Getting ready for infrastructure change

NASACT Webinar
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Welcome & Opening Remarks

Today’s agenda
Key areas for discussion that will review how state financial managers can select/prioritize projects, improve transparency, and leverage innovations

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Over $1 trillion spent on US construction annually
Between $275B and $300B is spent on public sector infrastructure.

In the U.S., the delivery of infrastructure is the responsibility of local, state, and federal governments

The Federal government has a significant role in providing funding, but represents only 25% of the spend in any given year for highway and transit, its area of greatest involvement.
The American Society of Civil Engineers estimates that the U.S. will need to spend $3.1 trillion by 2020 to meet the country’s infrastructure needs. We don’t spend enough on public infrastructure. 

*American Society of Civil Engineers, *Failure to Act, 2013

**Projected spending gap through 2020**

<table>
<thead>
<tr>
<th>Category</th>
<th>Spending Gap ($billions)</th>
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<tr>
<td>Electricity</td>
<td>$107 billion</td>
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<tr>
<td>Water</td>
<td>$84.4 billion</td>
</tr>
<tr>
<td>Airports</td>
<td>$39 billion</td>
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<tr>
<td>Waterways &amp; Ports</td>
<td>$16 billion</td>
</tr>
<tr>
<td>Transit</td>
<td>$90 billion</td>
</tr>
<tr>
<td>Highway</td>
<td>$1.7 trillion</td>
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President Trump has proposed an “America’s Infrastructure First” plan to spur investments up to $1 trillion in US transportation, water, power, telecommunications, and security infrastructure over the next 10 years.

President Trump has identified “Transportation and Infrastructure” as one of his 12 Policy Priorities. His plan would leverage $167 billion in federal funds.

Cash repatriation could drive corporate capital investment.

Previous ARRA stimulus projects had significant challenges with transparency and accountability. Less than a third of funds went to infrastructure.

### Infrastructure challenges

<table>
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<th>Challenges</th>
<th>A Path Forward</th>
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<td>Infrastructure projects stall because of funding issues</td>
<td>Funding and Financing</td>
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<td>Government’s reputation for project delivery is not good</td>
<td>Selecting and Prioritizing Projects</td>
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<td>The relationship between government, the public and the built environment is changing</td>
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As public funds become more scarce, the funding/financing dynamic is becoming more critical, with governments seeking innovative financing solutions.

Funding is the revenue and capital that pay for the creation and ongoing maintenance of an asset or service.

Financing is the structure and related financing instruments that are used to leverage or securitize the funding revenues.

Sources:
- Traditional
  - Revenue bonds
  - Federal loans
  - Infrastructure banks
- Innovative
  - Project finance loans
  - Taxable bonds
  - PABs
  - Mezzanine, sub debt
  - Investor Equity

Leveraged with:
- State and local revenue
- Federal funds
- NTF (state, local, etc.)

Uses:
- Construction Costs
- O&M Costs

Review of Federal funding programs for transportation systems

1. Capital Investment Grants
   - Competitive grant
   - State and public agencies
   - New Starts: new projects over $250 million
   - Core: Improvements to existing systems
   - Interrelated: combination of above projects

2. Transportation Investment Generating Economic Recovery (TIGER)
   - Competitive process
   - State and public agencies
   - Based on economic impacts and environmental considerations

3. Passenger Rail Investment and Improvement (PRIIA)
   - Authorized by Congress
   - Designed to match local subsidies
   - State and public agencies
   - Capital assistance for the US rail system

4. State of Good Repair Grants
   - Formula grant
   - State and public agencies
   - Maintains, rehabilitates, and replaces state and local infrastructure

5. Buses and Bus Facilities Grants
   - Competitive process
   - State and public agencies
   - Maintain, rehabilitate, purchase buses and facilities

6. Urbanized Area Formula Grants
   - Formula grant
   - State and public agencies
   - Develop and finance capital projects in urban areas
States do a lot of pay-go funding of projects, but also lean heavily on borrowing in the municipal bond market. Both are backed by diverse revenue streams.

**Select sources of revenue used to support transportation (funding):**
- Tolls/Fares/User Fees
- Gas Tax
- Sales Tax
- Property Tax
- Mortgage Recording Taxes (NY MTA)
- Federal Grants
- Grants/Severance Fund transfers (taxes & property tax)

**Securitized through (financing):**
- General Obligation bonds
- Revenue Bonds
- “Value Capture” bonds (e.g., TIF, Assessment Districts, Mello-Roos, Community Development Districts)
- Grant anticipation notes
- Bank loans
- Project finance banks
- Private equity (in PPPs)

**Funding and Financing**

**Participants in the public infrastructure markets**
Under the U.S. System, there are different roles for the Federal, State and Local Governments and the private sector. Innovations in these roles are driving PPP procurements.

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<tr>
<th>Project Sponsor/Owner</th>
<th>Project Developer</th>
<th>Debt Provider</th>
<th>Equity Provider</th>
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<td>Federal Govt.</td>
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<tr>
<td>State Govt.</td>
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<tr>
<td>Private Developer</td>
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<td>Private Capital Markets</td>
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- State and local governments carry the lion’s share of the responsibility for delivering, funding and financing infrastructure. The Federal Government has historically participated in funding infrastructure (grants), but more recently has increased its focus on financing (loans, loan guarantees).
- Under an accelerated infrastructure agenda focused on engaging the private sector, they are likely to face challenges in project identification, risk allocation, PPP structuring, and transaction execution.

**Designing the structure**
Allocating roles, risks and rewards across these parties can maximize value creation and open up new financing options.

- **Desired partnership structure**
- **Operate**
- **Finance**
- **Build**
- **Maintain**
- **Own**

- Who can and should do what?
- Capabilities
- Financial
- Risk Transfer
- What Do I Want to Do?
- What are my Objectives?
- Speed
- Efficiency
- What Am I Allowed to Do?
- Legal Framework
- Political realities
- What Am I Allowed to Do?
- Legal Framework
- Political realities
Key innovative financing market trends

- Sustained low interest rates have reduced return expectations in “traditional” markets.
- Investors are seeking risks for which they can be compensated.
- “Social impact” and “Green” investors are seeking socially beneficial, with underlying social benefits.
- Investors are willing to take risks as long as they are rewarded.
- Some highly structured financings (intended to reduce risk) have led to some unintended challenges and bankruptcies due to unintended consequences.

- Continuing growth in innovative procurement mechanisms like Design-Build, DBFM, DBFOM, which enables risk (and return) sharing beyond purely financial mechanisms.
- Greater equity involvement in public infrastructure projects.
- Financial transactions will become increasingly intertwined with the entire procurement process.
- Benefits of pursuing innovative procurement will need to be clearly communicated to all stakeholders with transparent measurement methodologies.

Selecting and prioritizing projects

Prior to construction, the Government needs to address challenges across the investment decision lifecycle, improving the project selection and prioritization process.

- Cost modeling: Analyze risk and cost scenarios for projects.
- Portfolio optimization: Objective assessment of investments to support the decision-making process.
- Project champions: Project champions are critical to understanding the potential risks and mitigation actions for efficient targeted project results.
Trade off analysis is difficult for all decision makers at the Portfolio and Project level. Visualization improves the ability to standardize the investment decision process, and perform trade off analysis leading to improved resource allocation.

Portfolio optimization improves trade off analysis and provides additional information to help "make the case" for projects.

In order to conduct meaningful trade-off discussions at the project level, you need to be able to group and compare the value of the selected projects based on financial and strategic benefits to the organization.

Project comparison and selection through visualization.

Improving and increasing transparency.
Integrated Performance Management (IPM) (cont.)

Analysis
- Analysis of performance measurement gaps
  - Development of performance measurement goals and plans
  - Performance measurement gap analysis

Performance Management
- Performance measurement gap analysis
- Development of performance measurement goals
  - Development of performance measurement plans
- Development of performance measurement targets

Strategy Planning
- Strategy planning for performance measurement goals
- Performance measurement planning for strategy
- Development of performance measurement actions

Forecasting & Financial Planning
- Forecasting & financial planning for performance measurement
- Development of performance measurement budgeting
- Development of performance measurement forecasting

Integrated Performance Management (IPM) (cont.)

The framework for IPM contains three primary components:

1. Constituent Value
2. Organization Alignment and Accountability
3. Planning, Budgeting & Forecasting
Recognize and Respond to Results

- Recognize individual/team performance and contributions to achieving established objectives
- Respond to results and determine how results will influence the strategic planning process

Monitor Individual Results

- Business plans and key metrics are linked to individual performance plans
- Evaluation of individual performance based on individual performance plans
- Accountability for individual performance

Reward Results

- Transparency

Perspectives on performance reporting

A similar set of State priorities can generate different points of view from different stakeholders:

- The Governor
  - Key concerns:
    - High-level Outcomes
    - Perceived Success/Failure of State programs
    - National Standing

- Budget Office
  - Key concerns:
    - Effectiveness of dollars spent on Statewide programs
    - Promoting collaboration to reduce redundancy and waste

- Citizen
  - Key concerns:
    - Standard & Quality of life
    - Financial Security
    - Quality of Interaction with Government

Performance and transparency reporting—Results Washington

- Data-driven performance management and continuous improvement system
- A quarterly scorecard with specific measures to help states reach their objectives

Source: [http://www.results.wa.gov/](http://www.results.wa.gov/)
Several states and municipalities have developed performance measurement systems and accompanying online platforms to increase transparency.

- StateStat adapted from Baltimore’s success to monitor and ensure progress on 16 strategic policy goals.
- StateStat has become a leading statewide performance program that drives measurable results.

Source: gopi.Maryland.gov

Oklahoma has the potential to become a leading state in performance reporting and transparency.

- Nascent efforts to publish key performance data on website.
- Ongoing development of strategy maps and indicators will allow for a robust leading edge, performance management system.

Source: http://www.ok.gov/okstatestat/
Many of our state and local clients are grant recipients. The Grant Management Lifecycle graphic below outlines the key administrative processes and activities associated with managing a grant after award.

Proper Fiscal Management

In addition to regulations, a number of important back office activities are required to support proper fiscal management of a grant.

New Federal Government Requirements Impact Agencies

In December 2013, the Federal Office of Management and Budget (OMB) enacted new Federal grants management regulations to streamline and simplify grant-making processes. These changes simplify processes but put more scrutiny on States to be good stewards of funding.
The Federal government has pushed a transformation in Grants Management practices in the past several years.

**Current Trends**
- Increased focus on proving outcomes through performance data.
- Increased focus on fraud, waste and abuse.
- Increased focus on proving outcomes through performance data.
- Increased focus on transparency of funds so that each dollar can be followed and accounted for.
- Increased requirements for program, financial and risk controls.
- Increased requests for information reporting and record keeping in both grant applications and maintenance.

**Capacity** reflects the organizational, financial, and human capital resources available for the implementation of grant programs. A lack of capacity can adversely impact an agency’s or recipient’s ability to manage and implement grant programs effectively.

New grant requirements have strict rules around how funds are separated, tracked and used. Grantees need robust financial management systems, as well as developed procedures and policies to meet grantor’s financial requirements.

When internal controls in grants management and oversight are weak, grantees face challenges in achieving program goals and assuring the proper and effective use of grant funds. Effective controls can help support successful grant applications.

Grant Management is often managed at the individual agency or department level, which can create redundancy and poor visibility across an organization, while preventing the grantee from developing a comprehensive grant strategy.

**Top Challenges Facing Grantees**
- A lack of appropriate performance measures and accurate data can limit the ability to effectively measure grant program performance. This can impede the ability of grantees to meet grant requirements, and limit ability to show impact for future grants.

**Leading Practices for Grant Management**

1. **Be a Good Steward of Funds**: Keep your financial house in order by analyzing financial systems, recording time spent on activities, and only using funds for intended purposes.
2. **Be Audit Ready**: Every entity receiving over $750k in funds will be audited and should be set-up for success. Know the federal regulations and any funder-specific requirements.
3. **Establish and Continuously Update Policies**: You have to walk the walk to establish good standards, and make them relevant to one’s own agency. Refine and update policies/procedures to keep pace.
4. **Demonstrate Good Practices**: Serve as a positive example and steward within the organization about how to stay in line with grant requirements, model positive behavior to inspire others to do so too.
5. **Invest in the Right Systems**: Given the importance of accurately tracking data, it’s critical to have the right technical infrastructure and project management approaches to facilitate and streamline reporting processes.
6. **Educate and Communicate**: Bring the full organization along so they are aware of requirements and policies; setting all stakeholders up for success.
7. **Med your P’s and Q’s**: Be prepped for the intricacies of reporting, by knowing requirements, timelines, and establishing systems that suit your reporting.
8. **Establish a Strong Governance Structure**: Having the right people and oversight in place can support effective grant management in the long run.

**Leveraging technology**
Technology advances in industries linked to Capital Projects—such as the public sector—are encouraging construction companies to increase their awareness of “what’s possible” with digital and analytics tools and solutions and to invest accordingly.

Capital project owners are demanding increasing levels of visibility and transparency of project performance. Legacy systems are struggling to cope with disparate data and increased complexity of project information.

Drones in construction allow for views and details of the project that were not able to be seen previously. Decision making can be slow and reliant on “gut feel” in the absence of trusted sources of project statistics.

Wearables such as glasses and safety vests collect valuable project data such as safety metrics and construction progress. 3D printing has tremendously boosted productivity and improved safety for workers.

Why now?

Leveraging Technology

Analysis of big data sources in construction

What is it?

Big data is large data sets that can be analyzed visually to identify trends and patterns. Construction projects gather large amounts of data throughout the life cycle of a project, that can be used to visually communicate the status of a project and help to identify potential issues.

Using analytics, data can be visually analyzed. Key metrics such as schedule, cost, quality, and safety are visualized, allowing for trends to be identified and potential issues to be mitigated.

How is it used?

Analytics allows an entity to review key metrics at all levels (program, portfolio, project, etc.) to visually understand performance, and identify potential issues or areas for improvement.

Deloitte Case Study: Deloitte was engaged to develop a dashboard for selected projects. The Deloitte team analyzed key information to develop a meaningful program view, extracted key performance metrics to monitor project status, and standardized reporting and metrics collection to enhance control and performance.

Leveraging Technology

Project management dashboard

Provides an interactive view of 7 key metrics, utilizing red, yellow green status, ‘hover over’ details and drill down capability.
**Drones**

*Drones in construction*

**How is it used?**
- **Planning & Pre-contract**—Drones are used to conduct site investigations, develop topographic maps, and inspect existing structures.
- **Construction**—Drones are used to conduct layouts and surveys, perform safety inspections, and take daily progress photos or videos.
- **Network rail** has a framework agreement with four companies to use drones for infrastructure inspections and land surveys. This will reduce the risk to workforce that often have to work at height or in close proximity to the railway to carry out inspections.

**Wearables**

*Accessories for construction monitoring*

**How is it used?**
- **Wearables** can be used in many components of the construction phase to monitor employee vitals, identify employee location during evacuation, and check contamination exposure.
- **Deloitte Case Study**—Deloitte is collaborating with the construction industry to trial wearable wrist bands that help contractors monitor access and vital health metrics of the workforce on site.
- **Daqri** has worked with Hyperloop Transportation to create a Smart Helmet that gives on-demand support to remote workers allowing tasks to be completed quickly, correctly, and safely.

**3D Printing**

*Printing construction structures*

**How is it used?**
- **3D printing** can be used to create components of a building, such as windows, doors, and furniture.
- **Example**—3D printing a 3-bedroom house required 100 hours but took 40 hours with traditional methods. In 2025, the firm expects to build 400 homes in 60 hours.
- **3D printing** at Skanska and Loughborough University is currently developing the first commercial concrete printing robot.
A city is smart when investments in (i) human and social capital, (ii) traditional infrastructure and (iii) disruptive technologies fuel sustainable economic growth and a high quality of life, with a wise management of natural resources, through participatory governance. 

**Building our cities smarter**

**Goals**

**Economic Growth**
- Quality of life, a good city to live in
- Ecological footprint, sustainability "planet"

**Resilience**
- Controlled transition of labor market due to automation
- Winning the war on talent between metropolitan areas
- Social cohesion, inclusiveness, solidarity
- Secure digital environment, privacy

**Action plan**

Ask these questions as you continue to plan and manage your infrastructure projects.

- What ways can your new projects be funded?
- Are you selecting the best value projects?
- Do you know the projects in your portfolio?
- Are you receiving the project information you need?
- Do you have access to construction analytics data?
Questions and Answers

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