Asset Management's Resilience: Will We Survive or Thrive in the Next Decade?

15th National Conference on Transportation Asset Management Keynote Speech by Katie Zimmerman, APTech

Thank you, Omar, and welcome everyone to the 15th National Conference on Transportation Asset Management. I'm honored to have been asked to open the conference. I chose a theme of resilience for my presentation because I think this is something that's on everyone's mind these days, especially in light of the increasing frequency and intensity of weather events that are making asset management more challenging than ever.

But rather than focus on how resilience is impacting the way we're managing assets, I thought it might be worthwhile to focus on the practice of asset management itself…using what we know about resilience to question whether we've built a sustainable practice that's resilient enough to survive in today's geopolitical climate. Today's agency leaders are dealing with all kinds of things:

- political uncertainties,
- funding uncertainties,
- rapid changes in the technologies available to support decisions,
- changes in the way workplaces operate, and
- huge losses in institutional knowledge.

Any of these things alone could easily put an end to, or significantly alter, asset management practices as we know them today. I thought it might be interesting to evaluate the asset management process itself in terms of its ability to continue

functioning as “our way of doing business” in spite of all the uncertainties in the world around us.

But perhaps more importantly, I’m not just curious as to whether or not asset management will survive in the next decade, I was especially interested in thinking about what might be needed so asset management does more than survive; I was curious as to what might be needed to ensure that it thrives in the future.

I want to start by asking you to do a little exercise with me. As you know, this is the 15th National Conference on Transportation Asset Management and I’m curious to see how many of you are newcomers to asset management, or old timers, like me. I’d like to ask you all to stand.

- If this 15th conference is your first, welcome, and please sit down.
- If you’ve attended up to 5 of these conferences, please sit down.
- Those of you that have attended 5 to 10 of them, please sit down.
- Those of you remaining, you may exemplify resiliency, but please also sit down.

What does this show us? With this large group of newcomers there’s a lot of new knowledge and enthusiasm being brought to our profession that will have a tremendous influence on how asset management thrives in the next decade.

I expect your energy will provide a lot of opportunities to make better use of technology, since you haven’t been entrenched in older ways of doing business, you’ll find more creative and effective ways to manage assets.

At the other end of the spectrum, the dwindling numbers of **“seasoned”** practitioners may also introduce some challenges with the loss of historical context and years of practical experience. This has the potential to lead to an over-reliance on data and analysis results without really understanding their limitations. It’s possible that previously discarded strategies will be repeated simply because the context for how prior decisions were made is no longer known within the organization.

While repeating past mistakes can be inefficient or damaging, perhaps even more threatening for a transportation agency is the possibility that **inexperienced practitioners might not understand or might not recognize potential risks**. From an asset management perspective, this could be a significant issue, especially if inexperience leads to regulatory or safety issues, or unexpected, negative long-term impacts in system performance. I heard one professional caution that it’s not about making mistakes since everyone makes mistakes at some point. **The more serious issue is not even realizing the potential for making mistakes**.

In a session at TRB earlier this year on workforce development, several DOT Directors and HR Directors talked about this issue. They recognized the changes taking place in

the workforce and noted that a key is going to be figuring out how to build institutional knowledge at a faster rate than has happened in the past. We don't have time to let people get their feet wet and build their skills over time. Today newer staff are being put in positions of responsibility much earlier in their careers, and **that creates the challenge to figure out how to quickly transfer critical knowledge from one generation to another so they have the skills necessary to avoid any serious long-term consequences**.

I also think it's important to recognize that as an industry, AM is still relatively young. I graduated with my Master's degree 40 years ago and I've spent my entire career practicing some form of asset management. When I started my career, I worked in pavement management. At that time, managing assets was very stove piped with decisions and data all segregated by asset type. In the early days, asset management involved manual condition surveys and the use of mainframe computers to do rather limited forms of analyses on a project by project basis.

The concepts of managing the transportation network from a systems perspective wasn't even introduced until the mid- to late 1970s and early 80s. Early adopters and innovators were limited in terms of their ability to put ideas into practice by the absence of the tools and technology needed to analyze complex problems - problems such as optimizing the use of available funds across multiple assets subject to a series of constraints.

I had the privilege of being friends with one of those early innovators, Fred Finn. He retired in Monticello, IL; a town near me in Champaign-Urbana. Fred was a kind, generous person and a co-worker and I were fortunate to have gotten to join him for lunch several times a year. During those lunches we'd pick his brain about the "early" days and he'd pick our brains about how things were changing and evolving. During one of our lunches, I asked him how he and his peers were able to turn their ideas about managing assets from a systems perspective into reality. He said there were two success factors that made the difference.

- The first was being able to bring together people with different areas of specialization to solve what was a multi-disciplinary problem. The first computerized management systems for pavements were developed by a team that included a pavement engineer familiar with pavement conditions and performance, a statistician who was familiar with model development, an expert in optimization theory, a programmer, and a database manager.
- The second success factor was their ability to build buy-in among agency personnel who were used to a very different way of doing their jobs, so that the models and analysis results were accepted. They did this by going out into the field to compare district project lists generated by the usual methods with the

> outputs from the computerized analysis. That buy-in was critical to the acceptance of the analysis tool because it demonstrated that reasonable results could be generated…results that could be used to support decision processes.

Although Fred didn't talk about it, I think there was a third success factor that's worth noting…the transformation that was starting to take place in terms of technology in the 1980s. When I started my career, desktop computers were just coming into existence, and most organizations only had a couple of computers – **they certainly weren't on everyone's desks or in their pockets!** But as technology evolved, and computers became more accepted and affordable, suddenly practitioners had access to desktop tools that could analyze network-level needs in a matter of hours instead of the days/weeks/or months needed by a mainframe computer.

Because of the contributions of these innovators and the foresight of key people at the FHWA, AASHTO, and TRB, I think asset management has a strong foundation from which to build on. Since the first AASHTO *Transportation Asset Management Guide* was published back in 2002, we've had foundational principles that guide asset management. Since 2012, with the requirements for State DOTs and Transit agencies to develop Asset Management Plans, we've seen asset management practices evolve from siloed systems concerned only with the needs of a single asset (as in the 1980s), to more sophisticated, risk-based analyses that consider the condition and performance needs of the entire system to achieve an agency's strategic long-term objectives.

In many agencies, asset management is considered “standard practice” in terms of identifying cost-effective investment decisions. In several cases, AM has moved up to fairly high levels within DOT organizations, rising from the engineering levels to:

- Department level Asset Management Offices or Divisions or
- Asset Management Committees that might be chaired by executive level personnel.

We’re also seeing asset management as a cross-cutting activity within an organization, with participation and input from planners, programmers, engineers, finance, field personnel, data analysts, and so many others. **All of these foundational pieces provide a strong structure from which asset management can grow.**

I don’t know how asset management will evolve over the next decade, but with a good foundation, and a frank assessment of what’s needed to make asset management more resilient, I want to offer you some ideas for how I think asset management can adapt to a changing, complex world and remain useful in supporting the types of decisions that have to be made when managing a transportation system in the face of uncertainty.

Assessing Asset Management’s Resilience

Since the theme of my presentation is the resilience of asset management, I want to make sure we’re all on the same page with what that even means.

The FHWA defines resilience as “the ability of a transportation system to anticipate, prepare for, and adapt to changing conditions, and to withstand, respond to, and recover rapidly from disruptions.”

To be able to adapt to changing conditions, an agency has to anticipate risks and vulnerabilities so they can develop strategies that prepare them for unexpected events. Those strategies have to consider all possibilities, including being able to withstand the changing conditions, respond to them, and minimize the recovery time to return system performance to an operational condition.

When considering the resilience of asset management as a practice, I wanted to use similar concepts. I came up with seven factors that I think will be important to asset management over the next 10 years, especially if we're looking for it to not just survive but thrive.

Within each area, I assessed both our current strength and the perceived urgency in terms of Low, Medium, and High. I'll also highlight some of the strengths and weaknesses in each area.

Keep in mind, this assessment is entirely based on my perceptions. It would definitely benefit from the input of others, including the FHWA TAM Expert Task Group (TAM ETG), the AASHTO TAM Subcommittee, and the new TRB Asset Performance and Risk Committee.

1. Technological Adaptability

Let's start with our adaptability to technology.

There is so much data available today and so many new ways of being able to obtain the data.

- Are we prepared to take advantage of new technology?
- Are DOTs nimble enough to adopt new technologies in a timely fashion?
- Can we make use of new technologies like AI and Machine Learning to process that data quickly and in a meaningful way?
- Will there be new sources of data that will require us to think about data access and ownership?
- And as systems become more connected, will agencies become increasingly vulnerable to cybersecurity threats?

Current Strength: Low – Primarily because of the lack of "nimbleness" to evaluate and adapt new technology.

Urgency: High

Strengths:

- Availability of technology

Weaknesses:

- Speed with which innovations are adopted
- Potential conflicts in system compatibility
- Ability to use data to produce useful information
- Introduction of new issues, such as cybersecurity threats, data ownership, etc.

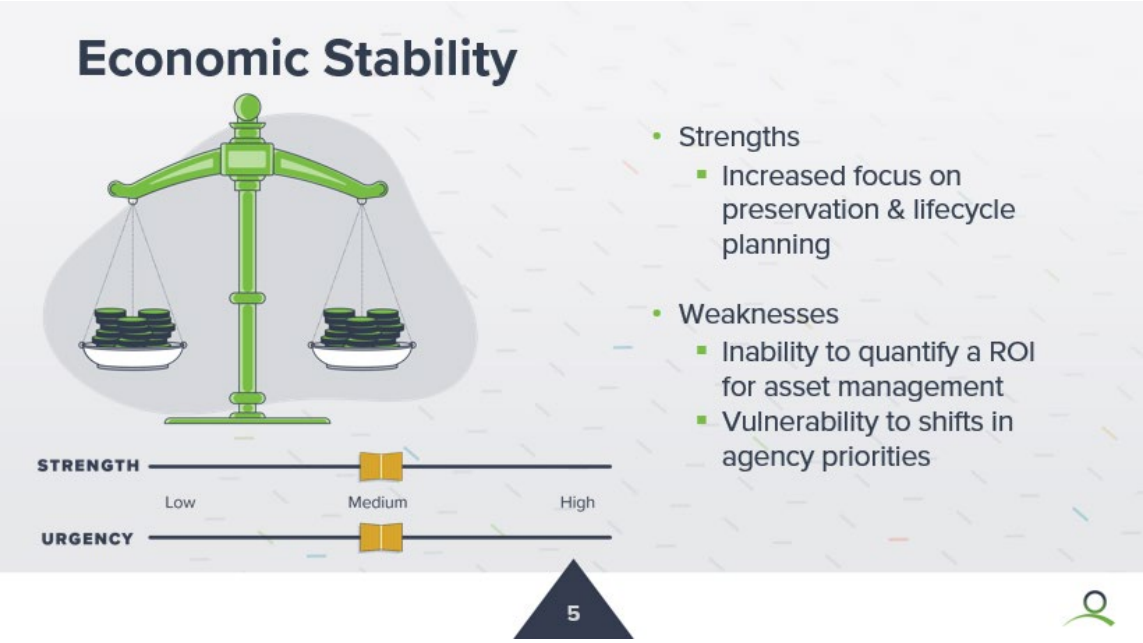
2. *Economic Stability*

The second area is economic stability.

Asset management is dependent on the data that agencies collect regularly and the availability of analysis tools to compare long-term impacts of different strategies. Asset management is vulnerable to shifts in funding – not only funding to support system preservation but also funding to maintain the data and analysis tools. Without the ability to show a Return on Investment (ROI) for these efforts, there is a possibility that agencies won't continue to fund data collection. What happens to our ability to forecast consequences if we don't have reliable data to drive decisions?

Another consideration is that right now, there's a focus on preserving existing assets because there just isn't enough funding to expand the system. With the focus on life cycle planning, agencies are evaluating long-term strategies that reduce the lifecycle cost of maintaining transportation assets. But what if that shift changes? What if there is a return to more low-cost, short-term options that have lower construction costs, but

lead to higher lifecycle costs in the long run? Do we have ways to convince decision-makers that focusing on long-term strategies is the better decision?



Current Strength: Medium – I think there's a strong focus on system preservation right now and the current requirements for AMPs and TPM support the need for data. But, I do think it's vulnerable and very dependent on what is included in future transportation bills so we may have to come back and revisit this rating.

Urgency: Medium – I rated the urgency as Medium because I think we're in a good place with data collection right now, but if the focus starts to change, the priority might shift to high.

Strengths:

- Increased focus on preservation and lifecycle planning and the data needed to support these efforts.

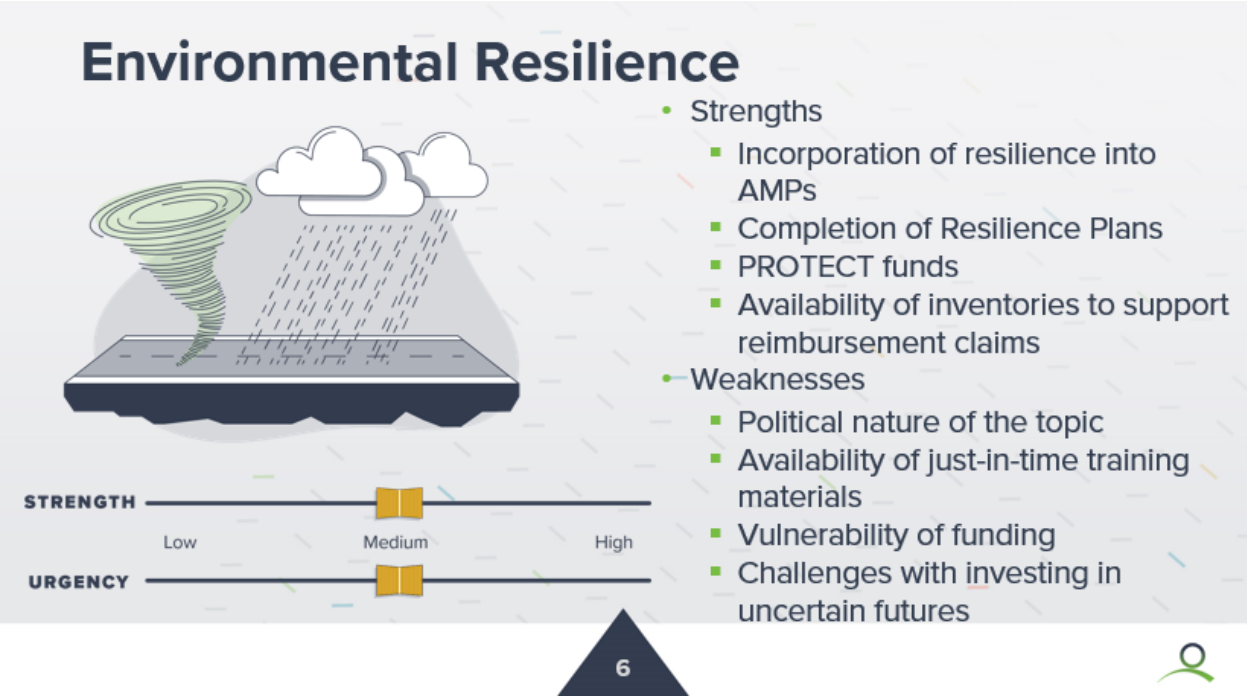
Weaknesses:

- Inability to quantify a return on investment for asset management
- Vulnerability to a shift in agency priorities from preservation or sound life-cycle strategies to more short-term strategies

3. *Environmental Resilience*

With increases in the number and intensity of storms, asset management is a valuable tool for assessing asset vulnerabilities and using that information to set investment priorities that enhance system resilience.

Asset management also offers critical support to DOTs in recovery efforts following natural disasters, including providing the inventory and work history data needed to support reimbursement claims from FEMA or other organizations. Will the focus on these efforts increase over the next decade – resulting in an increased use of asset management? Or will it shift to some other priority – perhaps shifting priorities away from asset management?



One area of weakness in this area is the lack of any formal consideration of environmental conditions in network-level analysis models. We've seen progress in project-level models, but we haven't seen a lot of success in modeling resilience and sustainability considerations at the network level.

Current Strength: Medium – Right now, resilience seems to be a priority and there's a lot of good work being done in terms of assessing vulnerabilities and prioritizing enhancements to vulnerable assets.

Urgency: Medium – Again, I think we're in a good place in this area. Yes, there's still work to be done, but I think it's happening at a reasonable pace.

Strengths:

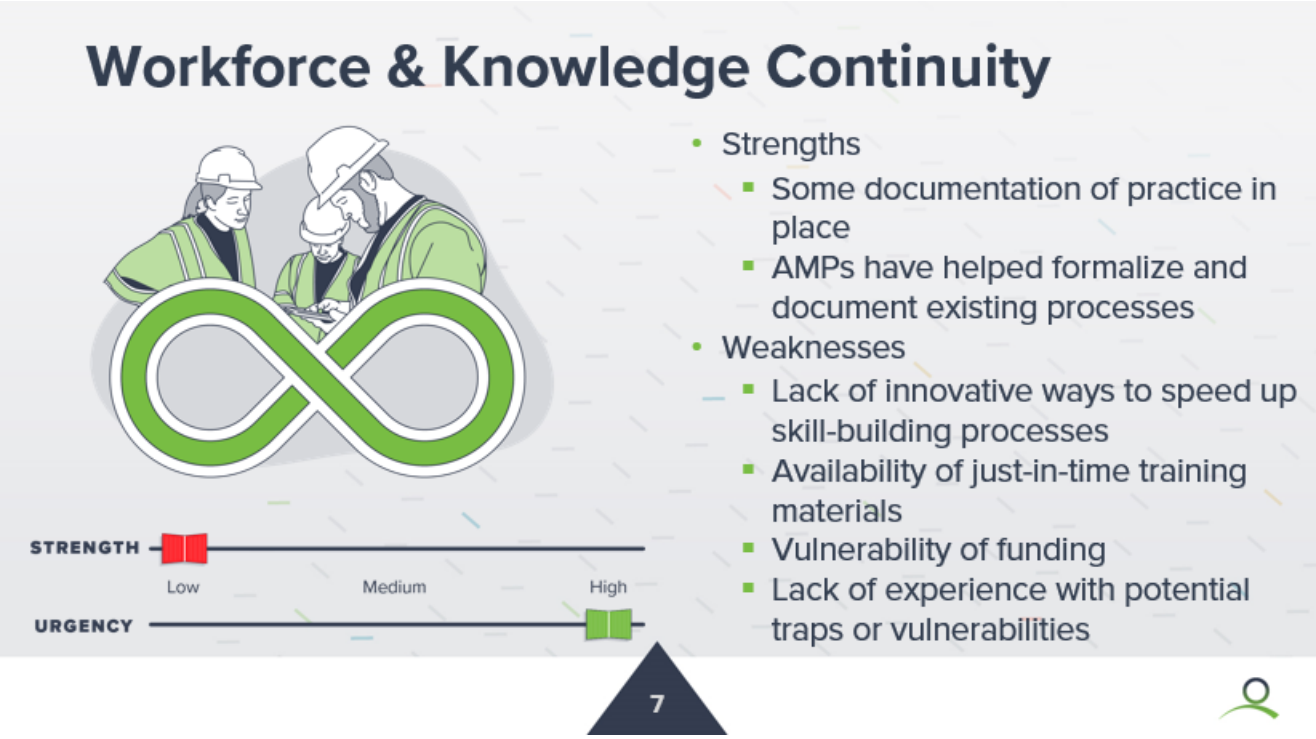
- Incorporation of resilience into Asset Management Plans
- Completion of Resilience Plans
- PROTECT funds to address resilience priorities
- Availability of inventories to support reimbursement claims

Weaknesses:

- Political nature of the topic in today's environment and its potential impact on funding to support vulnerable assets
- Lack of formal consideration of environmental considerations in network-level analysis models
- Challenges with convincing decision-makers to invest in strategies for events that may or may not occur

4. Workforce and Knowledge Continuity

I've already talked about the importance of transferring knowledge from one generation to another, especially as newer practitioners are being given increasing responsibility early in their careers.



From what I've seen, few agencies have documented their practices in ways that would enable someone new to get up to speed quickly. That begs the question of whether there might be more effective ways of capturing that knowledge so it's available in digestible quantities when it's most needed. I know there are studies underway to evaluate TAM workforce needs, and I'm hopeful that those efforts will lead to innovative strategies for building a workforce that can adapt asset management programs, with confidence, as needs change.

Current Strength: Low – Even though there are a lot of resources out there, I rated it low primarily because the material isn't packaged in a way that serves our needs

Urgency: High

Strengths:

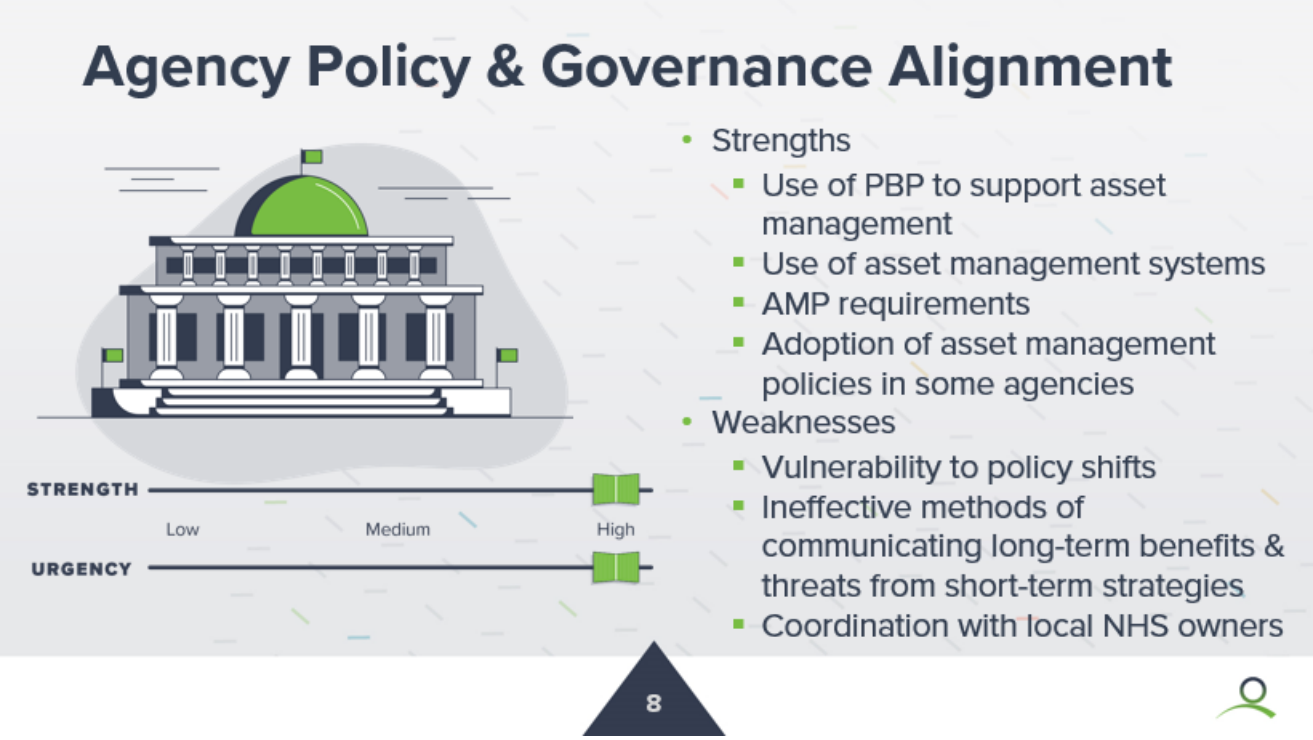
- Some documentation of practices in place
- Asset Management Plans have helped to formalize and document existing processes

Weaknesses:

- Lack of innovative ways to accelerate skill-building processes
- Availability of just-in-time training materials or simulated situations that build problem solving skills.
- Lack of experience with potential traps or vulnerabilities

5. *Agency Policy and Governance Alignment*

Over the years I've heard regret that since the ISTEA mandate from 1991 that required State DOTs to implement pavement management systems by 1997 and bridge management systems by 1998 was repealed, funding and support for data collection and software has become more vulnerable.



In 2012, MAP-21 re-emphasized the importance of pavement and bridge management systems to support the development of State DOT asset management plans. Under

current legislation, each State DOT is to use its bridge and pavement management systems to analyze conditions for the purpose of developing and implementing the AMP. But again, these requirements are vulnerable to political forces in Congress and could be removed in subsequent transportation bills.

So how can we keep the focus on performance-based management and the use of asset management to support investment decisions? Some agencies have embedded asset management into policies, ensuring that it remains the way investment decisions are made.

We should be asking whether our current analysis tools are aligned with leadership priorities, or whether there are changes needed. We might also question whether the outputs from these systems are effective at communicating why long-term strategies are so beneficial.

Governance alignment also speaks to the challenges associated with the coordination required between State and local owners of the National Highway System. When pressed, most MPOs will admit that NHS projects typically aren't driven by pavement and bridge conditions. Rather, their focus tends to be more on safety and mobility concerns. But as several State DOTs have demonstrated, by providing useful asset management information to the MPOs, States can influence regional priorities to address shared needs.

Current Strength: High- I think we're in a strong position right now and I hope asset management continues to be a priority in future authorizations.

Urgency: High

Strengths:

- Use of performance-based planning processes in support of asset management
- Use of asset management systems
- Requirements to develop and implement Asset Management Plans
- Adoption of asset management policies in some agencies

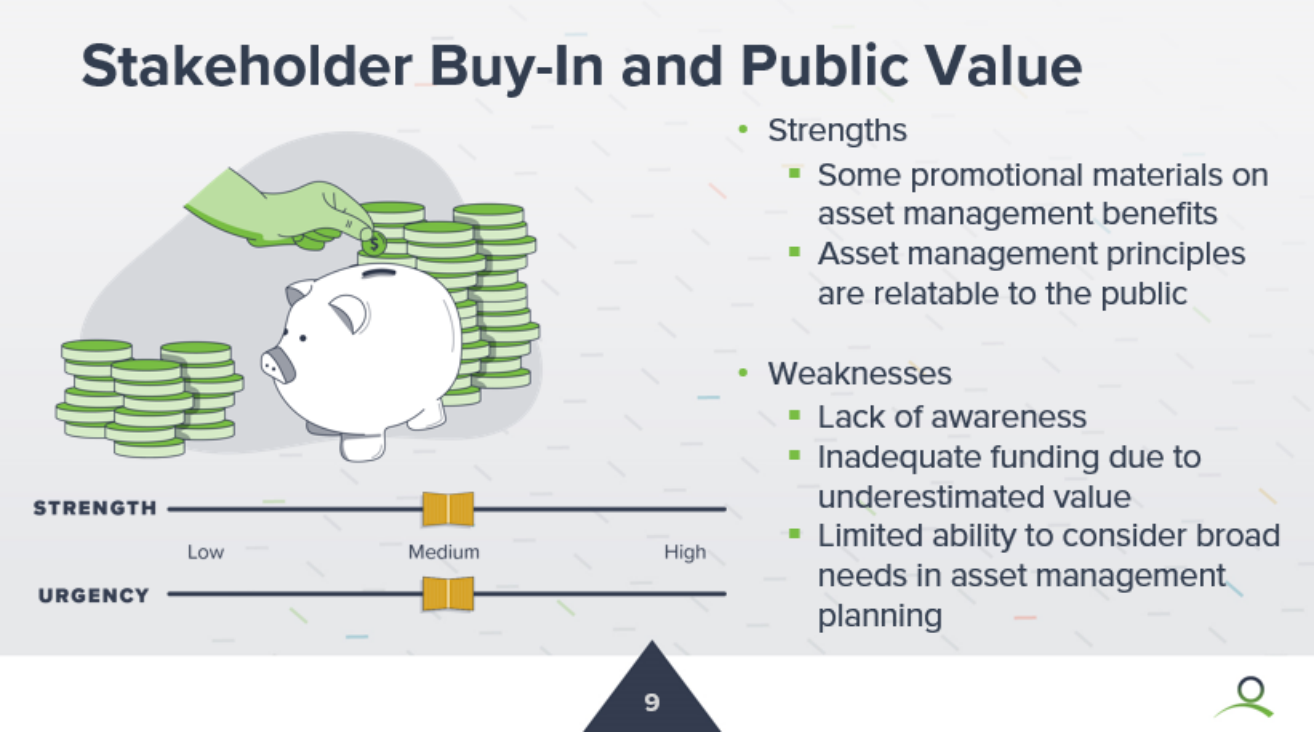
Weaknesses:

- Vulnerability to shifts in priorities
- Ineffective methods of communicating the long-term benefits of asset preservation and threats from short-term strategies
- Coordination with local owners of NHS assets

6. *Stakeholder Buy-In and Public Value*

We've all heard of instances in which a member of the public questions why a DOT or other agency is spending time and money on an asset in good condition when there are

so many assets in poor condition that need more substantial improvements. This is just an example of the public not understanding the purpose of a preservation treatment, but when we illustrate the concept in terms of something they're familiar with – like maintaining a car or a house – they can understand the concept. But it illustrates that knowledge of asset management principles is not generally understood.



I think the public underestimates the value and benefits that transportation agencies provide and I think that is reflected in the limited funding available to support asset management. There are several calculators that are available to estimate what a typical driver pays in gas taxes each year. On average, depending on mileage, fuel efficiency, and tax rates, **the average driver might pay between $141 and $398 per year in fuel tax** towards highway maintenance. That's nothing. I don't know about you, but **even with the senior citizen unlimited program at Verizon, I'm paying more than that for my phone**! It might benefit the long-term viability of asset management to find ways to raise the value of transportation to the public.

Another factor affecting asset management is that in some communities, pavement and bridge conditions aren't as important as other transportation considerations, such as the availability of sidewalks or access to transit.

One of the things we've realized in the past few years is that many of the performance measures we use to drive investments have inherent biases towards car users. Think about measures such as Vehicle Miles Traveled (VMT) or Vehicles on Poor Roads. Each of these is looking at conditions based on users rather than on community needs.

When you're identifying pavement or bridge needs, it makes sense to use conditions and vehicle usage as the primary drivers for treatment decisions. But when we manage assets **from a system perspective**, we have to consider other local priorities that might influence the work that's done – as I suggested the availability of sidewalks, bike paths, and pedestrian crossing islands to name a few. Our current tools don't do a good job of support these types of analyses.

Current Strength: Medium

Urgency: Medium

Strengths:

- Availability of some promotional materials on the benefits to asset management
- Asset management principles are explainable in relatable terms to the public

Weaknesses:

- General lack of awareness of asset management practices
- Inadequate funding for transportation due to underestimating its value
- Limited ability to consider broader transportation needs in asset management planning

7. ***System Flexibility***

Lastly, we need to consider the flexibility of the data and tools that we're using in support of asset management.

The pavement and bridge management systems that are in use today are complex tools with models for:

- predicting changes in conditions over time,
- applying rules about what types of treatments are needed over an analysis period,
- calculating treatment costs,
- forecasting the expected performance AFTER the treatment is applied, and
- summarizing network conditions for each budget scenario.

From what I've seen, many new practitioners don't have the familiarity or confidence to be able to change these models and so they're hesitant to do any type of analysis outside the norm. Unfortunately, if asset management is going to be able to adapt to shifts in funding, treatment types, construction practices, traffic shifts, automated vehicles, and other changes, pavement and bridge managers are going to need to be able to adjust the models accordingly.

On the other hand, we have to recognize that not all agencies need the same degree of sophistication, so we need tools that accommodate all ranges of complexity. In Indiana and Michigan, for example, local agencies are either encouraged or mandated to develop simple Asset Management Plans that outline planned improvements that will be made. These AMPs aren't nearly as complex as the AMPs that State DOTs prepare every 4 years, but they're a step towards encouraging the use of asset management at the local level. The Brookings Institute estimates that 75% of the roads in the US are managed by local agencies, so anything we can do to encourage their use of asset management practices is sure to benefit them and to promote asset management practices.

Current Strength: Medium

Priority: High

Strengths:

- Availability and use of management systems to analyze conditions
- Initiatives in some States to support local agency asset management practices

Weaknesses:

- Inability or hesitation to adapt models to changing conditions
- System complexity limits its agility
- Coordinated efforts to help local agencies adopt asset management

Suggestions For Helping Asset Management Survive

From my analysis I've identified four high priority areas where I think we need to focus our attention to ensure that asset management doesn't just survive…it can actually thrive over the next decade. Here are my suggestions for moving forward…in no particular order.

Technological Adaptability – The first area is Technological Adaptability. We have to be more nimble in terms of adapting to new technology so we can take advantage of the opportunities available and keep asset management relevant in a changing world.

- I think we need to "get outside of our comfort zone" and take a chance on new innovations and new ways of looking at traditional practices. A key to that is building a culture that encourages practitioners to take "calculated" risks that are evaluated against the potential rewards and monitored over time so adjustments can be made based on what's working and what isn't. Within this culture, failures should be viewed as lessons learned rather than reasons to end a practice or punish an employee. I would love to see transportation agencies reward employees for taking these calculated risks rather than have them keep doing the same thing over and over again just because "it's the way we've always done it."
- It also means being able to quickly assess and evaluate which technologies make sense and how to best use the data that's generated. There's a very good chance that the assets we'll need to manage in the future will look quite different – and perhaps less tangible and more virtual or digital – than those we're

managing today. In the future, asset management will have to be able to account for communication networks, systems to facilitate connected or autonomous vehicles, non-contact vehicle charging systems, and so much more. We'll need to think about what data and tools will be needed to support these kinds of assets.

- Tools like AI and ML show promise for analyzing and making sense out of large amounts of data, but we have to use those tools wisely. Just last week I heard a story about how an AI Tool that was touted as being equivalent to a PhD couldn't label the 50 states on a map correctly. I've found AI tools to be very helpful and in yesterday's peer exchange there was a lot of good information for how we might use these tools to generate presentations in very creative and effective ways. In my mind, this is going to be critical for asset management's future.
- But, we can't use the results blindly. Just as we do quality checks on condition data provided by contractors before we put it into our management systems, we have to retain sufficient organizational knowledge to know whether the answers we're getting are good or bad. One of my favorite examples to illustrate this comes from a European study in the 1980s. In that study, a significant positive correlation was found between the size of the stork population and human birth rates in Europe. Now, while there was definitely a correlation between the two data sets, the correlation does NOT IMPLY CAUSATION. I use this to stress the point that we have to know how to interpret the data and know whether it makes sense if we're going to use it to support decisions.
- We also have to be able to use the data to communicate more effectively. As I mentioned, this was a focus of yesterday's peer exchange and we learned a lot about generative AI, communication strategies, and data visualization techniques. We've got to get smarter about using these tools. I'm an engineer, so I can say this. The way we typically present information to decision makers, elected officials, and the public isn't useful. It can't be grasped quickly, and it isn't compelling. We need to involve people who understand communication to help us tell our story more effectively if we want asset management to thrive.

System Flexibility – The second area to consider is System Flexibility.

- To remain relevant, we're going to need analysis tools that allow practitioners to easily assess potential changes they can be analyzed. I've seen this as a challenge over and over again as agencies consider different LCP strategies while they're developing their Asset Management Plans. Adjusting the models to explore the potential impacts of new materials or changes to traffic patterns is a significant effort….and it's one that people don't have the time or confidence to do. As a result, agencies don't have a good idea of the impacts these changes can bring – whether they're negative or positive.

- We also need to improve our confidence in asset management data and analysis results. We need to take steps to make the data collection process more reliable, we need to spend time evaluating the reasonableness of the models, and we need to make sure that practitioners have the skills needed to operate and understand these systems. At the same time, we need to be able to quickly assess the role technology can play in improving the quality of the data that's being used to inform decisions.

Policy and Governance Alignment – The third priority area is Policy and Governance Alignment. We're fortunate right now that we have a highway bill that's supportive of asset management. That legislation has had a significant impact on the use of asset management in the US. But we can't count on the permanence of that legislation.

- That means we have to better communicate the benefits of asset management so agencies continue to prioritize long-term solutions over short-term, less cost-effective strategies. Some agencies have ensured the sustainability of asset management by adopting policies and directives that specifically state that asset management will drive preservation decisions. Perhaps this is a good time to try to get similar policies in place before there are changes at the national level that might impact its use.
- And we need to find ways to better communicate the value of asset management in our organizations. I can't imagine a transportation agency with limited resources effectively managing its network without asset management. We've got to get agency leadership to put a value on the asset management data and analysis results needed to support asset management. We've got to get them to realize that they can't be effective without a strong asset management program. But, as I've already said, we can't present this information in traditional formats. We need to be more creative in messaging, and tools like Power BI and data storytelling show promise for presenting complex information in clear and compelling ways.

Workforce and Knowledge Continuity – I purposely saved this one to the end because I think it's going to be critical to asset management's future.

- Today's agencies are moving newer hires without a lot of experience into positions of responsibility much sooner than in the past. This is necessary to fill the positions of those who are retiring or leaving agencies for other opportunities. We need to figure out how to support people who are put in these positions, whether it's through micro-training (in which small digital bursts of information are conveyed), virtual reality simulations, YouTube videos, peer exchanges, process documentation, or some other method that I haven't thought of.

- Several years ago, FHWA paid for the introductory asset management course offered through NHI to be taught in any agency that was interested. That effort had a huge impact on workforce development in at least 30 State DOTs. Unfortunately, FHWA hasn't been able to offer that level of training recently, but perhaps that's something that can be resurrected in the future.
- Whatever format is used, the training has to address more than just technical topics to really help people succeed. I can't stress enough how important communication and data visualization skills are going to be to help asset management thrive.
- We also have to recognize that the workplace will be made up of people with skills other than engineering and planning, so we need to identify ways to help these people with different backgrounds thrive in their careers in transportation. From the TRB session I referenced earlier on workforce issues, DOT HR managers said the majority of people they interact with never think of transportation as a career choice. We need to change that and help them see how they can have a thriving career in transportation. It's going to be important for DOTs to invest in both talent and culture to be adaptable to the complex environment they operate within.
- We also can't underestimate the benefits of peer-to-peer exchanges of information. Over and over I've heard practitioners say that peer-to-peer networking, like the peer exchange held yesterday and the conference sessions that you'll attend over the next few days, are two of the most valuable sources of learning. Being able to share experiences with peers helps you realize you're not alone in some of the challenges that you're facing. These are opportunities to build a network and learn about new and innovative approaches to try. I challenge you to continue to find ways for peer exchanges like what took place yesterday, and conferences such as this, to continue.

Boiling all that down, there are six things to focus on:

- We need to invest in diverse talents and a dynamic culture to ensure success.
- Be need to be nimbler so we can adapt quickly to changes.
- We need to turn data into useful information to better tell our story.
- We need to improve practitioners' confidence in data and tools so we can evaluate new scenarios.
- We need to take a chance with calculated risks.
- We need to better communicate asset management's value to help it remain a priority.

Closing

If you've looked at the program you can see that Omar and the conference organizers have put together a tremendous program for us, filled with all kinds of information that's sure to get you thinking about new ways of doing things.

I urge you to take advantage of everything the conference offers, network at every possible opportunity, and think about how what you've learned can contribute to positive changes in your organization or, more globally, can ensure that asset management thrives in the next decade.

The opportunities are there; we just need people who will move them forward. Whether you're new to our community or one of the old-timers, I hope you'll each be one of the catalysts – someone who sees the possibilities and makes them happen. **That's** the real key to making sure asset management thrives. I look forward to seeing where you take it.

Personal Remarks

Before I close my presentation, I want to convey a few personal remarks. As many of you know, I plan to retire exactly 6 months from today, on my next birthday! Some might be asking "What took me so long?" I have to admit, I've been around for long time!

The reason for my hesitation to retire is complicated. I have been extremely fortunate to have had a career that was filled with interesting and exciting work, opportunities to help

shape an evolving field of practice, and chances to work with transportation agencies and professionals who were committed to doing the best they could with what they had available.

I've had the opportunity to travel professionally to all 50 states and to all continents with one exception. Antarctica is the one I haven't gotten to yet, but I hope to make that happen in the not too distant future.

But the hardest part about retirement is going to be ending the opportunities to work with you; this wonderful community of people who have energized me, challenged me, and accepted me for all these years. Some of you have become dear friends who I know I'll continue to connect with, even in retirement. Many of you have been colleagues and mentors who have shaped my career in many ways. I'm grateful for the opportunities I have had to work with many of you. I want you to know I'll miss the comradery and laughter (and the wine) we've shared over the years.

Some of you I haven't had the opportunity to get to know. To you, I can only suggest that you take advantage of the opportunity presented at this conference to make connections. This is one of the tightest, most passionate, helpful groups of people I've ever had the chance to work with.

All I can say is thank you. You've been a large part of what has been a wonderful career.