



Transportation Needs Study



Joint Transportation, Highways, and Military Affairs Committee
May 18, 2021

D Y E M A N A G E M E N T G R O U P, I N C.

In partnership with



Agenda

- Introductions
- Unfunded Annual Needs Estimates
- Needs Quantification Details
- Focus Group Findings
- Observations
- Questions

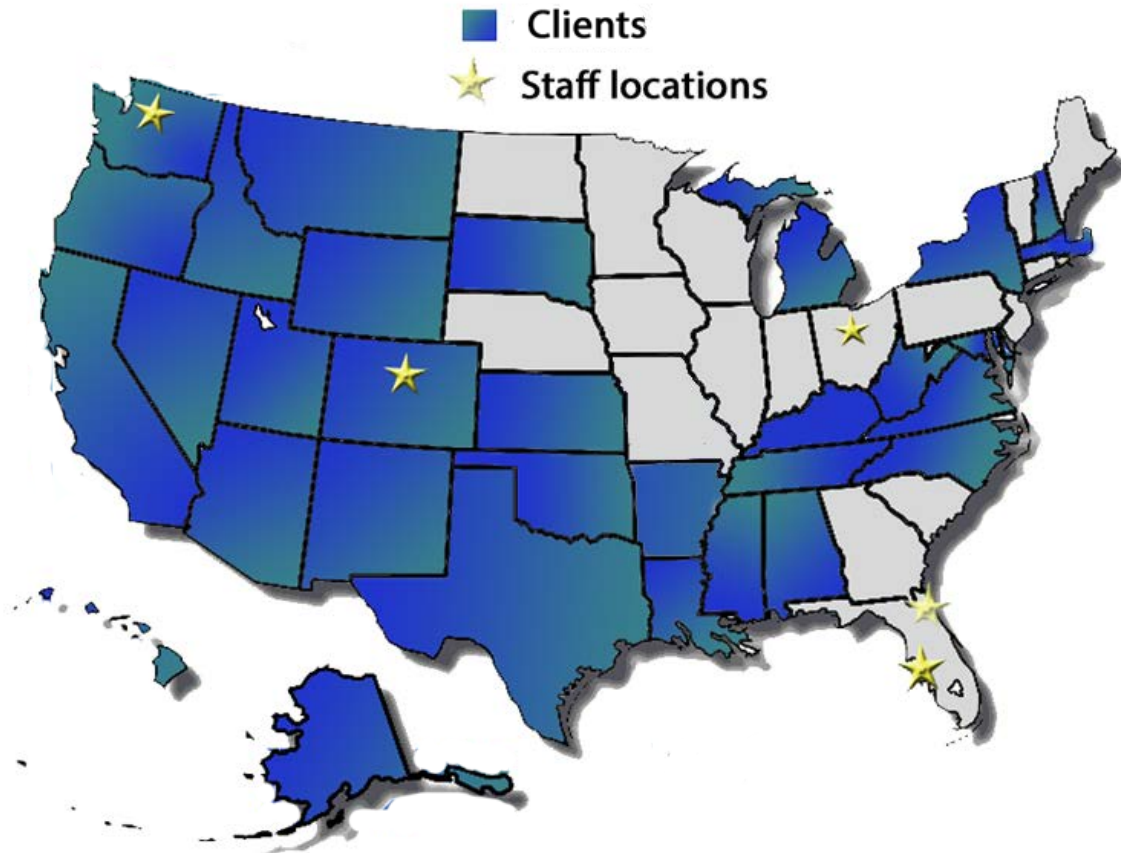


Dye Management Group, Inc.

- Transportation management consulting firm based in Seattle
- Founded in 1990
- Conducted over 400 Transportation Reviews in 31 States
- Projects for Transportation Departments and Legislative Committees
- Use experts and apply industry best practices



DMG Clients



Needs Quantification

Estimated Unfunded Annual Needs (in millions)

| Needs Area | Amount |
|---|----------------|
| Surface Transportation | \$196.2 |
| -Construction | \$103.7 |
| -Maintenance | \$9.9 |
| -Traffic | \$5.7 |
| -Safety | \$0.9 |
| -Projects Identified for Future Expansion | \$10.0 |
| -Wildlife Crossings | \$22.4 |
| -Delayed STIP Projects * | \$43.6 |
| Computer Systems | \$6.6 |
| Communications | \$0.8 |
| -Telecommunications Equipment | \$0.8 |
| Highway Patrol | \$17.1 |
| Motor Vehicle Services | \$9.1 |
| -Revenue Information System (RIS) | \$8.0 |
| -Non-RIS | \$1.1 |
| Aeronautics | \$44.7 |
| Fleet / Equipment | \$34.0 |
| Buildings / Facilities | \$43.7 |
| Design and Construction Survey Equipment | \$2.1 |
| Total | \$354.3 |

* \$435.7 million in delayed surface transportation projects over ten years



Budget Needs Quantification

Surface Transportation: Pavement Preservation/Construction

| Estimated Need (millions) | | |
|---------------------------|---------|----------|
| Total | Funded | Unfunded |
| \$236.7* | \$160.0 | \$76.7 |

* FY21 - FY30 average annual need

Method:

- Focus on maintaining the system in its 2017 (TAMP) state of performance, which represents an overall good pavement network with minimal poor pavement

| | Excellent | Good | Fair | Poor |
|--------------------|-----------|------|------|------|
| Interstate | 63% | 22% | 12% | 3% |
| Non-Interstate NHS | 42% | 26% | 22% | 10% |
| Non-NHS | 40% | 21% | 19% | 20% |
| Overall | 44% | 22% | 18% | 16% |

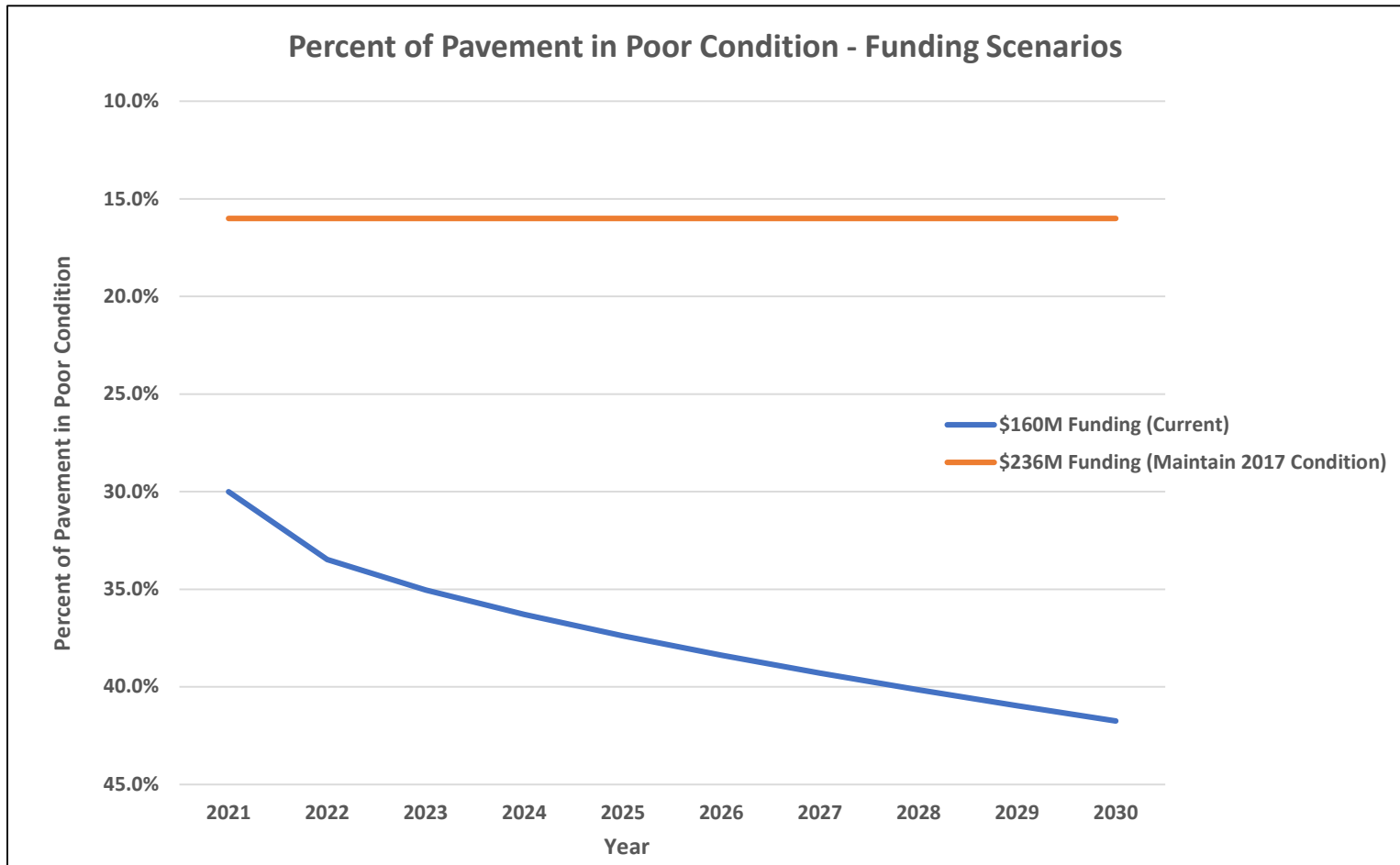
Impacts of underfunding:

- Increased costs to taxpayers due to increased life cycle costs to operate and maintain the roadway network
- Poor pavement condition can negatively impact traveler safety and reduce the level of service to the traveling public:
 - Rough ride
 - Potential damage to vehicles



Budget Needs Quantification

Surface Transportation: Pavement Preservation/Construction



Budget Needs Quantification

Surface Transportation: Bridge Preservation/Replacement

| Estimated Need (millions) | | |
|---------------------------|--------|----------|
| Total | Funded | Unfunded |
| \$62.0* | \$35.0 | \$27.0 |

* FY21 - FY30 average annual need

Method:

- FY21 need was developed by quantifying the needs to:
 - Replace bridges past their design service life over the next 20 years (\$50.5M per year)
 - Maintain 92 percent of all bridge deck area in good and fair condition (\$11.5M per year)

Impacts of Underfunding:

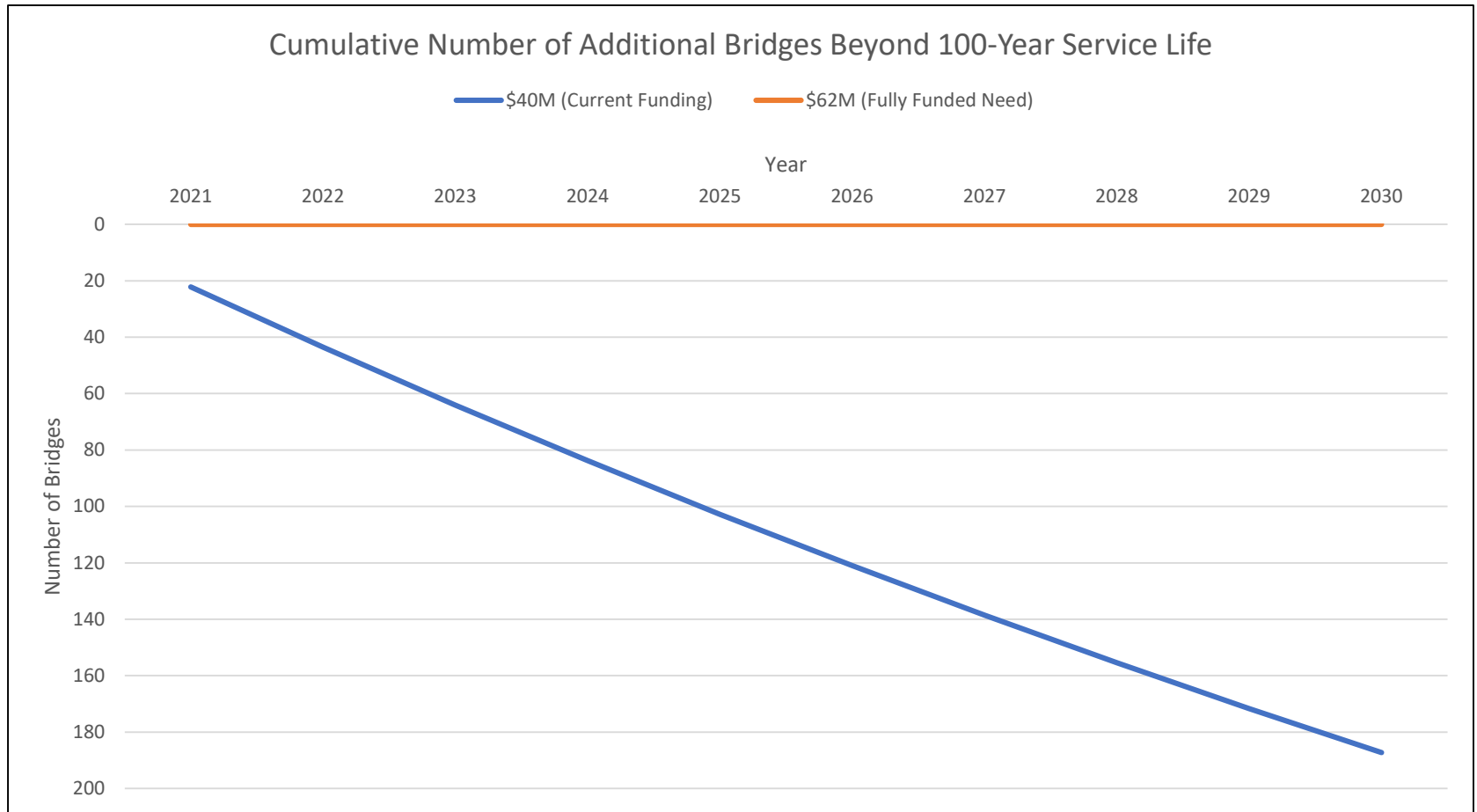
- Increased costs to taxpayers due to increased life cycle costs to operate and maintain WYDOT bridges
- Bridge weight postings can negatively impact freight and other heavy truck traffic
- Potential to not meet FHWA requirement of no more than 10% poor bridges on the National Highway System

“Ranchers may need to use two trucks to haul cattle instead of one”



Budget Needs Quantification

Surface Transportation: Bridge Preservation/Replacement



Budget Needs Quantification

Surface Transportation: Highway Maintenance

| Estimated Need (millions) | | |
|---------------------------|--------|----------|
| Total | Funded | Unfunded |
| \$98.3 | \$88.4 | \$9.9 |

Method:

- Calculated the backlog of work necessary to achieve target balanced scorecard levels of service (LOS)
- Includes 15 additional FTEs to deliver the performance-based LOS targets

| FY | Road Surface | | Shoulders and Approaches | | | | | | Drainage | | |
|----------------------------|--------------|---------|--------------------------|----------|-------------|---------|-----------|-----------|----------|--------------|---------------|
| | Concrete | Asphalt | Shoulder | Approach | Delineation | Barrier | Guardrail | Cablerail | Culvert | Buried Drain | Curb & Gutter |
| 2019 | 80.2% | 93.8% | 87.0% | 88.1% | 87.1% | 97.6% | 86.9% | 96.9% | 85.3% | 65.5% | 64.9% |
| Balanced Score Card Target | 90.0% | 95.0% | 90.0% | 85.0% | 85.0% | 75.0% | 85.0% | 95.0% | 90.0% | 85.0% | 65.0% |

Impacts of Underfunding:

- Decreased ability for snow and ice operations which can cause traveler delay and unsafe conditions
- Poor condition of ROW fence and roadway delineation and markings with negative impacts to traveler safety



Budget Needs Quantification

Surface Transportation: Traffic

| Estimated Need (millions) | | |
|---------------------------|--------|----------|
| Total | Funded | Unfunded |
| \$25.1 | \$19.4 | \$5.7 |

Method:

- 10-year annual average of \$5.7 million for traffic-specific projects that are currently unfunded, including:
 - Installing variable speed limit / dynamic message signs on I-80
 - Grooving I-80 pavement to increase the life of pavement markings
 - Installing backup power systems at tunnels

Impacts of Underfunding:

- Underfunding traffic-related assets increases the likelihood that drivers will encounter non-functioning traffic signals, signs, and roadway striping and delineation. This can lead to an avoidable increase in vehicle crashes, property damage, injuries, and fatalities.



Budget Needs Quantification

Surface Transportation: Safety

| Estimated Need (millions) | | |
|---------------------------|--------|----------|
| Total | Funded | Unfunded |
| \$20.0 | \$19.1 | \$0.9 |

Method:

- Quantified the gap between the \$20m/year needs quantification from the safety management system (which was previously reported as an unfunded need) and the \$19.11m that is funded in the STIP
- Safety-related projects can include:
 - Shoulder widening
 - Guardrail installation or enhancement
 - Roadway elevation modifications

Impacts of Underfunding:

- Safety-related projects are specifically planned to increase the safety of the highway network through design enhancements and safety asset installation.
- Underfunding these projects results in a less safe highway network for drivers, and an avoidable higher occurrence of vehicle crashes, property damage, injuries, and fatalities



Budget Needs Quantification

Surface Transportation: Projects Identified for Future Expansion

| Estimated Need (millions) | | |
|---------------------------|--------|----------|
| Total | Funded | Unfunded |
| \$10.0 | \$0.0 | \$10.0 |

Method:

- Worked with WYDOT to identify two-lane roads that are currently exceeding capacity and require future additional travel lanes
- Average of \$3.5 million per mile for expansion
- Annual average of the \$100 million in capacity projects over the next ten years

Projects to address two-lane roads exceeding capacity:

| Route | Community |
|---------------------|--------------|
| US-16 | Buffalo |
| WY-336 | Sheridan |
| S I-80 Service Road | Rock Springs |
| WY-22 | Jackson |
| WY-390 | Jackson |
| WY-254 | Casper |

| Route | Community |
|----------------------|--------------|
| WY-258/Casper Bypass | Casper |
| US-14A | Powell |
| WY-330 | Sheridan |
| WY-376 | Rock Springs |
| I-80 Bus | Laramie |
| I-80 Bus/US-30 | Green River |



Budget Needs Quantification

Surface Transportation: Projects Identified for Future Expansion

Impacts of Underfunding:

- Increased delays resulting in longer travel times
- Increased drive time with resulting negative impacts on individual and commercial carrier costs and economic vitality



Budget Needs Quantification

Surface Transportation: ITS/RWIS

| Estimated Need (millions) | | |
|---------------------------|--------|----------|
| Total | Funded | Unfunded |
| \$9.3 | \$9.3 | \$0.0 |

Method:

- Intelligent transportation system (ITS) and Road Weather Information System (RWIS) needs were identified by the WYDOT ITS/RWIS team and validated with DMG subject matter experts

Impacts of Underfunding:

- Increased delays resulting in longer travel time
- Decrease in traveler safety, particularly during times of inclement weather
- Increased time to clear highways of snow and ice due to the lack of real time climate and road condition information



Budget Needs Quantification

Surface Transportation: Wildlife Crossings

| Estimated Need (millions) | | |
|---------------------------|--------|----------|
| Total | Funded | Unfunded |
| \$22.4 | \$0.0 | \$22.4 |

Method:

- WYDOT worked collaboratively with several public agencies and wildlife non-profit groups to develop a priority list of locations
- Average annual need over 10 years (1 project/year)

Impacts of Underfunding:

- Continued incidence of avoidable vehicle and animal collisions resulting in injuries, loss of life, and vehicle damage



Budget Needs Quantification

Surface Transportation: Delayed STIP Projects

| Estimated Need (millions) | | |
|---------------------------|--------|----------|
| Total | Funded | Unfunded |
| \$43.6 | \$0.0 | \$43.6 |

Method:

- \$435.7 million in projects identified in the STIP that have been delayed until funding is available
- Used 10-year average of total project value

Delayed projects include:

Reconstruction:

- I-80 and I-25 interchange
- I-25 near Wheatland
- WY 487 near Casper

Widening:

- WY59 near Gillette
- US 89 near Thayne
- WY 212 near Cheyenne
- US 87/WY 335 near Sheridan

Adding a passing lane to:

- US 20/US 26 between Waltman and Shoshoni
- US 20/WY 789 between Shoshoni and Thermopolis

New construction:

- Bill Nye Avenue near Laramie



Budget Needs Quantification

Surface Transportation: Delayed STIP Projects

Impacts of Underfunding:

- Negative impacts on Wyoming economy due to loss of construction-related jobs
- Negative impacts on pavement performance and overall level of service
- Increased drive time with resulting negative impacts on individual and commercial carrier costs and economic vitality



Budget Needs Quantification

Computer Systems

| Estimated Need (millions) | | |
|---------------------------|--------|----------|
| Total | Funded | Unfunded |
| \$6.6 | \$0.0 | \$6.6 |

Method:

- Workshops with WYDOT IT personnel and business unit leads
- Includes enhancements/upgrades of existing systems, procurement of new systems, and estimated annual license fees
- 5 Additional FTEs

Impacts of Underfunding:

- Vulnerability to cyberattacks
- Increased “down time” of critical software and hardware systems
- Decreased productivity of WYDOT staff
- Decreased ability to support mobile WYDOT field operations and telework environment



Budget Needs Quantification

Communications

| Estimated Need (millions) | | |
|---------------------------|--------|----------|
| Total | Funded | Unfunded |
| \$5.5 | \$4.7 | \$0.8 |

Method:

- WYDOT came to an agreement with Motorola at the end of September
- Wyolink capital and operating needs of the physical infrastructure will be met over the next biennium
- Radio replacement (\$0.8 million) is still a need for WYDOT maintenance

Impacts of Underfunding:

- Vulnerability to cyberattacks
- Lack of coverage in remote Wyoming locations
- Increased likelihood of radio failure for law enforcement and WYDOT crews can negatively impact public safety



Budget Needs Quantification

Wyoming Highway Patrol (WHP)

| Estimated Need (millions) | | |
|---------------------------|--------|----------|
| Total | Funded | Unfunded |
| \$17.1 | \$0.0 | \$17.1 |

Method:

- Includes enhancement or replacement of enterprise systems as well as vehicle and officer related equipment
 - Includes Communications Center emergency phone system, additional radar devices, and secondary location for dispatch

Impacts of Underfunding:

- The lack of a secondary location for dispatch center ensures WHP dispatch operations will cease to function in the event of a natural or man-made disaster at the primary location
- Increased likelihood of equipment failure can negatively impact trooper, employee, and public safety



Budget Needs Quantification

Motor Vehicle Services

| Estimated Need (millions) | | |
|---------------------------|--------|----------|
| Total | Funded | Unfunded |
| \$9.1 | \$0.0 | \$9.1 |

Method:

- Includes \$8 million for RIS procurement and \$0.9 million for facility security enhancements/upgrades, and 2 additional FTEs for Compliance and Investigation
- Previously reported need was based on prior estimates for RIS, which has increased over time

Impacts of Underfunding:

- Longer wait times for customers
- Lack of self-service for customers that prefer that option results in a higher per-customer cost
- Increased likelihood of avoidable customer altercations with WYDOT staff



Budget Needs Quantification

Aeronautics

| Estimated Need (millions) | | |
|---------------------------|--------|----------|
| Total | Funded | Unfunded |
| \$95.0 | \$50.3 | \$44.7 |

Method:

- Worked with WYDOT to review the Wyoming Aviation Capital Improvement Program (WACIP) and non-WACIP needs
- WYDOT Aeronautics Division worked with all publicly-owned airports to understand and validate their “true” needs and review the WACIP

Impacts of Underfunding:

- Disruptions to emergency medical care, aerial firefighting, and agricultural needs throughout the state
- Negative impacts on the Wyoming economy if unable to attract and retain businesses
- Increased costs to the taxpayer due to increased life cycle costs to operate and maintain airports
- Loss of commercial air service to airports in Wyoming



Budget Needs Quantification

Fleet and Equipment

| Estimated Need (millions) | | |
|---------------------------|--------|----------|
| Total | Funded | Unfunded |
| \$41.5 | \$7.5 | \$34.0 |

Method:

- Estimated fleet replacement budget was cut from \$13.5 million (FY20 funding levels)
- Previous estimate based on FY20 funding levels and FY21 projections

Impacts of Underfunding:

- Increased costs to the taxpayer due to higher life cycle costs to operate and maintain the fleet
- Negative impacts on WYDOT operations due to equipment downtime and an inability to access the right piece of equipment at the right time
- Potential negative impacts on snow and ice operations with resulting negative impacts on traveler safety and travel time



Budget Needs Quantification

Buildings and Facilities

| Estimated Need (millions) | | |
|---------------------------|--------|----------|
| Total | Funded | Unfunded |
| \$49.2 | \$5.5 | \$43.7 |

Method:

- Includes results of analysis and interviews with district engineers to identify additional facility needs, including functional needs (e.g., larger facilities to accommodate larger equipment)

Impacts of Underfunding:

- Increased costs to the taxpayer due to higher costs to operate and maintain buildings and facilities
- “Functionality obsolete” facilities hinder the ability of WYDOT maintenance forces and mechanics to deliver the department mission



Budget Needs Quantification

Design and Construction Survey Equipment

| Estimated Need (millions) | | |
|---------------------------|--------|----------|
| Total | Funded | Unfunded |
| \$2.1 | \$0.0 | \$2.1 |

Method:

- Workshops with WYDOT team members
- Includes geology and photogrammetry equipment, survey units, tablets, processing software, etc.

Impacts of Underfunding:

- Slowdowns in construction projects due to limited ability to gather and report necessary data to efficiently and effectively design and monitor construction projects
 - This can lead to negative impacts on traveler safety, travel times, and the Wyoming economy



Focus Group - Willingness to Pay

| Element | Average Rating |
|--|----------------|
| Improve paved roadway surfaces so the ride quality is smooth and nearly free of potholes and other flaws | 2.62 |
| Improve pavement center and edge lines so the markings are present and highly reflective | 4.42 |
| Improve bridges and overpasses so there are almost no bumps or dips as they are approached and no visible cracks | 5 |
| Increase width of roadway shoulders | 5.27 |
| Enhance snow removal | 5.31 |
| Increase width of roadway | 5.77 |
| Improve signs so they are highly visible and easy to read | 7.23 |
| Improve mowing so the grass is consistently short to improve visibility for the driver | 8.19 |
| Improve rest areas so they are clean and well-kept | 8.69 |
| Improve litter pick-up so the roadside is free of litter, other debris and road hazards | 8.85 |
| Improve guardrail | 9.27 |
| Increase the number of digital message signs | 9.92 |
| Increase the number of bicycle lanes | 10.46 |

1 = Most Willing 13 = Least Willing



Observations

- Current funding levels are unsustainable for WYDOT to continue delivering the level of service citizens expect
- WYDOT will have to cut services (e.g., close rest areas, reduce snow/ice operations, etc.)
- Underfunding asset preservation results in a higher overall cost during the life of the asset.
 - \$1 spent at the right time to preserve the asset can avoid up to an \$8 cost later to replace the asset
- Wyoming citizens are willing to pay to invest in many of the assets and operations where WYDOT has a critical need
- Moving to a “performance-based” approach will help WYDOT develop an optimized budget that focuses on improved safety and level of service



Questions?

