A Blueprint for Sustainability:

One Department of Transportation’s Pursuit of Performance-Based Accountability

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ABSTRACT
An increasing number of transportation agencies in the United States are using sustainability as a framing device for transportation decision making and to demonstrate performance-based accountability. Despite interest in sustainability as an organizing concept for transportation decision making, the practice of using sustainability to frame formal policy development at state departments of transportation is still in its formative stages. This paper presents the approach that has been taken by the North Carolina Department of Transportation (NCDOT) to adopt sustainability as an agency value. Currently in the implementation phase, the Department’s “Blueprint for Sustainability” is not a standalone plan, but rather a set of principles, objectives, performance measures, and strategies that has been integrated into NCDOT’s overall strategic direction and policy framework. The process used to create this product has relied on a combination of internal and external outreach, agency introspection, and conversations with senior leadership to conceptualize sustainability in a way that resonates within the agency’s culture and context. A variety of lessons can be derived from this process, including the importance of flexibility, integration, and strategic coordination with related agency initiatives. Through presentation and evaluation of the NCDOT process, this paper provides transportation practitioners with useful insights for how to integrate sustainability as an agency value and a decision-making framework.
BACKGROUND
An increasing number of state, regional, and local transportation agencies in the United States are using sustainability as a framing device for transportation decision-making processes. Federal leadership and the recent federal transportation reauthorization bill, MAP-21, have simultaneously emphasized the need for performance-based and data-driven transportation decision making (1). Despite interest in sustainability as an organizing concept for transportation decision making, the practice of using sustainability to frame formal policy development at state departments of transportation (DOTs) is still in its formative stages. An emerging approach to formally integrate sustainability into transportation decision making is the development of sustainability plans by state DOTs (2). Considering Norton’s definition of a plan as a “communicative policy document” (3), the development of a sustainability plan infers the existence of a commitment on the part of the institution that develops the plan to not only improve decision making in terms of sustainability outcomes, but also to communicate the importance of and institutional alignment with sustainability to external and internal stakeholders alike. In response to attendance at a 2009 sustainability peer exchange and in support of a 2009 state mandate for transportation reform (4), the North Carolina Department of Transportation (NCDOT) has developed a Blueprint for Sustainability (henceforth referred to as the “Blueprint”) to help adopt sustainability as an agency value. While contextual factors preclude a “one size fits all” planning approach, this paper summarizes NCDOT’s experiences in developing the Blueprint and provides lessons learned in integrating sustainability as an agency value at one of the largest state DOTs in the nation (5).

UNDERSTANDING SUSTAINABILITY
While sustainability is a rather amorphous concept and definitions in practice may diverge from formal definitions in the academic literature, a review of academic understanding of the concept provides necessary background to discuss its application in practice. The ability to “meet the needs of the present without compromising the ability of future generations to meet their own needs” is a widely accepted definition of sustainability, first articulated by the Bruntland Commission (6). A soft interpretation of this definition, wherein natural capital may be replaced by capital of other forms, is the basis for most definitions of sustainable transportation in the literature (7-9). While NCDOT pursued its own definitional process, the concept of soft sustainability underpinned this process.

Sustainability as a standalone concept, while useful in illustrating complex tradeoffs and interactions between human and natural systems, has somewhat limited policy relevance. However, sustainability is highly useful as a framing device for policy discourse. Appleton argues that sustainability emerged as a largely pragmatic response to the increasing divide between the environmental movement and worldwide insistence on economic growth as a laudable goal during the 1980s (10). Appleton concludes that “the chief value of sustainability to date has been to articulate a goal of bridging the gap between the limits of the environment and the economic aspirations of humanity and to spur debate about how to do so” (10, p. 11). Sustainability presents a unique opportunity to engage diverse perspectives when considering tradeoffs between fundamentally non-comparable outcomes. As a tool to enable institutional change, sustainability provides an avenue for individuals to think broadly and challenge both their own assumptions and the implicit assumptions of their organization. The development of NCDOT’s Blueprint for Sustainability offers a unique example of a large state DOT acting “in the trenches” to embed sustainability into the policies, practices, and ultimately the culture of the agency.

PROCESS AND METHODS
The Blueprint effort originated when four NCDOT managers attended The Sustainability Peer Exchange in May 2009, which was hosted by the American Association of State Highway and Transportation Officials (AASHTO) Center for Environmental Excellence. This exchange focused on how transportation professionals can provide leadership in achieving sustainable outcomes by developing multidisciplinary partnerships, planning and designing more effective multimodal systems, and pursuing other sustainable practices. The NCDOT attendees, who represented multiple functional areas of the Department, were influenced by the exchange of ideas related to sustainability in transportation decision making. Most notably, the group recognized that NCDOT was already engaged in sustainable practices and that by focusing and enhancing these efforts, the Department would be better prepared to demonstrate performance-based accountability.
Following this workshop, a small, in-house team was established to start considering sustainability as a policy framing device for NCDOT. While the team envisioned that the end product might be a formal plan, this result was not predetermined; instead, leaders of the effort remained open to other ideas and formats that might best incorporate sustainability into the agency’s work. The team recommended the formation of two groups to manage the development of a “Blueprint for Sustainability” for the Department: an Advisory Group comprised of senior leadership and a Working Group of NCDOT managers representing a cross-section of Department functional areas and modes. These two groups collectively comprise the team of policymakers that guided the development of the Blueprint. A research consultant team was hired to facilitate the process and deliver products. Work officially began in July 2010 and is ongoing, with current efforts focusing on integration.

The development process for NCDOT’s sustainability framework is discussed in the sections that follow. This process may be broken into four broad stages of policy development: establishing the state of the practice within and outside of NCDOT, determining what sustainability means for NCDOT, developing the sustainability framework, and implementation and monitoring. The major components of each stage are presented in Figure 1 and discussed in the sections that follow.

**Establishing the State of the Practice**

As a first step in the development process, several initiatives were undertaken to define the current state of the practice in planning for sustainable outcomes both across the United States and within NCDOT. These tasks sought to answer the following key questions:

- What can be learned from plans that other state DOTs have adopted to support sustainable decision making?
- What is NCDOT already doing that relates to sustainability and can be built upon through this effort?

The first of these initiatives was a comprehensive review of sustainability planning efforts at the state DOT level. This review identified eleven sustainability plans in force at ten state DOTs across the nation. A systematic review of plan content was conducted to identify drivers of plan quality, including best practices in plan visions, goals, objectives, strategies, and measurement (2). This review informed the development and content of the Blueprint.

Second, a survey was distributed to NCDOT staff in leadership and senior management positions to catalogue existing Department practices aligned with sustainable outcomes. A total of 135 sustainable practices were collected in areas including materials, infrastructure, facilities, technology, financing, planning, design, and research. The survey also gauged perceptions of the role of sustainability within NCDOT. Survey results suggested a conception that sustainability is largely an environmental issue and that staff were interested in communicating the economic outcomes of sustainable practices to a wide audience.

Third, to enhance the survey results and account for a number of Department-wide efforts relevant to sustainability and NCDOT’s Transportation Reform effort, an inventory of high-level initiatives was collected. Eighteen programs and policies were identified and evaluated through interviews with initiative representatives. This inventory has been expanded throughout the development process as new initiatives have emerged. The results were incorporated into the inventory of existing sustainable practices at NCDOT, and selected high-level initiatives appear in the Blueprint framework presented in Table 1 of this report.

These efforts effectively established the state of the practice across the United States and at NCDOT with respect to sustainability. The results provided a strong foundation for understanding sustainability as a policy framing device, defining a baseline of current NCDOT efforts, and working to further conceptualize sustainability from the NCDOT perspective.

**Determining what Sustainability Means for NCDOT**

While the need for performance-based accountability was apparent from the outset of this effort, the importance of NCDOT acceptance of the Blueprint to implementation could not be overstated. Given the multiple dimensions of sustainability and the tendency for the term to be a polarizing force due to differences
FIGURE 1 Sustainability Blueprint Process Flow

Establishing the State of Practice and Determining what Sustainability Means for NCDOT

State DOT Sustainability Plan Review → Focus Areas → Internal and External Outreach (focus groups, interviews, survey, 2040 Plan)

Existing Practices Survey and High-Level Initiatives Review → Video

Strategies “The HOW”
Revised Principles and Objectives “The WHAT”

Existing Metrics Potential Metrics

Draft Principles and Objectives “The WHAT”

Full Blueprint Framework

Branding (“Accountability Framework”)
Endorsement (Board of Transportation)
Integration (expanded mission, 2040 Plan, Policy to Projects, high-level initiatives)
Communications (internal, external)
Maintenance and Monitoring (continuous improvement)

* Engagement activities
in interpretation, it was crucial to ensure that the concepts set forth in the Blueprint reflected the aspects of sustainability that resonated most strongly with the agency’s functions and responsibilities. Thus, after establishing the state of the practice both on a national scale and within NCDOT, a multifaceted effort was undertaken to determine what sustainability means for the Department. This process relied on a combination of initial framework development, internal (NCDOT) outreach, and external outreach, as described in the sections that follow.

Initial Framework: Sustainability Focus Areas and Video
To begin determining how sustainability would be defined at NCDOT, an initial framework of sustainability “Focus Areas” was developed by the Blueprint Working Group. The results of the state DOT sustainability plan review informed the selection of the following four areas of emphasis:

- Mobility, Accessibility, and Transportation-Land Use Integration
- Financial and Economic Investment
- Environmental Stewardship
- Social Investment

The Focus Areas provided an outreach tool through which participants could react and respond to how sustainability was beginning to be characterized at NCDOT. A video was developed to describe the four Focus Areas using existing NCDOT practices as examples. The video challenged staff to think about the aspects of sustainability in their day-to-day activities. Five existing practices were chosen that reflected one or more Focus Areas and were likely to resonate with NCDOT employees while stimulating new thinking about sustainability. These practices included recycled asphalt, reflective signage, low-growing turf grass, a complete streets corridor project, and a logistics and industrial complex supported by transportation network investments. In addition to profiling each practice and its connections to sustainability, the video included appearances by the Secretary of Transportation and NCDOT Chief Operations Officer to demonstrate high-level support for the effort.

The Focus Areas and video were used during internal and external outreach to begin the discussion of sustainability and to obtain feedback on its role at NCDOT.

Internal and External Outreach
Outreach within NCDOT was essential to ensure that the Blueprint reflected the Department’s context and would be meaningful to—and thus implemented by—its staff. The purposes of the internal outreach effort were to introduce the Blueprint, continue to collect existing and new sustainable practices, and obtain feedback on the Focus Areas. To achieve these objectives, focus group sessions were held with a cross-section of NCDOT employees across the state representing all business units and functional areas. During these sessions, employees viewed the Blueprint video, participated in facilitated exercises to identify existing and new sustainable practices, and reviewed the Focus Areas in light of how closely they resonated with their work.

External outreach was also conducted to engage stakeholders that either work with NCDOT to plan, develop, and deliver transportation products and services, or represent the interests and needs of transportation users. Participants included industry partners, state and federal agencies, regional agencies, local elected officials, sustainability-related groups, cabinet secretaries, and special interest groups. Three primary approaches were used to obtain external input, including presentations at existing group meetings, an online survey, and one-on-one interviews. These methods focused on identifying existing and new sustainable strategies and collaborative partnerships that could support implementation. The Blueprint team also provided input into a public survey developed for the Statewide Long-Range Transportation Plan (2040 Plan), with questions addressing investment priorities, sustainable funding strategies, and the effects of transportation on quality of life.

Taken together, the results of the internal and external outreach efforts were used to revise the Focus Areas, expand the inventory of existing practices, explore new ideas for sustainable practices and performance measures, and continue creating a process and products that would resonate with NCDOT managers and staff as well as stakeholders.
The Blueprint Framework

Based on internal and external input, a detailed framework was created to set forth what should be done with respect to sustainability (principles and objectives); the measures that would allow NCDOT to track performance; and strategies for how to move the gauge on the identified metrics. This framework is presented in Table 1. The process used to develop the framework is summarized below.

While the Focus Areas provided a useful tool for reaction and feedback, it became apparent from the outreach results that division into the four high-level categories was no longer sufficient to define sustainability at NCDOT. To develop the Blueprint principles and objectives, the Working Group reviewed internal and external input on the Focus Areas and considered how sustainability would be understood across NCDOT functional units, divisions, and modes; how the concepts were balanced across the dimensions of sustainability; and how the concepts fit into the existing work and direction of NCDOT. This iterative process resulted in a set of eight principles and associated objectives, as presented in Table 1.

After the framework of principles and objectives was established, the policy development team began to consider how progress toward the identified outcomes would be measured over time. To build upon work already being conducted at NCDOT, all existing Department performance measures—from the executive, public-facing level down to individual employee performance metrics—were compiled and mapped to relevant sustainability objective(s). More than 1,000 existing NCDOT metrics were reviewed for their ties to the framework, with measures screened based on their applicability to the objectives and their level of measurement or influence (i.e. strategic/outcome-based, operational/output-based, and tactical/input-based). Emphasis was placed on strategic and operational metrics over tactical measures because the latter tend to be “too far in the weeds” for a holistic view of sustainability.

Next, objectives to which no or very few measures had been mapped were considered to be gaps. A review of sustainability performance measurement literature was conducted to research emerging ways to fill these gaps, with an emphasis on metrics that would be practical and relevant from a state DOT perspective. This review referenced several related initiatives, including NCHRP Report 708: A Guidebook for Sustainability Performance Measurement for Transportation Agencies and the research consultant’s ongoing work with sustainability and livability performance measurement.

Following this research, the Blueprint framework contained an extensive number of performance measures, both existing and new. The Working Group reviewed and consolidated the measures through a facilitated process that involved defining a set of evaluation criteria and rating each individual measure accordingly. The criteria established by the Working Group included three points of evaluation:

- **Specific** – The measure is clear and relates strongly to the sustainability principles and objectives
- **Measurable** – “Success” is easy to define, data are available/accurate, and measurement is repeatable
- **Attainable** – The measure is within NCDOT’s control or influence and a target could be set

The results of this rating exercise were used to condense the list of performance measures. While the list became more manageable under this consolidation, a number of gaps remained, particularly in the areas of Connectivity, Choices, Prosperity, and Healthy Communities. Further research and contacts with subject matter experts in each of these areas were conducted to identify metrics that might fill these gaps. Additions and revisions were made on an ongoing, iterative basis with regular input from the Working Group.

Finally, it was decided that distinguishing between primary and secondary metrics would be useful for both presentation and analysis. A large number of measures were found to contribute to one or more larger metrics, making them more appropriate as items to track in the background while higher-level, more encompassing measures became forward-facing. For example, various preventative roadway maintenance measures were captured by (and thus secondary to) an overall infrastructure health score.

The product of this effort was a list of 114 metrics—existing and new, primary and secondary—to track sustainable outcomes over time. Selected primary measures are presented in the framework in Table 1. Of the 114 measures, two-thirds were already being tracked by the Department at some level. Importantly, this list is considered to be “living,” with ongoing refinements needed as new measurement techniques continue to emerge.
<table>
<thead>
<tr>
<th>Principle</th>
<th>Objectives</th>
<th>Sample Performance Measures</th>
<th>Sample Strategies</th>
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| **Moving People and Goods: Efficient transportation network** | • Improve the reliability of all modes of transportation  
• Reduce congestion  
• Reduce travel times | • Percentage of planned ferry runs completed as scheduled  
• Percentage of passenger trains arriving on schedule  
• Department infrastructure health score  
• Travel time index for surveyed roadways  
• Average statewide accident clearance time  
• Average operating speeds on surveyed roadways  
• Average operating speeds of freight rail movement | • Governor’s Logistics Task Force  
• Low-Impact Bridge Replacement Program  
• Intelligent Transportation System Strategic Deployment  
• Passenger Rail  
• Mobility Fund |
| **Choices: Options in how to travel**         | • Expand and enhance alternatives to automobile travel  
• Improve intermodal connectivity  
• Reduce growth rate of single-occupancy vehicle (SOV) travel | • Percentage change in public transit ridership  
• VMT per capita  
• Number of transit route miles (urban, rural)  
• Miles of greenways, bike lanes, sidewalks  
• Percentage of buses/trains with bike racks  
• Number of non-general-purpose lane miles | • Complete Streets  
• Transportation Demand Management Program  
• Passenger Rail  
• Statewide Bicycle and Pedestrian Plan |
| **Connectivity: Integration of transportation and land use** | • Enhance transportation network connectivity  
• Improve pedestrian and bicycle linkages to activity centers  
• Encourage comprehensive planning at the state, regional, and local levels  
• Invest in multimodal, mixed-use transit centers  
• Reduce average trip length | • Number of areas with a bicycle/pedestrian plan  
• Average density of sidewalk mileage within municipalities that have pedestrian plans  
• Number of Comprehensive Transportation Plans (CTPs) adopted by NCDOT | • Comprehensive Transportation Planning  
• Complete Streets  
• Interagency Leadership Team  
• Healthy Environments Collaborative |
| **Resource Protection: Protection and conservation of natural resources** | • Improve air quality and reduce transportation-related emissions  
• Protect and enhance water quality  
• Increase energy and water conservation and efficiency  
• Conserve high-quality ecosystem services  
• Enhance “3 R” (reduce, reuse, and recycle) efforts | • Overall condition rating and/or level of service for stormwater devices  
• Average energy efficiency rating of NCDOT buildings  
• Percentage reduction in metered water consumption  
• Gallons of fuels purchased by NCDOT, by type  
• Average environmental compliance score for construction and maintenance projects  
• Percentage of management plans implemented for endangered species sites  
• Tons of reused and recycled office material  
• Tons of reutilized materials on construction and maintenance projects | • Interagency Leadership Team  
• Stormwater Pollution Prevention Plan  
• Alternative Fuels Program  
• Delegated environmental programs  
• Resource conservation and 3R programs  
• Performance Contracting  
• Facility Condition Assessment Program |
<table>
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| **Prosperity: Economic growth and development** | - Leverage effective funding strategies for transportation investment to meet long-term needs  
- Use transportation investment to support economic development, job creation, and commerce  
- Increase the efficiency and cost effectiveness of goods movement | - Percentage of NCDOT's total annual budget expended on external goods, materials, and services  
- Percentage of project costs supported by local funding, public-private partnerships, and/or other cost recovery mechanisms | - Governor’s Logistics Task Force  
- Transportation Financing Options Studies  
- Public-private partnerships  
- Tolling  
- Business Opportunity Workforce Development |
| **Accountability: Balance of needs and interests with available resources** | - Improve performance-based program delivery  
- Use value management tools, including life cycle, risk assessment, and return on investment analyses, for transportation decision-making  
- Maximize the capacity potential of the existing transportation network (all modes)  
- Improve NCDOT’s level of customer service | - Percentage of STIP and Division-managed projects delivered on schedule  
- Percentage of projects within +/- 10% PE budget  
- Percentage of customers satisfied with transportation in North Carolina  
- Number of projects/programs that have undergone formal life cycle/risk assessments, ROI analyses, or value engineering studies | - Project Streamlining Initiatives  
- Performance Dashboard/Scorecard  
- 2040 Plan  
- Transportation Demand Management Program  
- Prioritization  
- Asset Management Program  
- Statewide public opinion survey |
| **Healthy Communities: Livable communities and improved quality of life** | - Improve safety for communities and for travelers of all modes  
- Provide equitable transportation options for all travelers, including transit-dependent populations and users of all capabilities  
- Support improved public health outcomes  
- Improve the resiliency of transportation infrastructure to natural causes, including weather-related events  
- Enhance public awareness and opportunities for participation with an emphasis on engaging traditionally underserved populations  
- Protect and preserve historic, cultural, and civic assets | - Statewide crash and fatality rates, total network and by mode  
- Percentage of surveyed North Carolina drivers using a safety belt  
- Miles of greenways, bike lanes, sidewalks  
- Percentage of Unified Public Engagement Process Survey respondents who rate NCDOT’s current public engagement process as excellent or good  
- Percentage of population within one-half mile of a rail transit stop | - NC Sustainable Communities Task Force  
- Safe Routes to School  
- Healthy Environments Collaborative  
- Statewide Bicycle and Pedestrian Plan  
- Complete Streets  
- Hazard mitigation, emergency management, and disaster recovery programs  
- Public Participation Toolkit  
- Departmental Health Policy |
| **Organizational Responsibility: A sustainable organization** | - Attract new employees and enhance employee engagement, retention, productivity, diversity, and satisfaction  
- Improve information technology products and services to facilitate efficient and effective business operations  
- Support programs that improve employee health, safety, and welfare | - Employee retention rate  
- Employee engagement index score  
- Percentage of time NCDOT’s information network is available  
- Employee safety index  
- Dollars saved as a result of IT initiatives  
- Percentage of workforce participating in Highway to Health Program | - Continuous Improvement  
- Talent Management Program (including Legacy Leadership Program, Employee Engagement Survey, and Knowledge Management Program)  
- Highway to Health Program |
Refinement of the performance measures also led to the revision of principles, outcomes, and objectives. In validating the objectives, it was deemed important to closely consider objectives for which no measures could be identified; without a reasonable form of measurement to track an outcome, performance-based accountability would not be supported. Several objectives were either revised or removed on this basis. However, several aspirational objectives for which strategies are still evolving—such as economic development and value capture—were retained under the assumption that the emerging strategies would eventually point to the proper measures to track.

To complete the Blueprint framework, strategies with the potential to “move the gauge” on the selected performance measures were identified and mapped to the eight principles. This process built upon the inventory of 230 existing NCDOT practices collected through outreach with an emphasis on Department-wide, or high-level, initiatives. Selected strategies are presented in Table 1.

These methods resulted in a framework of what NCDOT would like to achieve across the various dimensions of sustainability; how progress toward these outcomes should be measured; and how the Department can effect change in these performance measures through its policies, programs, and initiatives. The framework does not include an overarching definition of sustainability, although this was originally envisioned as a potential product of the Blueprint effort. Instead, and as driven by input from the Working and Advisory Groups, sustainability is defined through multiple lenses and in terms of how NCDOT aims to achieve and measure progress. Throughout the framework development process, endorsement from senior NCDOT leadership and the North Carolina Board of Transportation was sought to ensure support at a strategic level. Endorsement activities focused on the principles and objectives, as these elements constitute the foundation of the framework and the performance measures are likely to evolve over time.

Implementation and Monitoring
As of the date of this report, the Blueprint is in the implementation phase. A variety of actions have already been taken to integrate the framework into the Department’s strategic direction, while approaches for other implementation areas—including communications and monitoring—are currently being developed. The Blueprint implementation strategy consists of four major elements, discussed in turn in the sections that follow:

- Branding
- Integration
- Communications
- Maintenance and monitoring

Branding
From the outset of the Blueprint initiative, it was recognized that using the term “sustainability” could be problematic. Tending to become a polarizing term in otherwise productive discussions, the word is often value-laden and associated primarily with environmental concerns. Additionally, practices and policies related to sustainability may be perceived as simply another requirement added to employees’ already expansive workloads. The team therefore knew that the product of this effort would not ultimately be called the “Blueprint for Sustainability.” However, retaining this term during the outreach and development process was useful not only for project identity, but also to begin gauging reactions—both positive and negative—and framing sustainability in a way that would be embraced by NCDOT.

The need to consider branding became more pressing as the development process progressed and became more widely recognized. While the team evaluated various options, the project identity was shortened to the “Blueprint” as a temporary measure. Based on discussions with senior NCDOT leadership, the initiative was re-branded as the “Accountability Framework.” This new identity not only avoided the use of the term “sustainability,” but also reflected the concept of performance-based accountability. In light of emerging federal requirements to demonstrate performance and accountability in the use of resources, the revised identity was deemed particularly appropriate.
As previously stated, the originators of the Blueprint/Accountability Framework effort did not predetermine the product as a standalone plan. This openness to a variety of formats allowed the team to leverage related, well-timed initiatives and to create a product that was integrated into the Department at a strategic level.

The decision not to develop a separate, formal plan was partially the result of Advisory and Working Group input, as well as feedback from the Board of Transportation. These representatives indicated that the Accountability Framework would function best if adopted throughout the organization as a way of thinking, making decisions, and delivering transportation products and services. The decision was also the result of highly fortuitous timing, as several related initiatives occurring at the time the framework was completed presented unique integration opportunities. These initiatives included the following:

- The Department’s expanded mission statement, which was revised to include the terms “health, economy, and well-being” in addition to traditional transportation goals
- The 2040 Plan, a statewide plan to establish high-level priorities for transportation investment over the next 30 years
- The Policy to Projects document (NCDOT’s State Transportation Improvement Plan (STIP))

As a starting point and with the support of senior leadership, the principles and objectives of the Accountability Framework were extracted as a separate “product” and considered to be the Principles and Objectives of the Department as a whole. Figure 2 demonstrates how these Principles and Objectives were integrated into the framework of other high-level Department initiatives. This graphic became the communication platform describing how the Principles and Objectives were embedded within, rather than established separately from, the Department’s overall strategic direction and policy framework. The Principles and Objectives do not constitute a distinct plan or product, but rather an ingrained concept that ties closely to other strategic initiatives and therefore cannot be easily extracted or opposed.

While integration at a strategic/policy level was critical, the Accountability Framework must also be integrated into the work of NCDOT managers leading specific initiatives and making day-to-day decisions. To reach this level of integration, one-on-one meetings will be held with the leaders of the high-level initiatives identified during the initial stages of this effort, as well as additional initiatives that have emerged or achieved relevance to sustainability throughout the development process. These meetings will focus on understanding how the initiatives fit within the overall strategic direction of the Department and identifying new performance measures and strategies that could promote and track their approach to sustainability. The meetings will allow the Principles and Objectives, performance measures, and strategies to be integrated at all levels of the Department, from policy and program development to business unit work plans and individual employee performance metrics (PDAs).

Communications

To support consistent communications, a list of key messages was developed to outline the origins and purpose of the Blueprint/Accountability Framework effort, its relevance to reauthorization requirements, and its ties to other Department initiatives. This list supported consistent and clear messaging and was presented to senior executive leadership at NCDOT to promote high-level understanding and support.

Beyond this preliminary messaging effort, the communications plan for the Accountability Framework is under development as of the date of this report. The plan will include internal strategies to communicate the framework to employees at all levels of the Department, with an emphasis on performance measurement in order to advance performance-based accountability. The plan will also include external components to communicate NCDOT’s commitment to performance-based accountability to external agencies, partners, and other stakeholders.

Given the importance of internal actions in effecting organizational change, as well as the timing of communications efforts underway for other high-level efforts, internal communications will be emphasized first. Across all internal activities, emphasis will be placed on demonstrating how employees can integrate the Principles and Objectives and performance measures into their respective decision-making processes, thereby supporting performance-based accountability. Specific internal strategies will include development
Performance Strategy at NCDOT
---How Managing Performance Fits Together---

- **Why**
  - Mission & Goals
  - Principles & Objectives

- **What & When (The Planning)**
  - 2040 Plan
  - Program & Resource Plan (10-Year)
  - Work Program (5-Year)

- **How & Who (The Delivery)**
  - Executive Performance Measures
  - Operational Performance Measures
  - Business Unit Work Plans
  - PDAs

- **Monitoring & Reporting**
  - Performance Scorecard (incl. annual performance report)
  - Executive Dashboard
  - Continuous Improvement & Innovation

- **1-Year Spend Plan**

- **Static Reporting**
  - Static Reporting

- **Dynamic Reporting**
  - Dynamic Reporting

- **Employee Performance**
  - Static Reporting

- **Mission & Goals**
  - Principles & Objectives

- **Executive Dashboard**
  - www.ncdot.gov/performance

- **PDAs**
  - (Employee Performance)

- **STIP Admin. Maint. Ops.**

- **Continuous Improvement & Innovation**

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of a video that introduces the Accountability Framework, conveys the role of performance measurement, presents existing and emerging sustainable practices at NCDOT, and highlights the MAP-21 requirements. Additionally, outreach and roll-out activities for other strategic NCDOT initiatives—including the expanded mission statement, the 2040 Plan, and the Policy to Projects document—will be leveraged to support Accountability Framework communications. External communication strategies may include press releases, graphic brochures, presentations, and other materials that “tell the story” of how NCDOT is pursuing performance-based accountability and sustainable outcomes.

Maintenance and Monitoring
Efforts to maintain the Accountability Framework and monitor its outcomes will be central to the success of this initiative. Maintenance strategies will be undertaken to continually optimize the framework, while monitoring strategies will serve to track outcomes and demonstrate performance-based accountability. NCDOT’s Executive Dashboard and Performance Scorecard will be critical to monitoring Blueprint outcomes. These activities will ensure that the Accountability Framework remains relevant, that implementation progress is being made, and that the gauge is moving toward anticipated outcomes.

As of the date of this report, the management structure for this phase of implementation is being determined. The group will likely consist of several individuals representing a cross-section of Department functional areas and charged with overseeing how the framework is translated into practice. Key responsibilities of this group will consist of the following:

- Identifying targets for all performance measures and developing baselines for new metrics
- Reviewing the Accountability Framework performance measure results and targets on a regular basis
- Compiling and documenting the results in support of performance-based accountability
- Identifying “success stories” that can be shared through internal and external communications
- Identifying areas where progress has been less positive and discussing improvement strategies with senior staff
- Refining and expanding the list of performance measures over time to reflect emerging measurement techniques and changes in the state of practice and research

Data sources, responsible parties, timeframes, and documentation formats are currently being developed. These activities will support continuous improvement in the Department’s pursuit of sustainable outcomes and performance-based accountability.

DISCUSSION OF LESSONS LEARNED
The development of the Blueprint/Accountability Framework was an invaluable learning process. This section presents the key lessons learned from this effort.

Advocate for Support from Senior Leadership
Support from NCDOT senior leadership was critical to the success of the Blueprint. Additionally, clear communication of senior executive leadership support to staff throughout the Department—via media such as the video, invitations to participate in focus groups, and inclusion of the Blueprint in speeches and discussion with staff—supported employee engagement throughout the process. Staff engagement fostered institutional buy-in and encouraged meaningful employee participation in outreach activities, thereby enabling the Blueprint to function on both institutional and individual levels.

Be Opportunistic About Policy Windows
For many state DOTs, integrating sustainability into entrenched decision-making processes can be a complicated and nuanced process. However, opportunities that enable such institutional change do occasionally arise. The Blueprint was able to take advantage of several key policy windows—including strong support from senior leadership, state mandated transportation reform, and updates to the state long-range transportation plan and the State Transportation Improvement Program (STIP)—to create an
advantageous context for policy-making. Due in large part to the flexibility of the framework development process and the eventual product, the team was able to act in an opportunistic and entrepreneurial manner to align seemingly unrelated policy windows in support of the Blueprint process. Policymakers should be aware of, and act opportunistically, when advantageous conditions for institutional change occur. This is consistent with the experiences of several other DOTs that have undertaken efforts to plan for sustainable outcomes (2).

Primary policy windows may take a variety of forms, including state mandates, dedicated funding from grants or other sources, internal support from senior leadership, concurrent updates to other institutional policies and plans, project prioritization efforts, and design standards. These opportunities offer additional policy windows that may be leveraged once the framework development process is underway.

Maintain Flexibility Regarding the Final Product
A key factor in the success of the Blueprint was the ability of the policymakers to maintain flexibility regarding the final outcome of the planning process. While a formal sustainability plan was originally envisioned as a potential product, it became apparent during the process that a more flexible format was preferable. Institutional norms indicated that a formal plan may “sit on the shelf” while a simple and concise standalone policy framework, developed through an intensive and participatory planning process, may be more effectively embedded into institutional practice. Additionally, a diminished focus on the final product as an outcome of the development process highlighted the importance of the process itself. Contemporary discourse on planning often emphasizes process over product (11) – Altshuler even goes as far as to say that “planning is more important than any plan” (12, p. 98, 130). Flexibility on the part of the policymakers enabled the process to truly dictate its own outcomes, even in terms of the ultimate product of the process itself.

Don’t Let the Perfect Get in the Way of the Good
An additional success factor for the Blueprint was the willingness of the policymakers to part ways with their preconceived notions of what constitutes “the perfect plan.” While background research was undertaken to define components of a high-quality sustainability plan for state DOTs, the Blueprint was not forced to fit within this construct. Rather, the Blueprint was allowed to evolve organically as the process revealed specific institutional barriers to and opportunities for successful implementation. This conclusion is aligned with the previous lesson—to avoid predefining the outcome—and highlights the flexibility of the process. Additionally, this conclusion reveals the importance of adjusting the process to conform to specific institutional characteristics and supports the notion that “one size fits all” planning approaches ignoring institutional context may not result in optimal outcomes.

Give Employees a Chance to Find Themselves in the Framework
Throughout the framework development process, internal outreach efforts were designed to enable meaningful participation from staff across divisions and regions and throughout the vertical hierarchy of NCDOT. While clear communication of support for the process helped engage NCDOT employees, the design of outreach activities played a pivotal role in engaging staff. These activities provided employees an opportunity to define sustainability within the context of their own roles within NCDOT. Employees were asked to provide examples of existing practices aligned with sustainable outcomes and identify areas for improved consideration of sustainability in their own day-to-day activities. While a number of definitions of sustainable transportation were vetted by the policymakers, no single definition was imposed upon Departmental staff. This approach provided NCDOT employees with an opportunity to think critically about and challenge their own assumptions regarding the role of a state DOT in supporting a sustainable transportation system. In appealing to the intellectual capacity of employees on an individual level, the Blueprint outreach activities fostered institutional buy-in and provided employees with an opportunity to see how their role within NCDOT fit within the larger framework—and thus the opportunity to see themselves in the process.

Embed the Framework
Throughout the process, the policy development team opportunistically pursued coordination with a variety of institutional policies and practices. Due to the flexible and compact nature of the Principles and
Objectives, the team was able to successfully advocate for their inclusion in the 2040 State Long-Range Transportation Plan, the ten year and 5 year work programs (STIP), and performance-based management instruments (i.e. executive performance measures, dashboards, and business unit work plans). This integration is displayed in Figure 2. The success of this approach is attributable to entrepreneurial behavior on the part of the policymakers, a success factor identified in achieving institutional change in a variety of studies (2, 13), as well as to the flexibility of the final product of the planning process. In a more abstract sense, the policymakers focused on creating an active rather than a passive product—and did so largely through integration with a wide range of existing institutional policies and practices.

**Align Performance Measures with Objectives**

While traditional planning processes often place performance measures at the end of the process and instead focus on strategies, the Blueprint was designed to emphasize the central role of performance measurement. In contrast to many efforts in which metrics are created simply to track specific strategies, Blueprint strategies were viewed as a way to promote measured outcomes from a more strategic perspective. Performance measures were also viewed as a way to refine the principles and objectives developed early in the process and to identify future measurement needs. Objectives for which performance measures could not be readily identified were carefully considered, as evaluation techniques are essential to performance-based accountability. In some instances, this exercise revealed ways in which objectives could be reframed or reworded for greater clarity and measurability. In other instances, the exercise identified data and methodology gaps that should be filled through future research, particularly in areas of the practice that are continuing to emerge and evolve. For these reasons, it is important to identify applicable metrics early in plan development and to use them as part of an iterative process that supports framework consistency and reveals ongoing measurement needs.

**CONCLUSION**

This paper tells the story of one transportation agency’s journey to integrate sustainability as an agency value and a decision-making framework. This process provides insights into exploring the application of academic theory in practice, taking direction from the literature surrounding sustainability and coupling these insights with effective implementation strategies. NCDOT has worked to achieve the translation between theory and practice by firmly embedding the principles of sustainability into the Department’s core practices. In doing so, NCDOT has followed a process that offers important insights for other agencies seeking similar outcomes. While not every aspect of NCDOT’s process can be replicated—including highly fortuitous timing with respect to other ongoing Department initiatives—the Blueprint/Accountability Framework effort highlights the universal importance of flexibility, innovation, agency introspection, and persistent efforts to create integration opportunities. The process also reflects Appleton’s notion that sustainability is a useful device to frame conversations and policy debates regarding a broad set of issues (10). It is the hope of the authors of this paper that NCDOT’s experiences will provide other agencies and organizations with guidance, lessons learned, and confidence in embracing sustainability in a way that is most meaningful to their agency and their customers.

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**REFERENCES**


