face of natural and man-made threats such as climate change, extreme weather, and homeland security. The RCIS calls for a number of climate resilience needs to be funded, including projects that make existing assets more secure, and programmatic investments that attempt to adapt our vulnerable infrastructure to the changing climate.

Regional resilience has been a public goal of many entities across the state since Hurricane Sandy devastated the Northeast United States in October 2012. While security had been a prominent feature in transportation for years prior, the focus on adapting and protecting infrastructure from all threats was a key change that occurred in regional planning since 2012. The RCIS recognizes this "all hazards" approach by focusing on investments in projects that can provide multi-faceted protection from a variety of sources. The investment guidelines also acknowledge the future uncertainty of climate change and the fact that planning must account for more intense and frequent climate events, and sea level rise may impact a significant proportion of transportation assets. To that end, the RCIS calls out specific documents that set a regional vision for the state such as the NJDEP 80x50 report and the 2019 energy master plan.

## **NEXT STEPS FOR REFINEMENT**

One clear difference between the regional resilience principle and others is its lack of direct reference to any specific spending category. Along with smart growth, resilience supports sustainability, so this can also be considered an overarching principle. The RCIS refinement process can also consider whether a target should be set for climate resilience and other security-based infrastructure investments. In addition, the RCIS may want to explore how resilience in infrastructure projects could include both protection-based ("gray infrastructure") solutions and other nature-based ("green infrastructure") solutions which could meet a variety of regional performance metrics beyond system preservation.

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## 3.10 SPENDING OUTSIDE OF RCIS CATEGORIZATION

As shown in the quantitative analysis and noted in sections above and in the TAC meeting, there is additional spending that has not previously been defined into an RCIS category or may not fit easily into an identified investment principle. This spending, which in the TIP includes overhead spending, aviation spending, and “other” spending on programs like program management and technical assistance, has grown as a proportion of total authorized spending compared to RCIS-allocated funds. While uses of these funds may vary, the refinement process should link the purposes of these different allocations with performance goals and determine whether specific RCIS target allocations should be increased to consider those projects. If certain authorized funds are so general that they cannot be linked to a certain RCIS project type, the refinement process should consider whether further documentation of funding purpose is needed to understand how these programs are tied to key performance measures used by the NJTPA.

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## 3.11 TECHNICAL ADVISORY COMMITTEE FINDINGS

The Technical Advisory Committee (TAC) discussion included a presentation that highlighted the overall themes discussed above. It included an overview of the project at hand, along with a presentation of the quantitative analysis, noting the key themes across the categories. In addition, there was discussion of how the data is presented and what it means for the RCIS. There was a general recognition of how some bigger, longer-term projects can impact categories and shift percentages, and how those can play a factor, but not necessarily dictate, changes in allocation targets, similar to how fluctuations in the overall economy (like steel price changes) can impact these changes as well. There was also some discussion of whether components of spending should be tracked and how, if it all, they would prove to be useful for the NJTPA. The quantitative analysis demonstrated that there has been a gradual expansion in non-RCIS spending within the total authorized spending that should be understood further and be a focus of refinement to determine how the RCIS may involve this spending.

In addition to an overview and discussion of the quantitative aspects of the RCIS, there was a discussion of the qualitative aspects of how the RCIS and its components apply to overall regional planning and the visions for the region. The qualitative discussion presented some indicative measures of effectiveness (MOEs) of each principle, which were then leveraged in order to understand potential other examples, or concerns that aren't addressed in the current RCIS. Some key themes across the different investment principles included:

- Aspects of certain project types (such as system preservation) may have intended or unintended outcomes for other investment principles. Consequently, funding for certain categories may actually be higher than stated. This may be especially true in matters of system preservation for bridges or roadways, which in many cases expand and enhance the roadway network, well beyond the lower roadway enhancement and expansion spending targets.
- Some investment principles may not be targeted to specific project types, but better represent guidelines for project performance across all project types. This may especially be true for topics such as resilience, which currently do not have a direct link to an RCIS category but may be a theme by which all projects should consider. Sustainability, safety, technology, and freight spending should be evaluated in a similar manner.
- The need for categorization is important and can help drive planning goals forward but should also be considered with overhead and staffing needs at transportation agencies, many of which are very burdened today. The RCIS should balance the need for investments that align with regional goals with programs and processes staff are familiar with to not create additional administrative work.

These conversation points will be taken into consideration for the continuing tasks of the project, highlighting those that best reflect the current priorities of topics for refinement.

## 4 CONCLUSION

This tech memo serves as a documentation of the quantitative and qualitative review of the existing RCIS. The review has highlighted both the performance of the RCIS expenditure targets compared to actual spending, as well as the alignment between RCIS investment principles and the many regional, statewide, and local planning processes and programs to help continually improve the transportation system's sustainability, economic performance, and services. Overall, the RCIS has largely reflected current issues and regional goals in transportation planning, even as it has somewhat aged. Though specific issues such as climate resiliency have been included with no specific allotment, many of the spending categories include projects that are meeting key issues facing travelers in North Jersey. As part of the refinement process, a few key opportunities have stood out:

- A deep-dive into specific spending categories where the RCIS targets and actual spending have consistently deviated over time.
- RCIS targets should be systematically reviewed with measures of effectiveness (MOEs) recommended in Task 2. WSP recommends that this be conducted in partnership with the TAC to determine if changes are warranted to better reflect regional goals.
- Recognition of how investments can cut across principles and categories offers an opportunity to clarify RCIS organization and presentation to enhance its effectiveness in informing planning and capital decision making.
- Categories currently reflect a large portion of projects, though the mixture of program funding, specific project funding, and lack of consideration for funding outside of traditional transportation funding sources means that some project types might be over-represented or under-represented. The refinement can help to identify if project classifications should be changed based on these representation trends.

As noted, the next step of this project will feature a literature review that focuses on how other capital investment strategies from MPOs and other agencies have adapted to new goals, challenges, and opportunities. The output of that literature review will focus on MOEs that can evaluate regional transportation as a whole and provide insight into how categorical investments are influencing these key metrics. The results of that analysis will complement the RCIS review summarized here in order to undertake a refinement of the current RCIS with recommendations on target allocations, goal alignment, and changes or additions to investment categories.