6. FINANCIAL PLAN AND INVESTMENT STRATEGIES

The financial plan presents the funding picture at Iowa DOT, identifies revenues needed to maintain asset conditions today and into the future, and identifies any gaps between funding needed to meet condition targets and funding available. Investment strategies for pavements and bridges are informed by the life cycle planning, performance gap analysis, and risk considerations discussed in prior chapters, with the goal of maximizing return on investment and making progress towards state and national goals and targets.

Introduction

This chapter details Iowa DOT's TAM investment strategy development process and presents the financial plan resulting from this process. The process utilizes the pavement and bridge life cycle plans developed as described in Chapter 3, as well as the predicted pavement and bridge conditions for the investment scenarios detailed in Chapter 4. The process also incorporates considerations of risk, including resilience and extreme weather, as discussed in Chapter 5. The financial plan shows Iowa DOT's planned and estimated available funds for TAM and anticipated expenditures by asset class over the 10-year period of the TAMP resulting from the selected investment strategies. This chapter also provides a summary of asset valuation for Iowa's Primary Highway System and National Highway System (NHS) pavements and bridges.

Federal Requirements

FHWA requires that states include investment strategies as part of their TAMP. FHWA defines investment strategies as "a set of strategies that results from evaluating various levels of funding to achieve State DOT targets for asset condition and system performance effectiveness at a minimum practicable cost while managing risks." The TAMP must discuss how the investment strategies make progress towards achieving a desired SOGR over the life cycle of the assets in the plan, improving or preserving asset condition, achieving 2-and 4-year state DOT targets for NHS asset condition and performance, and achieving national performance goals. "Desired SOGR" means the desired asset condition over the 10-year period of the TAMP.

FHWA also requires that states establish a process for developing investment strategies as part of the TAMP. The process must describe how investment strategies are influenced, at a minimum, by the following.

- Life cycle planning
- Performance gap analysis
- Risk management analysis
- Anticipated available funding and estimated cost of future work

In addition to requiring details on investment strategies, FHWA requires each state to include a financial plan that spans at least ten years and identifies funding and costs over that time in the TAMP. FHWA defines financial plan as "a long-term plan spanning 10 years or longer, presenting a State DOT's estimates of projected available financial resources and predicted expenditures in major asset categories that can be used to achieve State DOT targets for asset condition during the plan period, and highlighting how resources are expected to be allocated based on asset strategies, needs, shortfalls, and agency policies."

The plan should provide a summary of financial resources and needs for pursuing asset management objectives and achieving performance targets. FHWA also requires that states establish a process for developing a financial plan as part of the TAMP. The process must produce the items listed below.

- Estimated cost of expected future work to implement the investment strategies of the TAMP, by fiscal year and work type
- Estimated funding levels to address the costs of future work types, by fiscal year
- Identification of anticipated funding sources
- Asset valuation estimates for NHS bridge and pavement assets and the needed annual investment to maintain asset value

6.1 Investment Strategies

Investment Strategy Development Process

Iowa DOT's approach to developing its investment strategies is patterned on the guidance provided in NCHRP Report 898, A Guide to Developing Financial Plans and Performance Measures for Transportation Asset Management (2019). This guide details a 10-step process for investment strategy development. The output of the process is a high-level financial plan, supplemented with additional details on the investments in the plan and expected outcomes of implementing the plan. The following paragraphs describe the investment strategy steps, reproduced from NCHRP Report 898, and the specific activities performed by Iowa DOT at each step. This process is performed for all state-owned roads, but this document focuses on results for NHS pavement and bridges. Note that steps 4 to 7 of the process are iterative. These steps are performed at least once when evaluating alternative investment strategies, and an additional time when finalizing funding levels.

Step 1: Define Investment Scenarios

The first step of the strategy development process is to define alternative investment scenarios. NCHRP Report 898 recommends considering at least three alternative scenarios: funding estimated to be reasonably available; funding required to achieve targets; and funding required to maintain asset value. As described in Chapter 4, for its TAMP development, Iowa DOT considered numerous funding scenarios for pavements and bridges. This included a scenario reflecting expected funding and scenarios at higher and lower funding levels. As Chapter 4 highlighted, more funding is necessary than the amount currently projected to be available during the 10-year period to achieve the SOGR targets. Also discussed in Chapter 4, scenarios with lower funding levels or less optimized project selection were considered in addition to scenarios with additional funding. The less optimal scenarios help Iowa DOT consider the impact of risk on achieving its 10-year SOGR targets, as the scenarios can be used as sensitivity analyses. They serve as proxies to represent scenarios such as budgets decreasing due to less funding or increased inflation, having less funding for asset management projects due to a need to divert funding for other needs (such as emergency repairs due to natural disasters), or less effectiveness of asset management strategies leading to shorter life cycles for treatments and the need for additional work sooner than anticipated.

Step 2: Identify Current and Planned Projects

The next step in the process is to identify projects that are currently underway or that the agency has committed to perform in the near term. Ideally, the different investment scenarios should account for these ongoing and committed projects. Iowa DOT's Five-Year Program identifies committed projects. The expected funding scenario (as well as scenarios with increased funding) has been defined consistently with the program budgets levels such that the predicted budget is sufficient to fund these projects.

Step 3: Use Management Systems to Predict Future Conditions

The agency next uses its pavement and bridge management systems to predict future conditions for the different investment scenarios. As described in Chapter 3, Iowa DOT uses dTIMS and IPST to predict future conditions for pavement and the NBI Optimizer to predict future conditions for bridges. These systems are designed to follow Iowa DOT's life cycle strategies, subject to budget constraints. Chapter 3 further details the modeling assumptions in each system and how Iowa DOT uses each system to determine the conditions that will result from a specified level of funding.

Step 4: Perform Initial Budget Allocation

In this step, the overall budget level identified for the investment scenario is allocated between assets and specific uses. In Iowa DOT's case, this initial allocation is performed within the management systems following the life cycle strategies described in Chapter 3.

Step 5: Identify Candidate Projects

Next, it is necessary to determine what work may potentially be performed, given current and predicted future asset conditions. As in the case of Step 4, this step is initially performed within Iowa DOT's management systems using the life cycle strategies described in Chapter 3. Once funding levels are finalized in Step 8, Iowa DOT revisits this step to determine potential projects to add to the next year of its Five-Year Program.

Step 6: Select Projects

NCHRP Report 898 describes that different approaches may be used in this step to determine what projects to perform for each investment scenario. The selection of projects incorporates consideration of risk, performance gaps, and the agency's life cycle strategies. These strategies help achieve and maintain assets in a SOGR at minimum life cycle costs. In Iowa DOT's case, the management systems initially simulate the selection of projects for each scenario as part of the simulation process as described in Chapter 3. Once funding levels are finalized in Step 8 through review of the management system results, Iowa DOT revisits this step to select potential projects to add to the next year of its Five-Year Program.

Step 7: Revise Prediction of Future Conditions

At this step, the agency may need to revise its predictions of future conditions if Steps 4 to 7 result in a different allocation from that assumed in developing investment scenarios. In this instance, the investments scenarios that were considered remained consistent through the process and no revisions were required.

Step 8: Finalize Funding Levels by Use

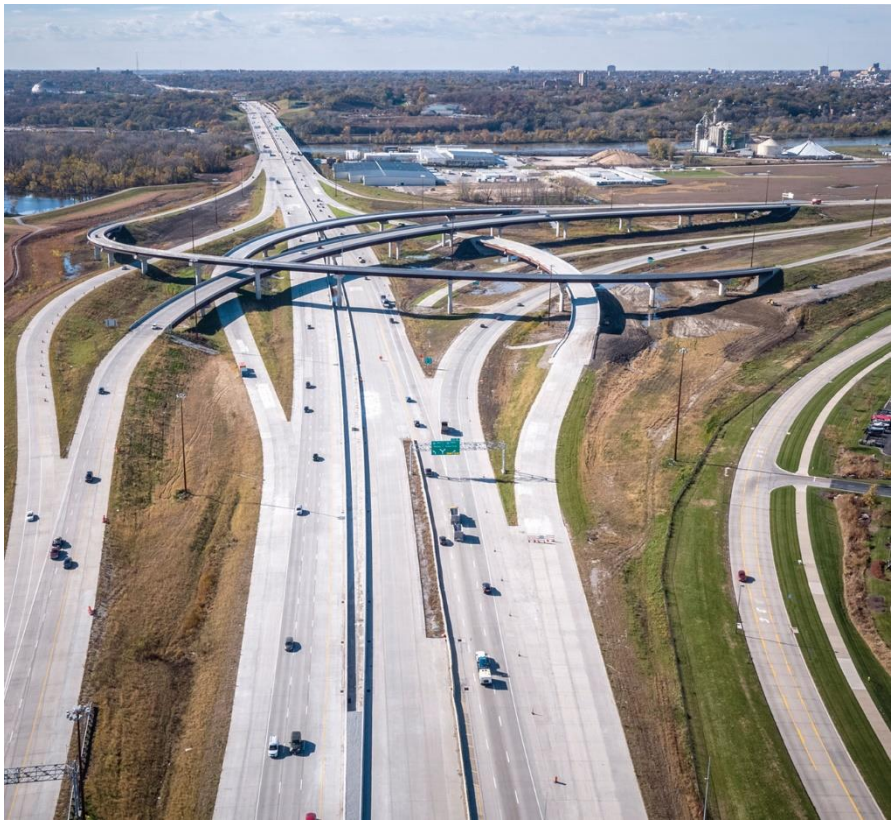
At this point, it is necessary to review the investment scenario results to determine how funds will be allocated in the TAM financial plan. For Iowa this determination is made by the Iowa Transportation Commission, as described further in the next section. Once funding levels are finalized, Iowa DOT repeats steps 4 to 7 to revise the predictions of future condition (if necessary) and determine what specific projects to add to the Five-Year Program.

Step 9: Perform Gap Assessment

Once funding levels have been finalized, it is necessary to determine the gaps between existing conditions, targeted conditions, expected future conditions, and the desired SOGR. Chapter 4 summarizes the results of the gap assessment.

Step 10: Document Assumptions and Investment Strategies

Finally, NCHRP Report 898 recommends documenting the assumptions followed as part of the investment strategy development process, and the strategies resulting from the process. This documentation has been prepared through the presentations to the Commission and this TAMP.



Finalizing the Investment Strategy

Regarding the approach to finalizing funding levels (Step 8 above), the Iowa Transportation Commission (Commission) determines how to allocate the funding available through Iowa DOT's Highway Program. The Commission establishes funding levels for the following six major investment categories.

- Stewardship categories
  - Interstate pavement and bridge
  - Non-Interstate pavement
  - Non-Interstate bridge
  - Safety-specific
- Capacity categories
  - Major Interstate
  - Non-Interstate

In recent years, the Commission has incorporated recommendations from Iowa DOT staff for the funding levels for the four stewardship categories, and then allocated the remaining funds to the two capacity categories. Iowa DOT recommendations for stewardship funding levels are based on historical funding trends, consideration of the national goals described in MAP-21, and asset management needs identified through analysis of the system. Over the past several years, program development has included a series of asset management presentations to the Commission, including one dedicated to pavements and one dedicated to bridges. During the presentations, the Commission is presented with information on the status of the system, treatment strategies, and output of the modeling systems for various funding scenarios. This cycle of asset management discussions has helped bolster the case for increasing stewardship funding for pavements and bridges.

The Commission approves the Five-Year Program in June of each year. The transportation programming process is a continuous, year-round effort. Once the Commission approves the funding for these categories, the funds are allocated to specific projects.

Investing Towards National Goals

The investment strategy development process results in a set of asset investments that supports state goals as well as the national goals defined in 23 USC 150(b). The selected strategies also help maximize progress towards achieving Iowa's SOGR, and in so doing, help minimize asset life cycle costs to the extent possible given available funding. Table 6.1 summarizes how the selected investment strategies help support the national goals.

Table 6.1: National goals and related investment strategies

National Goal	Related Investment Strategies
Safety To achieve a significant reduction in traffic fatalities and serious injuries on all public roads.	The TAMP investment strategies support the goals and objectives of the Iowa Highway Safety Improvement Program and the Iowa Strategic Highway Safety Plan. Implementing these plans will help reduce traffic fatalities and serious injuries.
Infrastructure Condition To maintain the highway infrastructure asset system in a state of good repair.	Iowa's TAMP investment strategies are aligned with the STIP and constrained by available funding to maintain highway assets as funding permits. Implementing the TAMP investment strategies through the STIP will help maintain highway assets in a SOGR. By following the life cycle strategies described in Chapter 3, the selected strategies will help Iowa DOT minimize asset life cycle costs to the extent feasible given available funding.
Congestion Reduction To achieve a significant reduction in congestion on the NHS.	Implementing Iowa's TAMP investment strategies will enable more efficient use of available TAM resources, freeing additional resources to dedicate to making progress towards national goals related to congestion reduction.
System Reliability To improve the efficiency of the surface transportation system.	Any improvement in infrastructure condition will have secondary benefits related to system reliability. Implementing Iowa's TAMP investment strategies will also enable more efficient use of available TAM resources, freeing additional resources to dedicate to making progress towards national goals related to system reliability.
Freight Movement and Economic Vitality To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.	Any improvement in infrastructure condition will have secondary benefits related to freight movement and economic vitality. Implementing Iowa's TAMP investment strategies will also enable more efficient use of available TAM resources, freeing additional resources to dedicate to making progress towards national goals related to freight movement and economic vitality.
Environmental Sustainability To enhance the performance of the transportation system while protecting and enhancing the natural environment.	Implementing Iowa's TAMP investment strategies will also enable more efficient use of available TAM resources, freeing additional resources to dedicate to making progress towards national goals related to environmental sustainability
Reduced Project Delivery Delays To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices.	The selected investment strategies do not specifically support this goal. However, in implementing the TAMP Iowa DOT will monitor actual expenditures and compare these with those projected in the TAMP. Supporting the investment strategies in the TAMP will require timely project delivery. Thus, actively monitoring TAMP implementation will help support minimizing delivery delays.

6.2 Funding Sources

Iowa DOT's Program Management Bureau forecasts state and federal revenue annually in preparation for the development of the Highway Program. State revenue sources have proven to be stable over time, and actual receipts typically track very closely to forecasted amounts. Iowa DOT estimates future federal funds based on existing funding identified in federal authorization bills. The current bill, the Infrastructure Investment and Jobs Act (IIJA), has provided federal funding authorization through September 30, 2026. The forecasts include the formula funding increases from the IIJA. The IIJA also includes many discretionary programs that could benefit Iowa DOT projects, but given the uncertain nature of obtaining funding through those programs, they are not added to the revenue forecasts. Longer term forecasting beyond this timeframe remains uncertain. Therefore, Iowa DOT uses a more conservative approach for forecasting funds for the outer years of the financial plan by holding them constant.

Iowa DOT's budget comes from three primary sources of funding: the Road Use Tax Fund (RUTF), the Transportation Investment Moves the Economy in the Twenty-First Century (TIME-21) fund, and federal funding.

A significant portion of Iowa DOT's funding is provided through the RUTF. The RUTF consists of revenue from annual vehicle registration fees, fees for new registration, state fuel taxes and other miscellaneous fees. These funds are allocated by law to Iowa DOT and Iowa's cities and counties according to a formula. After off-the-top allocations, 47.5% of the RUTF is distributed to the Primary Road Fund (PRF), which is dedicated to the construction and maintenance of the Primary Highway System. In 2023, Iowa DOT anticipates $747 million in funding from the RUTF will be allocated to the Primary Road Fund (PRF).

In 2008, the Iowa Legislature increased transportation funding and created a separate funding stream, titled TIME-21, by increasing registration fees for motor vehicles and trailers. This revenue is dedicated primarily to maintenance and construction of certain primary highways in the state (60 percent), but also of secondary roads (20 percent) and municipal streets (20 percent). In 2023, Iowa DOT anticipates receiving $135 million in TIME-21 funding.

Other state revenue sources include items such as reimbursements from other states for border bridge maintenance and improvements, revenue from the sale of excess right-of-way, PRF investment income, reimbursements from cities and counties, liquidated damages from contractors, reimbursements from insurance claims (e.g., bridge hits), and various other fees and income to the PRF. In 2023, Iowa DOT anticipates receiving $25 million in funding from other sources.

The Federal Government collects transportation funding and disperses it to the states through its Highway Trust Fund. The Highway Trust Fund is funded primarily by a motor fuel tax and fees charged to heavy vehicles. In 2023, Iowa DOT anticipates receiving $488 million in federal highway funding.

These funding sources are not all available for TAM. Iowa DOT has non-discretionary funding that cannot be used TAM purposes. This value is subtracted from the total available funding to calculate available TAM funding. Based on funding requirements and historical averages, Iowa DOT anticipates about 62% of this funding to be available for asset management uses. Over the 10-year period of the TAMP, funding sources are expected to total approximately $8.9B, as shown in Table 6.2. (Note that Iowa's state fiscal year runs from July 1 to the following June 30 and is numbered for the calendar year in which it ends. All years in this chapter are represented as fiscal years; for example, 2023 represents July 1, 2022 – June 30, 2023.)

Table 6.2: Summary of funding sources for TAM ($M)

Source	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Federal funds	**488**	**496**	**505**	**513**	**513**	**513**	**513**	**513**	**513**	**513**
State funds	**907**	**913**	**918**	**925**	**931**	**931**	**931**	**931**	**931**	**931**
PRF	747	753	758	765	771	771	771	771	771	771
TIME-21	135	135	135	135	135	135	135	135	135	135
Miscellaneous	25	25	25	25	25	25	25	25	25	25
Non-discretionary & line items (excluding TAM Contract Maintenance)	**-504**	**-517**	**-530**	**-543**	**-555**	**-555**	**-555**	**-555**	**-555**	**-555**
Total	**891**	**892**	**893**	**895**	**889**	**889**	**889**	**889**	**889**	**889**

6.3 Funding Uses

This section shows Iowa DOT's projected asset management expenditures over the 10-year period of the TAMP, organized by asset and work type. These expenditures draw on the funding sources described previously. These estimates were developed based on current funding, historical work type distribution, projected available funding, anticipated projects, and professional judgement. Note that in some years the projected funding uses slightly exceed funding sources; this is because Iowa DOT over-programs to account for any potential delay or suspension of projects. This helps mitigate project development risks. Table 6.3 shows a summary of funding uses for TAM.

Spending on NHS assets in Iowa is not currently tracked as a separate item. Funding estimates for NHS bridges and pavements were developed using assumptions based on work type history and the current Five-Year Program. Table 6.4 presents projected NHS TAM expenditures over the 10-year period of the TAMP. A discussion of projected performance and the funding gap to achieving a desired SOGR is included in Chapter 4.

Table 6.3: Summary of funding uses for TAM ($M)

Use	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Bridge	**199**	**252**	**221**	**243**	**339**	**252**	**252**	**252**	**252**	**252**
Maintenance	4	6	3	13	7	7	7	7	7	7
Preservation	10	3	6	3	5	5	5	5	5	5
Rehabilitation	35	53	56	43	35	45	45	45	45	45
Replacement	88	119	150	183	292	167	167	167	167	167
Construction	62	72	7	1	0	28	28	28	28	28
Pavement	**514**	**582**	**594**	**621**	**487**	**562**	**562**	**562**	**562**	**562**
Maintenance	22	17	17	17	18	18	18	18	18	18
Preservation	12	7	7	3	6	7	7	7	7	7
Rehabilitation	182	202	243	231	218	216	216	216	216	216
Replacement	169	182	148	158	183	169	169	169	169	169
Construction	130	174	178	210	63	152	152	152	152	152
Other*	**144**	**71**	**58**	**48**	**51**	**75**	**75**	**75**	**75**	**75**
Total	**857**	**905**	**873**	**912**	**877**	**889**	**889**	**889**	**889**	**889**

**Other TAM spending on assets including but not limited to signs, lighting, and culverts.*

Table 6.4: Summary of NHS funding uses for TAM ($M)

Use	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Bridge	**180**	**139**	**198**	**194**	**269**	**197**	**197**	**197**	**197**	**197**
Maintenance	4	6	3	12	7	6	6	6	6	6
Preservation	10	3	6	3	5	5	5	5	5	5
Rehabilitation	23	45	47	35	27	36	36	36	36	36
Replacement	81	78	137	142	231	134	134	134	134	134
Construction	62	8	7	1	0	16	16	16	16	16
Pavement	**434**	**491**	**468**	**497**	**367**	**454**	**454**	**454**	**454**	**454**
Maintenance	20	17	17	17	18	18	18	18	18	18
Preservation	8	7	7	3	6	6	6	6	6	6
Rehabilitation	114	112	151	136	117	127	127	127	127	127
Replacement	163	182	115	130	164	152	152	152	152	152
Construction	130	173	178	210	63	151	151	151	151	151
Total	**614**	**631**	**666**	**691**	**636**	**651**	**651**	**651**	**651**	**651**

6.4 Asset Valuation

FHWA requires state DOTs to include an estimate of asset value for NHS pavements and bridges in the TAMP. The financial plan process must also calculate the investment needed to maintain asset value. Iowa DOT uses a replacement value methodology to estimate asset value. The asset values are calculated by multiplying the inventory unit by the unit replacement cost. Given how Iowa DOT estimates asset value, asset values do not change as a function of asset condition. Thus, no investment is required to maintain asset value per this methodology. Asset values for Iowa DOT's bridges and pavements are included in Tables 6.5 and 6.6.

Iowa DOT estimates that it would cost more than $49 billion in current dollars to replace bridges and pavements on the Primary Highway System and more than $35.5 billion in current dollars to replace NHS bridges and pavements. Costs are routinely monitored and updated as part of the annual program development process. Cost increases have resulted in these system-level replacement costs being substantially higher than those documented in the 2019 TAMP; this cost is significant and reinforces the need for Iowa DOT to maintain its existing assets effectively in order to minimize expensive reconstruction activities.

Table 6.5: Bridge asset valuation

System	Deck Area (sq. ft.)	Unit Replacement Cost	Value
All State-owned	46,336,537	$394	$18,256,595,578
State-owned NHS	34,081,466	$362	$12,337,490,692
Other NHS	984,324	$292	$287,422,608

Table 6.6: Pavement asset valuation

System	Lane Miles	Unit Replacement Cost	Value
All State-owned	23,825	$1,300,000	$30,972,500,000
State-owned NHS	15,905	$1,400,000	$22,267,000,000
Other NHS	441	$1,400,000	$617,400,000

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