

THE COLLABORATIVE MPO APPROACH TO PERFORMANCE BASED PLANNING IN NEW HAMPSHIRE

Stakeholder and Context Assessment Synthesis Report

The origin of this report stems from the transportation performance based planning initiative and project undertaken by the Interagency Performance Based Planning Workgroup. The report provides context for the project, summarizes the qualitative research framework, and discusses the findings of the Stakeholder and Context Assessment.



February 2016



Strafford Metropolitan Planning Organization
Strafford Regional Planning Commission

Acknowledgments

The Stakeholder and Context Assessment and the production of this Synthesis Report could not have been carried out without the supportive staff and Executive Director of the Strafford Regional Planning Commission (SRPC)/Metropolitan Planning Organization (MPO), as well as its partners, stakeholders, and community members. The author of this report and the lead Project Team would like to take this opportunity to thank all of those involved with the “Collaborative Approach to Performance Based Planning in New Hampshire” project and its associated Stakeholder and Context Assessment (Phase I of the project). Special thanks go out to:

- Planning staff who helped initiate the New Hampshire Interagency Performance Based Planning Workgroup throughout the duration of this Assessment:
 - Cynthia Copeland, AICP, Executive Director, Strafford Regional Planning Commission
 - Natallia Leuchanka, Regional Planner, Strafford Regional Planning Commission
 - Colin Lentz, Regional Transportation Planner, Strafford Regional Planning Commission
 - Chris Scheiner, GIS and Technical Analyst, Strafford Regional Planning Commission
 - David Walker, Transportation Program Manager, Rockingham Planning Commission

- New Hampshire Interagency Performance Based Planning Workgroup members (in addition to SRPC):
 - Nashua Regional Planning Commission (NRPC)
 - Rockingham Planning Commission (RPC)
 - Southern New Hampshire Planning Commission (SNHPC)
 - Southwest Region Planning Commission (SWRPC)
 - Bureau of Planning and Community Assistance, NH Department of Transportation (DOT)
 - NH Division of the Federal Highways Administration (FHWA)
 - Region 1 of the Federal Transit Administration (FTA)

- Glenn Davison, Supervisor of Systems Planning of the NH DOT Bureau of Planning and Community Assistance for his assistance with development of the Workgroup and stakeholder interview questions;
- SRPC Senior Regional Planner, Matthew Sullivan, who started the performance measures initiative at SRPC during the summer of 2014;
- SRPC Regional Planner, Sarah McGraw, for assisting with recording and notes during stakeholder interviews;
- Strafford MPO Technical Advisory Committee and Policy Committee;
- QSR International (Americas) Inc. for their generous assistance with NVivo;

- Stakeholders and Interview participants (includes Workgroup members*):

Advance Transit	NH Coastal Adaptation Workgroup (CAW)
American Council of Engineering Companies (ACEC-NH)	NH DES Air Resources Division
Bike Walk Alliance of NH	NH DHHS Division of Public Health Services
Business and Industry Association (BIA)	NH DOS Division of State Police
C&J Trailways	NH DOS/DMV Fatal Crash & FARS Units
Central NH RPC	NH DOT Bureau of Aeronautics
City of Dover	NH DOT Bureau of Planning & Community Assistance*
City of Somersworth	NH DOT Bureau of Rail & Transit
Concord Coach Lines/Dartmouth Coach/Boston Express	NH DOT Division of Aeronautics, Rail, Transit
Conservation Law Foundation	NH Motor Transport Association (NHMTA)
Cooperative Alliance for Regional Transportation (CART)	NH Rail Transit Authority (NH RTA)
Cooperative Alliance for Seacoast Transportation (COAST)	NH State Coordinating Council (SCC)
Eagle Companies	North Country Council RPC
Easter Seals	Pike Industries
Fay, Spofford, & Thorndike	Rockingham MPO*
Federal Highways Administration - NH Division*	Southern NH MPO*
Federal Highways Administration - VT Division	Southwest RPC*
First Transit	Strafford MPO*
Federal Transit Administration Region 1*	Transport NH
Infrastructure and Climate Network (ICNet)	UNH Campus Planning
Lakes Region RPC	UNH Stormwater Center
Manchester Transit Authority (MTA)	UNH Wildcat Transit
Nashua MPO*	Upper Valley Lake Sunapee RPC
Nashua Transit System	

- Our appreciation and thanks to the FHWA Strategic Highway Research Program 2 (SHRP2) for supporting future work associated with this project.

Synthesis Report Prepared and Authored By:

Natalia Leuchanka, Regional Planner
 Strafford Regional Planning Commission
 150 Wakefield St., Suite 12
 Rochester, NH 03867
www.strafford.org

Lead Project Team of the Stakeholder & Context Assessment:

Natalia Leuchanka, Regional Planner, SRPC
 Cynthia Copeland, AICP, Executive Director, SRPC

Report Edits By:

Cynthia Copeland, AICP, Executive Director, SRPC
 Colin Lentz, Regional Transportation Planner, SRPC
 Shayna Sylvia, Communications and Outreach Specialist, SRPC

Funding for the Synthesis Report was provided by the Federal Highways Administration and Federal Transit Administration of the U.S. Department of Transportation, and by the dues-paying members of the Strafford Regional Planning Commission.

Table of Contents

I.	FOREWORD FROM THE PROJECT TEAM.....	7
II.	PREFACE	8
III.	INTRODUCTION	8
IV.	PROJECT PHASES	11
	Phase I: Stakeholder and Context Assessment.....	11
	Phase II: Evaluation Criteria and Measure Selection	11
	Phase III: Methodology Assessment, Review, & Selection.....	12
	Phase IV: Measure Calculation	12
	Phase V: Trend Analysis, Target Setting, and Strategy Development	12
V.	PHASE I: STAKEHOLDER AND CONTEXT ASSESSMENT	12
	Approach.....	12
	Assumptions and Limitations	13
	Methods	14
	<i>Stakeholder Identification & Sampling</i>	14
	<i>Semi-structured Interviews</i>	14
	<i>NVivo Software</i>	15
	<i>Queries & Analysis Tools</i>	20
	<i>Additional Data Sources</i>	20
	Results and Discussion.....	21
	<i>Interview Project Map</i>	21
	<i>Word Frequency Analysis (Word Cloud)</i>	24
	<i>Word Context Analysis</i>	25
	<i>Word Similarity Cluster Analysis</i>	27
	<i>Finding Common Interests via Comparison Diagrams</i>	30
	<i>Network Sociogram and Relationships</i>	32
	<i>Stakeholder Interests and Priorities</i>	35
	<i>Stakeholder Barriers, Concerns, and Challenges</i>	36
	<i>Intended Use and Application of Performance Measures</i>	38
	<i>Data Sharing Ability</i>	39
	<i>Current Requirements and Use of Performance Measures</i>	40
	<i>Performance Measures of Interest</i>	40
	<i>Preventing Products from Sitting on the Shelf</i>	47
VI.	CHALLENGES & RECOMMENDATIONS.....	48
	Project Challenges	48
	Recommendations	48
VII.	APPENDICES	50
	Appendix A – Sample Discussion & Interview Guide.....	51

Appendix B – Classification Table Showing Attributes and Attribute Values for Referenced Stakeholders.....	55
Appendix C - Top 100 Most Frequently Mentioned Words in Interviews.....	56
Appendix D – List of Stakeholders Referenced in Interviews.....	59
Appendix E – Matrix Table of Barriers/Concerns/Challenges Referenced by Key Planning Partners (MPOs, rural RPCs, DOT, and FHWA).....	63
Appendix F - Memorable Quotes from Interviews*	64
<i>Regarding Issues in Transportation</i>	64
<i>Regarding Funding in Transportation</i>	69
<i>Regarding Integrated Planning</i>	69
<i>Regarding the Performance Based Planning Process</i>	71
<i>Regarding Adaptation of the Performance Based Planning Process</i>	74
<i>Regarding Use of Measures</i>	74
<i>Regarding Data</i>	76
<i>Regarding Target Setting</i>	79
<i>Regarding Outcomes</i>	79
<i>Regarding Stakeholder Engagement</i>	80
<i>Regarding Public Perception</i>	81
<i>Regarding Communication</i>	82
<i>Regarding Collaboration</i>	83

Table of Figures

Figure 1. Defining S.M.A.R.T. objectives and measures.	9
Figure 2. Key phases of the Interagency Performance Based Planning process.....	11
Figure 3. Benefits of NVivo Qualitative Analysis software to this project.....	16
Figure 4. Screenshot of the NVivo Classification Table, showing some of the attributes and values of organization cases.	17
Figure 5. Screenshot of example topic and themes codes within NVivo.	18
Figure 6. Screenshot of example relationship codes within NVivo.	19
Figure 7. Screenshot of example analytical codes within NVivo.....	19
Figure 8. A basic model of coding qualitative data. Source: Saldaña, 2009.	20
Figure 9. A project map showing the interviews conducted for the Stakeholder and Context Assessment, and the organizations/groups that participation in each interview.....	22
Figure 10. A context map of interviewed organizations and their self-identified legal status, consisting of the following categories: non-profit, private, public, or other.....	23
Figure 11. A word frequency cloud, showing the most frequently occurring words in interview transcripts.	24
Figure 12. A word tree providing context into the use of the word “private” in interviews. The diagram demonstrates the ten words preceding and following the word “private”, which was the 99 th most frequent word used in stakeholder interviews.	26

Figure 13. A dendrogram (branching tree diagram) showing word similarity between organizations interviewed for this project. The red box demonstrated bus transit agencies grouped together in one mega-cluster.29

Figure 14. A comparison diagram showing the similarities and differences in performance measures related topics coded to two stakeholders: Eagle Companies (private freight operator) and municipal planners (cities of Dover and Somersworth).31

Figure 15. Social Network Analysis constructed in NVivo and demonstrated via a sociogram. The sociogram shows the identified stakeholder network, where lines represent relationships and dots/nodes represent organizations referenced for interview. The hollow circles indicate location of the MPOs and the triangle indicates location of the NHDOT Bureau of Planning and Community Assistance within the network.34

Figure 16. A pie chart indicating interviewees' ability to share their data.39

Figure 17. Performance measure reporting or tracking mandates mentioned by interviewees.....40

Figure 18. Top performance measures of interest, represented by Sorting Approach #1 (sorted by the number of coding references). Red, hollow oval indicates measures referenced by all sources. Black, hollow circles indicate examples of measures which overlap with the Granite State Future core metrics.42

Figure 19. Top performance measures of interest, represented by Sorting Approach #2 (sorted by the number of cases/organizations referring to the measure). Red, hollow oval indicates measures referenced by all sources. Black, hollow circles indicate examples of measures which overlap with the Granite State Future core metrics.43

Figure 20. Overlapping measures between Sorting Approaches #1 and #2, indicating a more comprehensive representation of the most frequently44

Figure 21. A hierarchical tree map showing the most coded to transportation performance measures themes.....46

Table of Tables

Table 1. Members and key partners of the New Hew Hampshire Performance Based Planning Workgroup. 9

I. Foreword from the Project Team

Strong, collaborative relationships and constructive stakeholder engagement are the backbone of planning for public projects and programs. Frequently though, approaches consist of one-way communication and engagement techniques stemming from existing mandates and “business as usual” approaches. Such traditional practices may not reach those whose feedback is crucial for effective decision-making.

Working with our partners, this project gave Strafford staff the opportunity to step outside the bounds of traditional engagement practices and to try a new stakeholder engagement approach. By using a mixed-methods approach, one that incorporated social science and qualitative analysis principles and that grounded the process with qualitative data, we were able to consider the priorities of a diversity of stakeholder groups. These diverse voices and their rich qualitative data provide planning and transportation professionals with shared perspectives for the next phases of the project, increasing:

- Opportunities for two-way communication
- Involvement of diverse perspectives into the processes
- Knowledge of concerns, constraints, and views
- Buy-in on decisions and implementation actions
- Informed and cost-effective decision making

Getting out of our comfort zone, keeping an open mind, establishing new relationships, and strengthening existing ones, are key elements that have helped Strafford and our partners increase the resiliency of our organizational network. Partnering with colleagues allows us all to grow in performance based planning and to enhance our operational and organizational abilities to cope with change.

The Strafford Commissioners and staff are excited about the future of performance based transportation planning and its integration with land use, public health, the environment, and economic development. As an organization, the Strafford Commissioners and staff look forward to implementing the FHWA SHRP2 award, which was recently given to the Strafford MPO and its MPO partners in New Hampshire to strengthen our collaborative partnerships.

- *Natallia Leuchanka and Cynthia Copeland, AICP*

II. Preface

This Synthesis Report describes the context for the interagency performance-based planning project, and dives into the process and results of the Stakeholder and Context Assessment (Phase I of the project), carried out from January 2015 to January 2016. Results from this phase and analysis will guide the decision-making process of the Interagency Performance-Based Planning (PBP) Workgroup. Specifically, results of the qualitative analysis performed and presented in this report will serve as one of the key tools and criteria to derive specific, measurable, agreed-upon, realistic, and time-bound (SMART) inter-regional and statewide performance measures. The objective of the report is to help the Workgroup continue to pave the way for implementing performance based transportation planning in New Hampshire via qualitative and quantitative approaches and equitable stakeholder engagement strategies. The report will provide a foundation for the Federal Highways Administration (FHWA) Strategic Highways Research Program 2 (SHRP2) award, which was recently awarded to Strafford MPO and other partners of the PBP Workgroup to help them strengthen their collaborative partnerships and implement performance based planning in the MPO regions of New Hampshire. The report can be used as guidance for any planning organization or entity embarking on performance based planning and looking to use social science based approaches as part of its process.

III. Introduction

The federal transportation reauthorization bill, *Moving Ahead for Progress in the 21st Century* (MAP-21), requires Metropolitan Planning Organizations (MPOs) and state Departments of Transportation (DOTs) to incorporate performance based planning and performance measures into their transportation planning and programming practices. Performance measures are metrics used to assess progress toward meeting an objective¹. Specifically, MPOs and DOTs must track performance measures in the emphasis areas covered by the following seven national goals:

Goal 1. Safety. Achieve a significant reduction in traffic fatalities and serious injuries on all public roads.

Goal 2. Infrastructure condition. Maintain the highway infrastructure asset system in a state of good repair.

Goal 3. Congestion reduction. Achieve a significant reduction in congestion on the National Highway System.

Goal 4. System reliability. Improve the efficiency of the surface transportation system.

Goal 5. Freight movement and economic vitality. Improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.

Goal 6. Environmental sustainability. Enhance the performance of the transportation system while protecting and enhancing the natural environment.

Goal 7. Reduced project delivery delays. Reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices.

¹ US Department of Transportation, Federal Highways Administration. *Performance-Based Planning and Programming Guidebook*. 2013. Retrieved from: http://www.fhwa.dot.gov/planning/performance_based_planning/pbpp_guidebook/

The Fixing America's Surface Transportation (FAST) Act, the most recent five-year enabling legislation, maintains these national goals and their associated measures. The FAST act, passed in December 2015, does not include any new performance measures to address other needs and topics of interest to a multitude of stakeholders. While the national goals and their associated measures provide a national baseline, transportation stakeholders and planning organizations in New Hampshire have expressed interest in tracking additional measures which focus on 'beyond the mainstream'² issues, such as accessibility, public health, and economic development.



Figure 1. Defining S.M.A.R.T. objectives and measures.

New Hampshire's MPOs recognized the need for adapting and enhancing the national standards to the state and its regions, and decided to establish a regional and state-based framework for performance based planning. Strafford Regional Planning Commission facilitated the establishment of the Interagency Performance Based Planning (PBP) Workgroup (see Table 1 for members), which would be tasked with implementing performance-based transportation planning in New Hampshire, on both regional and state levels. The Workgroup consists of representatives from New Hampshire MPOs, the Department of Transportation (NHDOT), Federal Highways Administration (FHWA), Federal Transit Administration (FTA), and a rural Regional Planning Commission (RPC).

Two core objectives of the PBP Workgroup are to: a) establish a common framework for performance-based transportation planning, and b) develop a common set of meaningful and SMART³ (Figure 1) inter-regional/inter-MPO and statewide baseline performance measures. Collaborating with other planning organizations and entities in the state provides Workgroup members with opportunities to share resources and expertise, apply for funding assistance as a group, and improve the final outcome by ensuring that all key partners are involved throughout the decision-making process.

Table 1. Members and key partners of the New Hew Hampshire Performance Based Planning Workgroup.

Members and Key Partners of the Interagency Performance Based Planning Workgroup
Strafford Regional Planning Commission (MPO)
Nashua Regional Planning Commission (MPO)
Rockingham Planning Commission (MPO)
Southern New Hampshire Planning Commission (MPO)
Southwest Region Planning Commission (rural RPC)
New Hampshire Division of the Federal Highways Administration
Region 1 of the Federal Transit Administration
New Hampshire Department of Transportation, Bureau of Planning and Community Assistance

² US Department of Transportation, Federal Highways Administration. *Performance Outcomes Beyond the Mainstream Peer Exchange: Summary Report*. 2014. Available at: http://www.planning.dot.gov/Peer/Arizona/scottsdale_6-20-14_performance_outcomes.pdf

³ US Department of Transportation, Federal Highways Administration. *Performance-Based Planning and Programming Guidebook*. 2013. Retrieved from: http://www.fhwa.dot.gov/planning/performance_based_planning/pbpps_guidebook/

In order to then establish a strategic direction, Workgroup members first reviewed national performance goals and brainstormed other common planning goals that fit state and regional contexts. These common goals included:

- ❖ **System resiliency.** Build redundancy into infrastructure and reduce vulnerability of assets. Examples may include establishing options of multiple routes to key destinations.
- ❖ **Efficiency.** Improve efficiency of planning efforts and agencies, and enable opportunities to assist on-time and on-budget completion.
- ❖ **Livability.** Foster livability of communities, working toward increased transportation choices, equitable housing, and enhanced economic competitiveness.⁴
- ❖ **Public Health.** Integrate public health and transportation planning. Example programs and issues include Safe Routes to School and the desire to age in place.
- ❖ **Plan Integration.** Improve connection and consistency between planning documents and programs, such as the Metropolitan Transportation Plan and Transportation Improvement Program.
- ❖ **Mobility.** Increase mobility for people and freight.
- ❖ **Accessibility.** Provide transportation options that improve access to a wide variety of services and needs, such as healthcare, education, employment, and other critical areas.
- ❖ **Safety.** Expand safety goals to include all modes and all public roads (not just the NHS).
- ❖ **Equity.** Meet transportation needs of a diverse group of populations in the region. This also includes ensuring a more appropriate geographic distribution of projects between the larger/metropolitan and smaller/rural communities.
- ❖ **Assets and Investments.** Determine the appropriate level of investment to maintain the assets that we already have and make the argument for that investment.
- ❖ **Overall transportation system.** Move beyond managing the decline of the transportation system and move forward developing a modern, safe, accessible, and resilient one.

⁴ Partnership for Sustainable Communities. 2013. *Livability Principles*. Retrieved from: <https://www.sustainablecommunities.gov/mission/livability-principles>

IV. Project Phases

Phase I: Stakeholder and Context Assessment

Prior to selecting potential measures from a long list of candidates, the Workgroup agreed that it needed to assess the current context, which includes the identification of potential stakeholders, interests, priorities, concerns, barriers, available data, and other information needed for decision-making. This stage of the interagency performance-based planning process was defined as Phase I (Stakeholder and Context Assessment) of a five-phase process, and is the focal point of this report (see Figure 2 for all project phases). The purpose of Phase I is to ensure that Workgroup members concentrate their efforts on measures that are of interest and need to stakeholders, and that stakeholder voices are directly incorporated into the research and decision-making process.

Findings from the qualitative stakeholder assessment will create a shared knowledge base for all parties at the table. Specifically, the results will:

- Help unify the key partners and stakeholders by establishing common ground regarding the proposed framework of performance based planning;
- Feed into the evaluation criteria used to select SMART performance measures;
- Integrate implementation of “beyond the mainstream” (e.g. public health, economic development) measures into transportation planning;
- Help NH MPOs and NHDOT further identify transportation priorities, which will be useful for regional long-range transportation plans, as well as statewide plans (such as the state freight plan);
- Help assess project outcomes to meet targets and goals.

Phase II: Evaluation Criteria and Measure Selection

Phase II of the project is the establishment of evaluation criteria which will be used to select and narrow the working list of candidate performance measures. While there is a specific project phase for establishing criteria and selecting measures, this task will be ongoing throughout the project and will be revised as the Workgroup develops a better understanding of data and methodology related needs. It is imperative to state that this phase is closely tied to Phase I of the project. Results from the qualitative analysis of the Stakeholder and Context Assessment will feed into the establishment of the evaluation criteria. Results will also help ensure that the NHDOT and MPOs consider stakeholder priorities and their use of intended performance measures.

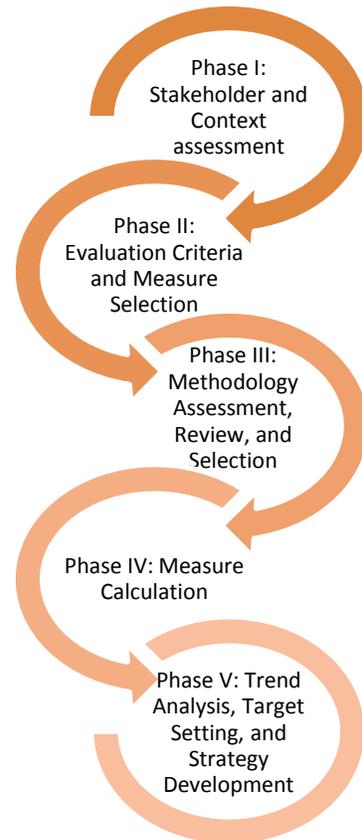


Figure 2. Key phases of the Interagency Performance Based Planning process.

Phase III: Methodology Assessment, Review, & Selection

Phase III is the research, review, assessment, and selection of the methodology, protocols, and techniques to be used for measure calculation. This phase is closely aligned with Phase II, as the evaluation criteria will include an investigation of available data and analyses.

Phase IV: Measure Calculation

Phase IV includes the calculation of the measures to determine baseline conditions, as well as current and historic performance of a particular measure. The tasks in this Phase are crucial to the development of targets and goals during Phase V.

Phase V: Trend Analysis, Target Setting, and Strategy Development

A follow-up to the Phase IV calculation of baseline conditions and historic trends is Phase V, where these trends are then analyzed and used in conjunction of other variables to determine desired trends and targets for the measures. The target-setting process involves consideration and integration of multiple factors, such as financial resources, technical considerations, policy-based considerations, and economic factors⁵. This Phase will connect back to the work accomplished in Phase I, where identified stakeholders will provide additional input and participate in the target-setting process. Finally, this Phase will involve the identification of strategies needed to achieve the set targets. The project team and stakeholders will identify a series of alternative strategies to determine which strategy or combination of strategies will help the regions and the state achieve their desired targets⁶.

V. Phase I: Stakeholder and Context Assessment

Approach

The Stakeholder and Context Assessment was implemented with a *qualitative social science lens* and an *inductive approach to inquiry*. Social sciences are defined as a “branch of science that deals with the institutions and functioning of human society and with the interpersonal relationships of individuals as members of society”.⁷ A social science-based research approach is an appropriate way to incorporate stakeholder voices and the rich verbal information into the transportation decision-making process. Such forms of data, in their raw format, tend to be largely unstructured and non-numeric⁸, and are often difficult to analyze with standard transportation analysis tools (such as Geographic Information Systems, Safety Analyst, or even Microsoft Excel). This provides another reason for utilizing the qualitative research approach to inquiry and assessment in a planning research study. In an inductive approach, such as the one adapted in this study, theoretical concepts, findings, and

⁵ Ibid.

⁶ Ibid.

⁷ Merriam-Webster Online Dictionary. 2015. *Social Science*. 2015 Merriam-Webster, Incorporated. Retrieved from: <http://www.merriam-webster.com/dictionary/social%20science>.

⁸ Guest, G., MacQueen, K., & E.E. Namey. (2012). *Applied Thematic Analysis*. Thousand Oaks, CA: SAGE Publications.

patterns, are observed from raw data^{9 10}. In other words, raw data tells the story, and guides emerging themes and interpretations, as opposed to a deductive approach where data are tested against a given hypothesis¹¹.

Adopting a qualitative research approach for this study provides a number of benefits¹²:

- obtaining a detailed and complex understanding of the underlying project objectives;
- empowering and engaging stakeholders and participants to share their stories;
- incorporating stakeholder voices directly into the research process;
- providing a supplement to quantitative data and research that currently exists on performance measures and planning in New Hampshire;
- accounting for the uniqueness of stakeholder interests and concerns, and adapting them to the performance based planning framework, thus helping ensure a more integrative approach.

Assumptions and Limitations

Due to resource and time constraints throughout the duration of project Phase I, not all mentioned stakeholders and groups were interviewed. Attempts were made to contact at least one representative of each key stakeholder group. Instead of striving for a statistically significant sample size, the project team implemented purposive sampling, where the goal was to achieve diversity and equity among transportation perspectives of interview participants.^{13 14}

A primary assumption for this project implied that by using the “snowball effect” and the concept of stakeholder saturation (see “Methods” for more information), we would get an appropriate diversity of stakeholders. This assumption was justified by prior peer-reviewed research within the field of social sciences. Based on results of the snowball effect, we made assumptions about who the appropriate participants were. This led to the formation of a stakeholder network, which consisted of organizations that have a responsibility, or an interest in using, tracking, and/or reporting on transportation performance measures.

Since performance based planning requirements under MAP-21 apply only to DOTs and MPOs, rural planning commissions in New Hampshire are not mandated by law to track the same measures and maintain the same level of commitment to performance based planning. That is not to say that the rural commissions are not practicing or initializing performance based management and planning, which is why the Project Team and the Workgroup decided that rural planning commissions should be a critical voice and adviser in the process.

⁹ Bernauer, J. A., Lichtman, M., Jacobs, C., & Robertson, S. (2013). Blending the old and the new: Qualitative data analysis as critical thinking and using Nvivo with a generic approach. *The Qualitative Report*, 18(How To Art. 2), 1-10. Retrieved from: <http://www.nova.edu/ssss/QR/QR18/bernauer2.pdf>

¹⁰ Thomas, D.R. (2006). A general inductive approach for analyzing qualitative evaluation data. *American Journal of Evaluation*, 27(2), 237-246.

¹¹ Ibid.

¹² Creswell, J. W. (2013). *Qualitative inquiry and research design: Choosing among five approaches* (3rd ed.). Los Angeles: SAGE Publications.

¹³ Mason, M. (2010). Sample Size and Saturation in PhD Studies Using Qualitative Interviews [63 paragraphs]. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*, 11(3), Art. 8. Retrieved from: <http://hbn-resolving.de/urn:nbn:de:0114-igs100387>.

¹⁴ Guest, G., Bunce, A. & Johnson, L. (2006). "How many interviews are enough? An experiment with data saturation and variability". *Field Methods*, 18(1), 59-82. Retrieved from: <http://api.ning.com/files/bzSRlccncYIHoa9GPd21ad0Uj6NlyGREx1RMTzJqjgYoBcPtmAyKny8kWTJW7MhnnlQkEyyo5j9FuEaO8Lr-6LIGYXFcZZFM.HowManyInt.pdf>

Methods

Stakeholder Identification & Sampling

While a variety of methods and overarching approaches are often used to identify stakeholders (or study participants) in qualitative research processes, the Project Team used “snowball” sampling, also known as *referral chain sampling*¹⁵ to identify stakeholders in this project. This sampling technique included initial interviews with core partners from the Workgroup, who identified and referred other individuals and stakeholder perspectives from their organizational networks. Some participants were identified per Strafford MPO Commissioners’ recommendations, particularly regarding interests for which the core partners did not have any contacts, such as private freight operators and distributors.

Semi-structured Interviews

Prior to interviewing partners from the core Workgroup and other stakeholders, a pilot interview was conducted with Strafford MPO staff to refine the interview questions and gather any other feedback to improve the interview process. Separate interview guides were established for MPO and non-MPO participants, since additional questions needed to be asked of the MPO representatives.

As stakeholders were identified, individual and group *semi-structured interviews* were conducted to gather stakeholder interests, concerns, barriers, and a foundation of performance based planning. Interviews also focused on data availability and sharing capabilities, current resources, and other relevant information aimed at helping the Workgroup provide an overall understanding of the context within which it is working. The interviews also ensure that MPOs and the Workgroup consider all angles and perspectives during the establishment process of additional transportation performance measures (those not covered under MAP-21).

During the semi-structured interviews, a set of questions was followed (see Appendix A), but the interview was open for participants to divert to new ideas, which often were prompted by their previous responses. The focus of the last interview question was to elicit the interviewee’s reference of other organizations, perspectives, or groups who should be involved in the process. With such a referral process, interview participants helped build a “snowball” of stakeholders until a level of saturation was reached. *Stakeholder saturation* is reached when the same people, agencies, or perspectives continue to be repeated over the course of multiple interviews, which is an indication of reaching an appropriate sample size in many qualitative studies.¹⁶

Diversity of perspectives and interests, rather than statistical significance, guided the selection of stakeholders for participation in interviews. Selection of interviewees was also based on the resource capacity of the organization performing the interviews (Strafford MPO/RPC), participant’s response (or lack of) to the initial solicitation for interviews, schedule flexibility and availability of prospective participants, as well as the diversity and saturation of representative perspectives. Although not all

¹⁵ Biernacki, P and Waldorf, D., 1981, Snowball sampling—Problems and techniques of chain referral sampling. *Sociological Methods & Research*, v. 10, p. 141-163.

¹⁶ Mason, M. (2010). Sample Size and Saturation in PhD Studies Using Qualitative Interviews [63 paragraphs]. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*, 11(3), Art. 8. Retrieved from: <http://nbn-resolving.de/urn:nbn:de:0114-fgs10038Z>.

referenced stakeholders were interviewed, the Project Team strived for diversity and equity within representation of perspectives. As resource and time constraints allowed, the Team attempted to have at least one representative from each major stakeholder type participate in an interview.

Over the course of the qualitative data collection period (lasting from January 5, 2015 to June 1, 2015) and the Stakeholder and Context Assessment (lasting from January 2015 to January 2016) we conducted *twenty-five individual and group interviews, with eighty-six participants, from approximately fifty organizations*. Although there is no “right” or “wrong” number of interviews that should be conducted in qualitative research, this study has exceeded the recommended minimum of 15 interviews.¹⁷

Verbatim Transcripts

All interview participants provided consent to an audio recording of their interview. With the exception of the first three interviews (due to pilot testing during the early stages of the process), interview audio recordings were transcribed verbatim. *Verbatim transcription* helps reduce the alteration of meaning by preserving the original and unedited language of the participant; keeping the researcher away from premature judgements and helping the researcher keep the interviewee’s speech in context during analysis.¹⁸ Transcribing the interview verbatim also helps reduce researcher bias and establish increased rigor, trust, and validity in the study. The method of using verbatim transcriptions (instead of summarized transcriptions) helps minimize the impact of implicit biases during the analysis process. Verbatim interviews also included the speech of the interviewer, as the interviewer usually prompts the participants, and thus provides context to their responses. Strafford MPO transcribed the first nine interviews and then contracted with an external company specializing in technical content transcriptions to carry out the remaining sixteen interview transcriptions. After receipt of the full interview transcript, Strafford MPO verified transcripts done by the contractor for their accuracy of content and speakers. Any identified errors were corrected by Strafford MPO.

Verbatim transcripts served as the primary source of *raw data* during the qualitative analysis, which is common among other studies generated by qualitative researchers.¹⁹ The next step in the process was to break down and make sense of the raw data for the purpose of detecting major themes occurring between and within stakeholder groups. To aid in the processing, analysis, and interpretation of the data, NVivo software for qualitative data analysis (QDA) was used.

NVivo Software

NVivo was used as a tool for management of qualitative data, identification and management of emerging themes, systematic comparisons and querying of the data, visualization of the results, and assurance of comprehensive analysis and interpretation.²⁰ NVivo aids the researcher in making sense

¹⁷ Bertaux, D. (1981). From the life-history approach to the transformation of sociological practice. In Daniel Bertaux (Ed.), *Biography and society: The life history approach in the social sciences* (pp.29-45). London: SAGE Publications. Adapted from Mason, 2010 and Guest, 2006.

¹⁸ Seidman, I. (2006). *Interviewing as qualitative research: A guide for researchers in education and the social sciences* (3rd ed.). New York: Teachers College Press.

¹⁹ Ibid.

²⁰ Bazeley, P. and K. Jackson. (2013). *Qualitative Data Analysis with NVivo* (2nd ed.). London: SAGE Publications.

of complex, rich, and often exhaustive qualitative datasets, such as the verbatim transcripts used in this project.

NVivo software served as a valuable tool to the Workgroup (see Figure 3). Specifically, the qualitative software was used as a tool for transparent and consistent interview transcript coding, and aided in the discovery of major intersecting and unique themes, relationships, performance measures of interest, and other findings from the stakeholder assessment phase.



Figure 3. Benefits of NVivo Qualitative Analysis software to this project.

Designing a NVivo Project Database

To help analyze and interpret the findings from this research project with the help of NVivo, an internal NVivo project database was created. The project database contains all sources of raw data and other supporting materials, as well as the organizational structure for the project.

Critical foundations of the organizational structure of the NVivo database include the project objectives and the *unit of analysis*, which refers to the type of entity being analyzed throughout the project. The unit of analysis (referred to as a “case” in NVivo) in this study was the “organization”, meaning that the researcher looked for themes, patterns, and relationships between *organizations* and *groups* represented during interviews, and not between the *individuals* representing those groups. These cases link all of the quantitative, categorical, and qualitative data related to a particular stakeholder organization, together in one place within the database. In this project, close to fifty organizations participated in interviews. A “case” was created for each of these organizations to ensure that all of their associated information is linked to them and stored in one place. In other words, cases help connect all of the data about an organization *with* that organization within the NVivo database. All of these fifty cases also have specific *attribute* information associated with them, which helped us compare the categorical and qualitative information between organizations (e.g. concerns of *private* organizations as compared to those of *public* organizations).

The attributes, attribute values, and organizations associated with those values are linked together in a form of a NVivo *Classification Sheet*, which allows the researcher to make comparisons between

various organizations interviewed during the project. The attribute values for all of the organizations who participated in interviews were obtained with a combination of institutional knowledge about the organization and a SurveyMonkey questionnaire, which was sent to all participants after the interviews. An example portion of the Classification Table showing some of the attributes and their values for a sub-set of participating organizations is shown in Figure 4 (see Appendix B for a screenshot of the entire table).

The screenshot shows the NVivo Classification Table interface. The table lists various organizations and their attributes across multiple columns. The columns include: Case Classification, Legal Status, Primary Source of Funding, Mandated FHWA MAP, Mandated FTA MAP, Modes vs. Interests, Modes vs. Sentiment, Advocacy (Y/N), Lobbying (Y/N), Ped (Y/N), and Bike (Y/N). The rows list organizations such as 2: Advance Transit, 5: American Council of Engineering, 8: Bike Walk Alliance of NH, 11: Business and Industry Associat..., 12: C&I Trailways, 13: Central NH RPC, 14: City of Dover, 17: City of Somersworth, 19: Concord Coach Lines "Dartmout...", 20: Conservation Law Foundation, 21: Cooperative Alliance for Region..., 22: Cooperative Alliance for Seacoast..., 23: Eagle Companies, 24: Easter Seals, 28: Fay, Spofford, & Thordike (BIA), 32: FHWA - NH & VT Divisions, 33: First Transit, 36: FTA Region 1, 39: Infrastructure and Climate Netw..., 40: Lakes Region RPC, 46: Manchester Transit Authority (M..., 62: Nashua MPO, 53: Nashua Transit System, 62: NH Coastal Adaptation Workgro..., 64: NH DES Air Resources Division, 67: NH DHHS Division of Public He..., 69: NH DOS Division of State Police, 71: NH DOS/DMV Fatal Crash & F..., 73: NH DOT Bureau of Aeronautics, 75: NH DOT Bureau of Planning &, 76: NH DOT Bureau of Rail & Transit, 77: NH DOT Division of Aeronautics, 84: NH Motor Transport Association, 87: NH Rail Transit Authority (NH R..., 90: NH State Coordinating Council (...), 84: North Country Council RPC, 100: Pike Industries (BIA member), 105: Rockingham MPO, 111: Southern NH MPO.

Figure 4. Screenshot of the NVivo Classification Table, showing some of the attributes and values of organization cases.

Coding

After building and setting up the structure of the project database in NVivo, then preparing and analyzing the raw data for analysis, the next step was to implement the analysis process by reducing and structuring the data into meaningful segments through a process of coding.²¹ Coding is the process of making the data more manageable and meaningful by reducing it into smaller segments and labeling it with unique names relevant to project objectives and potential themes.²²

In this study, the coding coverage includes whole sentences and in some cases paragraphs (instead of phrases or words) to provide context for the text of interest. The objective of this type of coding is not to quantify the number of phrases, but to understand the context of the phrases and words, along

²¹ Creswell, J. W. (2013). *Qualitative inquiry and research design: Choosing among five approaches* (3rd ed.). Los Angeles: SAGE Publications.

²² Ibid.

with their meaning based on participant perspectives. Coding is done by the researcher and not the software.

Three key types of codes were prevalent in this study:

- *Topic and Theme Codes*, which represent themes related to transportation and regional planning relevant topics (including specific performance measures). These codes usually involve little researcher interpretation of the data. For examples of topical and thematic codes from this project, see Figure 5.

Name	Sources	References
Performance Measures & Planning Themes	1	1
THEME - System Efficiency, Reliability, & Productivity	15	101
THEME - Security and Resilience	13	107
THEME - Safety	18	149
THEME - System Condition, Preservation, and Rehabilitation [Infrastructure]	22	173
THEME - Economic Vitality	21	213
THEME - Transportation Equity & Underserved Populations	18	216
THEME - Organizational-Institutional Development & Accountability	23	272
THEME - Mobility, Connectivity, & Accessibility	25	362
THEME - Environment, Public Health, & Sustainability	25	431
x.Transportation MODE & Key Inventory	24	802

Figure 5. Screenshot of example topic and themes codes within NVivo.

- *Relationship Codes*, which represent one-way, directional referral relationships/connections between stakeholders (including interview participants). These codes are the least subjective as they include little to no interpretation, but rather simply the facts of one stakeholder recommending that the Project Team speak to another stakeholder as part of the Stakeholder and Context Assessment process (e.g. SRPC recommends we speak with Transport NH). Relationship codes also help with visualization of the stakeholder network via a NVivo *network sociogram*, which is a complex network of stakeholder referral relationships showing key or 'central' organizations who help keep the network together, as well as those who may not be as tightly linked to the network. These codes and the resulting sociogram benefit the project because they can help us improve collaboration by identifying weaker and stronger areas of our organizational network. For examples of relationship codes from this project, see Figure 6.

Relationships		
From Name	Type	To Name
Organizations\American Council of Engineering	recommends to speak with	Organizations\Concord Coach Lines~Dartmouth Coach~Boston Express
Organizations\American Council of Engineering	recommends to speak with	Organizations\C&J Trailways
Organizations\American Council of Engineering	recommends to speak with	Organizations\Pease Tradeport~Airport
Organizations\American Council of Engineering	recommends to speak with	Organizations\Transportation Committee of the NH State Senate
Organizations\American Council of Engineering	recommends to speak with	Organizations\Public Works and Highways Committee of the NH House of Representative
Organizations\American Council of Engineering	is a subset of	Organizations\Business and Industry Association (BIA)
Organizations\Associated Grocers of New Engla	is a subset of	Organizations\Freight
Organizations\Bike Walk Alliance of NH	recommends to speak with	Organizations\NH Department of Resources and Economic Development (DRED)
Organizations\Bike Walk Alliance of NH	recommends to speak with	Organizations\Neighboring States
Organizations\Bike Walk Alliance of NH	is a subset of	Organizations\Non-Profits, Advocacy, & Grassroot Organizations
Organizations\Bike Walk Alliance of NH	is a subset of	Organizations\Bicycle
Organizations\Bike Walk Alliance of NH	is a subset of	Organizations\Pedestrian
Organizations\BSP Transportation, Inc.	is a subset of	Organizations\Freight
Organizations\Business and Industry Associatio	recommends to speak with	Organizations\C&J Trailways
Organizations\Business and Industry Associatio	recommends to speak with	Organizations\Concord Coach Lines~Dartmouth Coach~Boston Express
Organizations\Business and Industry Associatio	recommends to speak with	Organizations\NH Municipal Association
Organizations\Business and Industry Associatio	recommends to speak with	Organizations\NH Association of Counties
Organizations\Business and Industry Associatio	recommends to speak with	Organizations\Pease Tradeport~Airport
Organizations\Business and Industry Associatio	recommends to speak with	Organizations\NH Center for Public Policy Studies
Organizations\C&J Trailways	recommends to speak with	Organizations\UNH Campus Planning
Organizations\C&J Trailways	is a subset of	Organizations\Intercity Bus Providers
Organizations\Central NH RPC	recommends to speak with	Organizations\NH DOT Bureau of Aeronautics
Organizations\Central NH RPC	recommends to speak with	Organizations\NH State Coordinating Council (SCC)
Organizations\Central NH RPC	recommends to speak with	Organizations\Bike Walk Alliance of NH
Organizations\City of Dover	recommends to speak with	Organizations\Major manufacturers (those who use freight)
Organizations\City of Dover	recommends to speak with	Organizations\Port of NH or NH Port Authority

Figure 6. Screenshot of example relationship codes within NVivo.

- *Analytical Codes* describe the meaning of the data within its context, which in this project included a number of overarching institutional and comprehensive codes. These codes are usually the result of interpretation and the researcher's reflection of the data, and often are finalized after heavy examination of the content within that code.²³ For examples of analytical codes from this project, see Figure 7.

Analytical Code Themes			
Name	Sources	Reference	
Barriers, Concerns, Challenges	26	903	
Current Events	4	6	
Current Requirements & State of Performance Based Planni	22	80	
Currently Tracking	25	231	
Data Sharing & Availability	26	146	
Intended Use of Performance Measures & the PBP Process	25	394	
Memorable Quotes	23	240	
Process & Project Description	23	78	
Specific Interests & Priorities	22	310	
Strategies to Prevent Final Products From Sitting on Shelf	12	43	

Figure 7. Screenshot of example analytical codes within NVivo.

After an initial round of coding, the codes derived from raw data are reduced to meaningful categories, and eventually to concepts or themes (see Figure 8 for model).²⁴

²³ Richards, L. (2009). *Handling qualitative data: a practical guide* (2nd ed.). Thousand Oaks: SAGE Publications.

²⁴ Saldaña, J. (2009). *The coding manual for qualitative researchers*. London, UK: SAGE Publications.

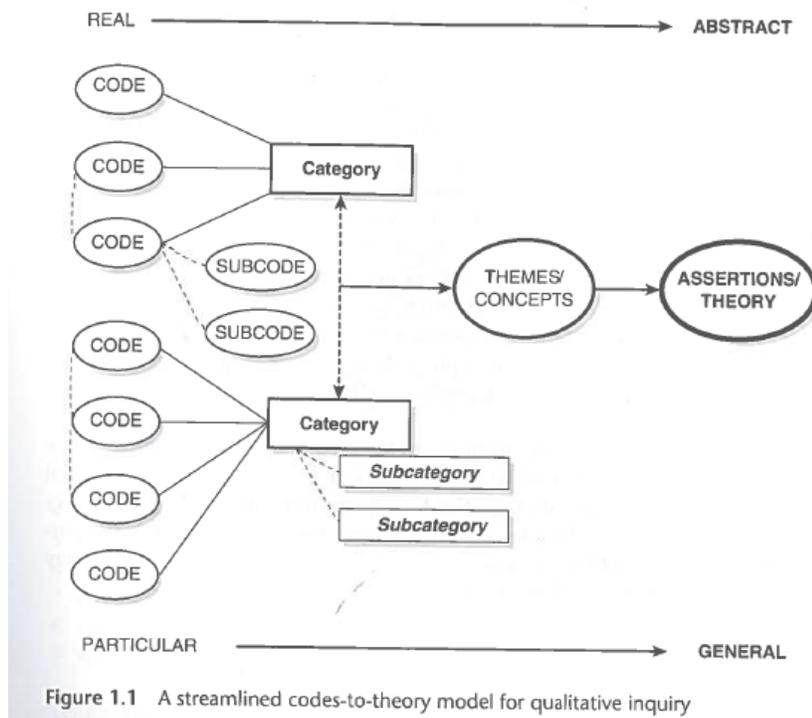


Figure 8. A basic model of coding qualitative data. Source: Saldaña, 2009.

Queries & Analysis Tools

As the first round of coding neared completion, various queries were constructed and implemented for identification of patterns and meaningful themes within and between the data sources and the coding. Queries in NVivo allow the researcher to ask various questions of the raw and structured data in the study.²⁵ Through these queries within the software, the researcher may identify patterns, overlaps, and discrepancies in the data.²⁶ NVivo provides the user with various analysis tools and diagrams, such as cluster analysis maps and comparison diagrams.

In this project, queries and analysis tools were used to help identify the most frequently used words among all interviews, word similarity among interviewee speech, intersecting themes among interview participants, top performance measures of interest, and other objective-relevant information.

Additional Data Sources

Before and after the interviews, participants were invited to send the Project Team a list of any measures their organization would be interested in tracking, particularly if the list was too long for them to talk about in an interview. Some individuals (primarily those affiliated with RPCs, MPOs, DOT, FHWA, and the DES Air Quality Division) submitted anywhere from a dozen to over one hundred

²⁵ Jackson, K. 2015. NVivo 10 Memos. In *NVivo 10 Training Materials*. Retrieved from: http://www.colorado.edu/ibs/crs/workshops/NVivo_Beyond_Basics_2015-01-07/workshop_materials/QUERIES%20Memos%20NV10%20as%20of%202012%2006%2026.pdf

²⁶ Bernauer, J. A., Lichtman, M., Jacobs, C., & Robertson, S. (2013). Blending the old and the new: Qualitative data analysis as critical thinking and using NVivo with a generic approach. *The Qualitative Report*, 18 (How To Art. 2), 1-10. Retrieved from: <http://www.nova.edu/ssss/QR/QR18/bernauer2.pdf>

measures of interest in a form of an Excel spreadsheet, some of which included measures from the *Granite State Future (GSF)* project. The statewide GSF project included a three-year visioning and public involvement effort as a component of the Sustainable Communities Regional Planning Grant funded by the Department of Housing and Urban Development. The effort included documentation of existing conditions across the state by identifying and calculating a set of 'core metrics'.

These 'core metrics' from the GSF project, along with other metrics of interest submitted by some of the interviewees, were all consolidated and imported into NVivo. NVivo was used to compare the metrics submitted via the spreadsheet list with any performance measures of interest mentioned by participants in interviews. Using both the *spreadsheet* list of submitted measures and *the twenty-five interview transcripts* (containing statements from approximately fifty organizations) allowed for a more accurate representation of specific measures that are of the most interest and highest priority to project stakeholders. The process of triangulation, which involves using multiple sources of data and evidence²⁷ to identify the priority measures (and topics) of interest also increases the validity of results, and eventually the list of measures recommended for implementation.

Results and Discussion

Interview Project Map

A project map of organizations/groups and their interviews is presented in Figure 9. Many of the interviews were group interviews with two or more organizations/groups represented. At most, nine organizations were represented during one interview (representatives of public bus transit operations). Interviewed organizations varied by legal status, with the majority of interview participants being from the public or non-profit sector. See Figure 10 for a context map of interviewed organizations and their identified legal status, consisting of the following categories: non-profit, private, public, or other.

See Appendix F for memorable quotes (sorted by topics) from stakeholder interviews.

²⁷ Creswell, J. W. (2013). *Qualitative inquiry and research design: Choosing among five approaches* (3rd ed.). Los Angeles: SAGE Publications.

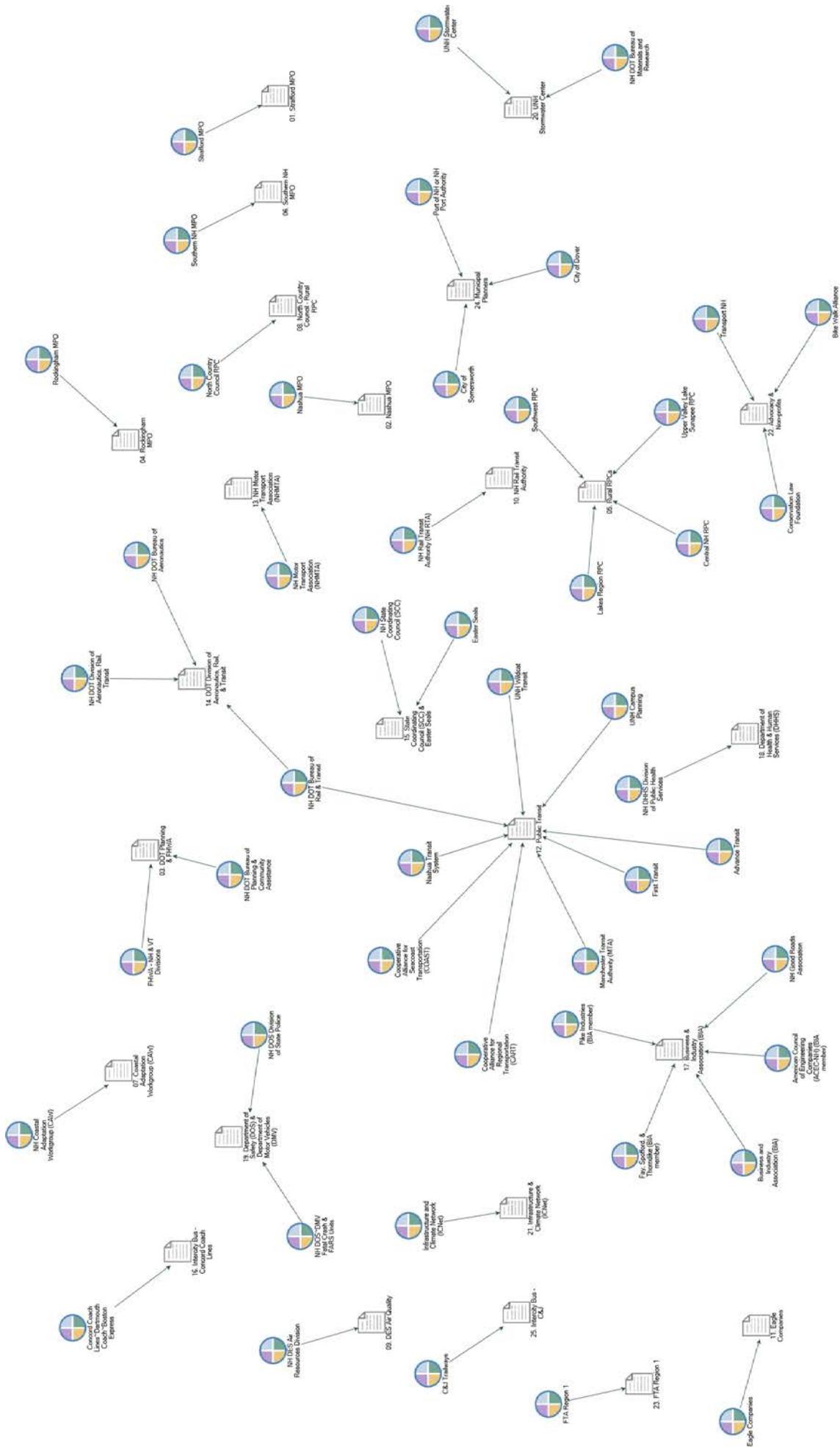


Figure 9. A project map showing the interviews conducted for the Stakeholder and Context Assessment, and the organizations/groups that participated in each interview.

Figure Legend

 = Organizational Attribute  = Organization/Group

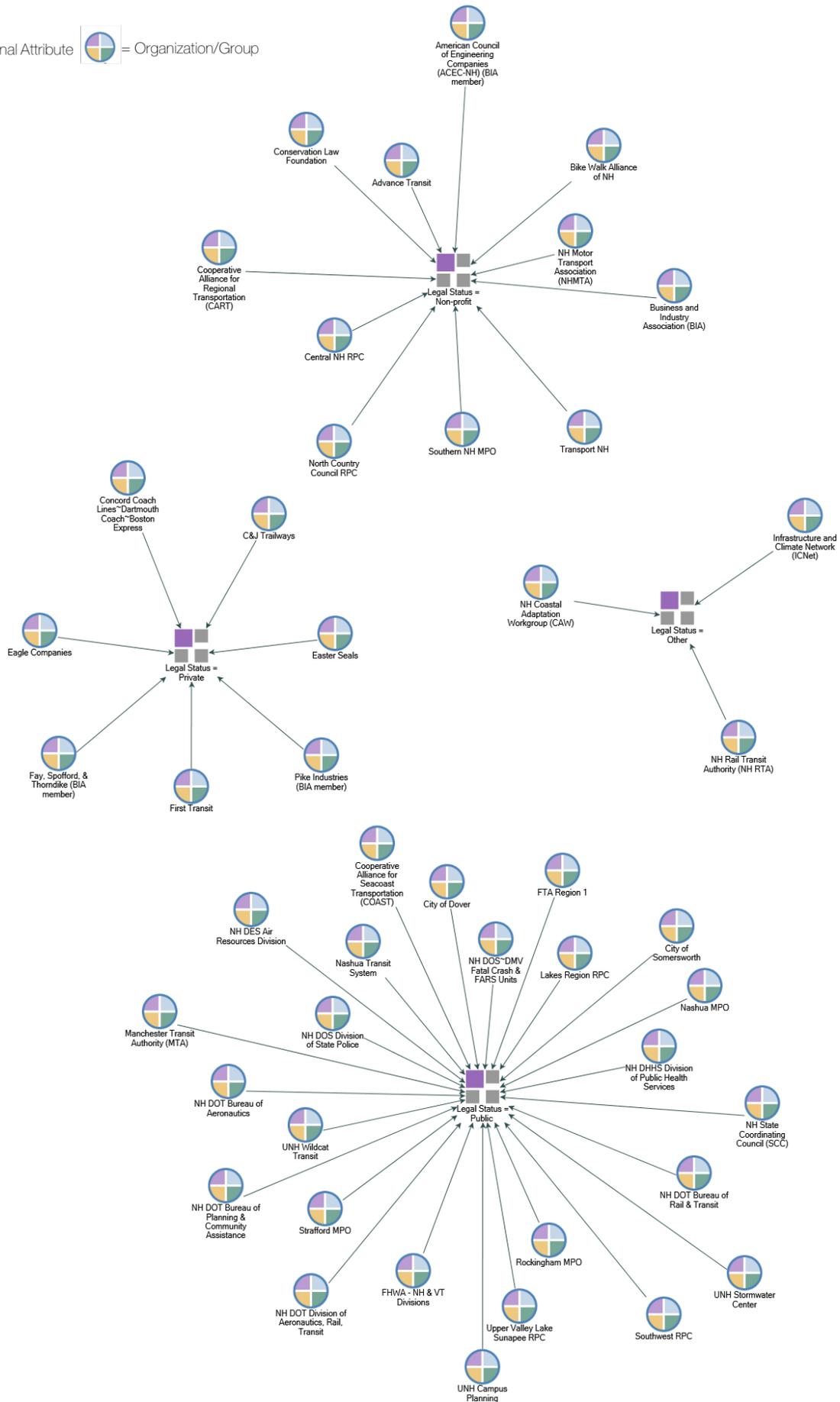


Figure 10. A context map of interviewed organizations and their self-identified legal status, consisting of the following categories: non-profit, private, public, or other.

While there are numerous takeaways from this result, some of the preliminary reviews may indicate that inter-modal transportation, economic development, public health, communities, private-public partnerships, budgeting, integrated planning, and finally data and metric based decision-making may be common topics of discussion and interest throughout the interviews. The list of top 100 words can be viewed from most to least frequently mentioned in Appendix C.

Word Context Analysis

To dive deeper into the data and results from the word frequency query, NVivo allows for a more in-depth context analysis of specific words via its “Text Search” query. The text search query allows for the construction of a word tree visualization, with tree branches showing the phrases and words surrounding the word of interest²⁸.

For example, a list of the most frequently mentioned words in Appendix C (also see Figure 11) tells us that “*private*” was the 99th most frequent word mentioned throughout the interviews. Based on the manual coding and analysis performed in this study, “utilization of existing partnerships”, and the “establishment of new public and private partnerships” are top priorities for stakeholders (see page 36). To follow up on these results from the word frequency query and the manual coding, a text search query on the word “private” was produced in NVivo. Results demonstrate the ten words preceding and following the word “private” in a form of a word tree, providing some context into how the word is used (see Figure 12). Based on these results, it appears that much of the references to “private” are made within the context of topics such as public/private partnerships, private funding and investments in transportation, sharing of data within private entities, and performance based planning requirements for public versus private entities. Although most parts of the diagram provide some insight into these topics, the red boxes in Figure 12 highlight examples of areas where they are prevalent in the word tree.

²⁸ QSR International. (n.d.). *NVivo 11 for Windows Help*. Retrieved from: <http://help-nv11.qsrinternational.com/desktop/welcome/welcome.htm>

Word Similarity Cluster Analysis

To gain more insight into the data, cluster analysis diagrams were used to discover and visualize clusters of similar items. Cluster analysis is a technique which groups similar items together and disperses different items further apart.²⁹ Cluster analysis, calculated with the Pearson correlation coefficient within NVivo, was used in this study to visualize clusters of word similarity in order to identify organizations represented in interviews who shared more words in common, which was determined by the occurrence and frequency of words. The greater the similarity of word occurrence and frequency used in interviews between participants, the closer they were grouped together and thus the more similar their language or use of words was. To increase accuracy of the results, certain 'stop words', such as prepositions or conjunctions, were excluded from the analysis.

Cluster analysis is beneficial to see who may be talking about similar topics and has mutual interests. Word similarity cluster analysis can also be used to identify potential discrepancies in relationships between stakeholders who may or may not be grouped close to one another.

Word similarity between interviewees was visualized in a dendrogram (see Figure 13), which is a horizontal branching diagram showing similar items on the same branch and different items further apart on different branches.³⁰ The dendrogram in Figure 13 demonstrates the eight most defining clusters of interviewee word similarity, with each cluster represented by a different color.

Dendrogram result observations:

A number of interpretations may be made from the word similarity dendrogram, however some key takeaways are emergent:

- State agencies all in one large cluster, indicating use of similar language
- Key members and partners of the Workgroup (RPCs, MPOs, DOT, FHWA, and FTA) are also part of one large cluster, indicating that while the partners may not necessarily agree on all of the factors and details of how PBP should be carried out, they are at least speaking a similar language, may share a similar mission, and are discussing similar topics and issues. This is advantageous since these key partners need to establish one voice for their message and collaborate with one another to implement performance based planning. Within this cluster, the MPOs and rural RPCs appear to be in separate sub-clusters, indicating that there may be some differences in discussion topics between them. Such differences likely come from the needs encountered at the rural versus urban geographic scale, as well as the MAP-21 federal requirements, which the rural RPCs are not bound by.
- Most of the bus transit agencies are situated within one cluster
- Intercity bus providers are not only in one cluster, but also on the same branch, indicating high similarity in the type and frequency of words used between them
- Local municipal planners are in one cluster. The two were also in the same interview, which was likely to influence the similarity in language between them.

²⁹ QSR International. (n.d.). *NVivo 11 for Windows Help*. Retrieved from: <http://help-nv11.qsrinternational.com/desktop/welcome/welcome.htm>

³⁰ Ibid.

- The Business and Industry Association (BIA) and its members are all part of one cluster. Regardless that they participated in the same interview, results indicate that the BIA and its members have a shared mission and one voice.
- Department of Health and Human Services (DHHS) and the Department of Environmental Services (DES) are on same branch, which is not a surprise since they both spoke of binding public health measures, such as air quality.

Some surprising results:

- Transit operators were concentrated in the upper portion of the dendrogram and are specifically spread out throughout four different clusters, which are all part of one mega-cluster (situated within the red rectangle in Figure 13).
- Conservation Law Foundation (CLF) shares a cluster with the transit agencies (talk of transit oriented development and sprawl reduction and land conservation potentially led it to being closer to transit).
- Seacoast based transit agencies Cooperative Alliance for Regional Transportation (CART) and Cooperative Alliance for Seacoast Transportation (COAST) share a cluster with the Bike-Walk Alliance of NH, and appear on a separate cluster from the rest of the transit agencies.
- Wildcat Transit, a provider of mainly fixed route transit in the university-town of Durham, appeared in a cluster with the UNH Stormwater Center. The similarity in language is likely the university-level scale of work that both groups operate within.
- Although advocating for different modes and issues in transportation, Transport NH and the New Hampshire Motor Transport Association (NHMTA) both appear within the same cluster and the same branch. Although their views may differ, what they share in common and what binds them together is their value of advocacy for issues they believe in, specifically their modes. These two organizations are situated within a larger cluster which incorporates most of the state departments interviewed (except for DOT, which is in a separate cluster).
- The Coastal Adaptation Workgroup (CAW), which is an ad-hoc organization focusing on climate change related issues in the seacoast of New Hampshire was also found in the same cluster as the state departments, and was particularly close to the Department of Environmental Services and the Department of Safety (DOS).
- Eagle Companies, a private freight operator and warehouse distributor, shares a cluster with municipal planners from the Cities of Dover and Somersworth, which is likely due to the municipal discussion regarding the significance of freight to local economies, as well as road conditions and traffic related data. Such topics of discussion, particularly regarding road condition and infrastructure, were also of interest and mention during the interview with Infrastructure and Climate Network (ICNet), a group focusing on impacts of climate change and sea level rise to transportation infrastructure. This one cluster, consisting of academic, private, and government representatives, is an example of diverse stakeholders sharing common topics of interest. This may serve as a conduit to increased collaboration into the future.

Nodes clustered by word similarity

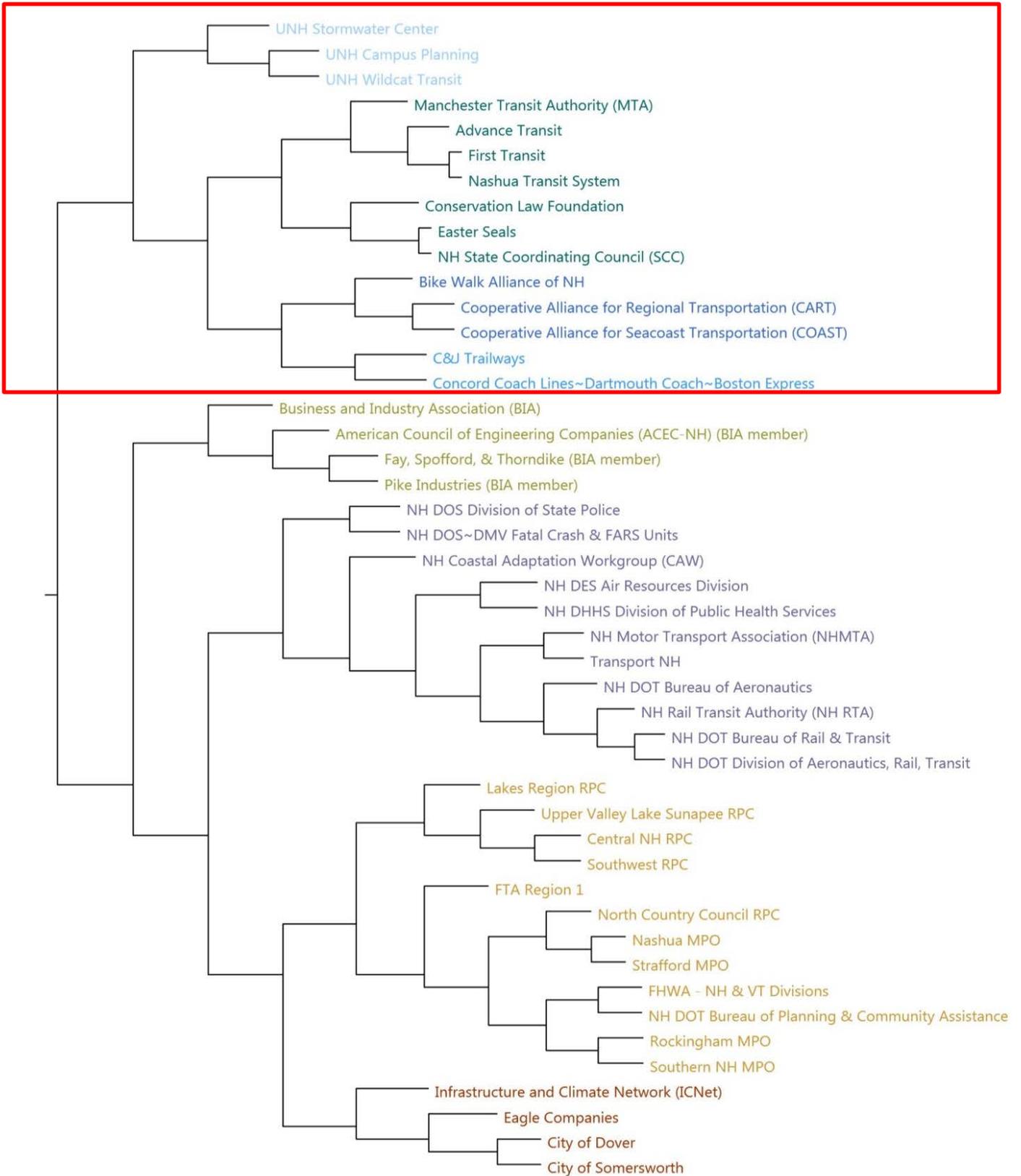


Figure 13. A dendrogram (branching tree diagram) showing word similarity between organizations interviewed for this project. The red box demonstrated bus transit agencies grouped together in one mega-cluster.

The overarching take away from this dendogram is that we may have more in common with one another than we may think. To strengthen collaboration and stakeholder relationships, it may be beneficial to work off common goals and interests. Some stakeholders may serve as gatekeepers into certain groups and; and some may become potential partners (e.g. private freight working with municipal groups on shared issues).

Finding Common Interests via Comparison Diagrams

As was discussed in the previous section, finding common goals and interests between stakeholder groups can help increase collaboration and efficiency in transportation planning. To demonstrate an example of similar interests between unlike groups, Comparison Diagrams were created in NVivo to compare performance measure related *Topic and Theme Codes* (see page 18) between two types of stakeholders. Comparison diagrams compare the coding of two sources of data³¹, which in this example are two interviews, one with a private freight truck operator (Eagle Companies) and another interview with municipal planners (from cities of Dover and Somersworth). A comparison diagram between these stakeholders is shown in Figure 14. Items in the center in the diagram are those that both Eagle Companies and municipal planners from Dover and Somersworth have in common (highlighted by the red box in Figure 14). Items on either side of the diagram are unique to that stakeholder and are not shared (at least when relying on the interview transcripts as the source of data for comparisons).

While the two stakeholders may not share any specific performance measures that they both talked about, they do share a number of transportation performance measure related topics. Some shared topics of interest include: travel time, planning and project development, employee capacity and professional development, organizational transportation finance and budgets, implementation and on-time performance, demographics and community growth patterns, and other themes. Such information provides the two stakeholders with an opportunity to collaborate on their shared interests and concerns, and establish stronger public/private partnerships, which were a major area of interest for many interviewed stakeholders.

³¹ Ibid.

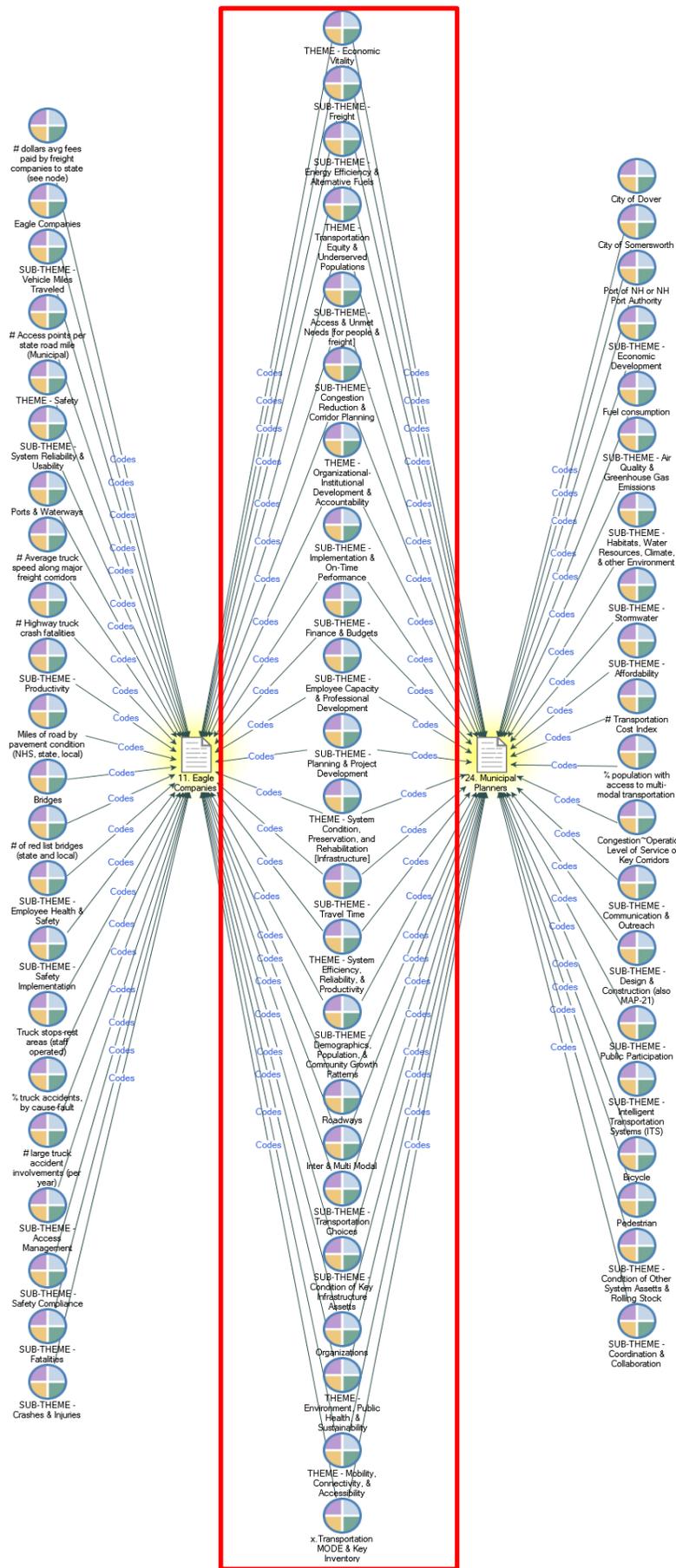


Figure 14. A comparison diagram showing the similarities and differences in performance measures related topics coded to two stakeholders: Eagle Companies (private freight operator) and municipal planners (cities of Dover and Somersworth).

Network Sociogram and Relationships

One of the benefits of carrying out stakeholder interviews is that the PBP Workgroup can now examine the social structure, links, and relationships between organizations and stakeholders affected by the performance based planning process. The social structure of organizations participating in the interviews for this project can be examined by conducting a Social Network Analysis (SNA) in NVivo, which yields a visual network sociogram and a quantitative list of centrality measures.³² A network sociogram in this project (see Figure 15) consists of relationships (lines) and organizations (cases/nodes). The one-way, directed relationship, created by the researcher in NVivo, represents one organization (interview participant) referencing another organization for an interview (see Appendix D for a list of stakeholders referenced in interviews). A total of two hundred and forty two relationships were formed via this method in NVivo. Such references allowed for a visual interpretation of the broader stakeholder network and how each organizational relationship helps build that network.

A sociogram of the organizational network in this project allows for investigation of questions such as:

- What does the stakeholder network look like? How are stakeholders connected?
- Where are members of the Performance Based Planning Workgroup situated within the network?
- What does the information flow look like?
- Where are areas of strengths? Who are the leader organizations that can serve as key communication paths? Who is most likely to have the most information flowing through them? Who can become a leader in the process?
- Where are areas of weaknesses within the network? How can the organizations within the key communication paths help improve these weaknesses?

Key Paths of Communication (Measure of Betweenness)

Sociogram centrality measures can help answer some of the above questions. The most relevant measure in the sociogram for this project is the measure of betweenness. Betweenness shows who holds the network together and which organizations are the key paths of communication between other organizations. This can be useful to identify points where the organizational network could weaken or break apart.³³

Betweenness was highest for the NH DOT Bureau of Planning and Community Assistance, which is the primary DOT Bureau directly involved in this project. Two of the MPOs, Rockingham Planning Commission (RPC) and Nashua Regional Planning Commission (NRPC), received the second and third highest measures of betweenness. The groups with the top three betweenness values, serving as potential key paths of communication and information exchange among the stakeholder network, happen to be in the PBP Workgroup. Having members of the Workgroup with some of the top measure values is beneficial to the PBP process in terms of engaging relevant parties and stakeholders, as well as enhancing efficiency in information exchange. In Figure 15, red, hollow circles

³² Ibid.

³³ Ibid.

highlight the position of all of New Hampshire's MPOs (all in the Workgroup), and the red, hollow triangle highlights the position of the NHDOT Bureau of Planning and Community Assistance within the network.

Some of the groups among the top fifteen are not actual organizations, but are the types of groups and stakeholders who were referenced for interviews, such as freight related groups and representatives from non-profit/advocacy/grassroots-type of organizations. Representative organizations from both of these suggested groups participated in the process.

Betweenness measure findings also indicate that the organizations serving as key paths of information exchange fall within various categories: public, private, non-profit, and ad-hoc groups of various geographic scales. Such group diversity suggests that stakeholder involvement should include a variety of voices, and that key partners need to engage apparently competing organizations if they are to stay inclusive and reach a representative audience.

Examples of potential areas of weakness and key organizations (does not include all organizations with low betweenness values) that may need to be better incorporated into the process include:

- Rural transit agencies;
- NH DES Air Resources Division;
- Municipal planners;
- Fixed-route transit operators (e.g. COAST, Nashua Transit System, Manchester Transit Authority, Wildcat Transit);
- Private, intercity bus operators (C&J and Concord Coach Lines);
- Specific companies within the private freight industry (e.g. UPS, Fed Ex).

We are tasked to collaborate in everything we do. To collaborate effectively, we need to engage stakeholders and key partners. Sociograms and their centrality measures can help us identify influential organizations and perhaps those who may need to be brought more fully into our processes.

Stakeholder Interests and Priorities

Interview participants were asked about any interests and priorities they had within their representative groups and organizations. Through the manual coding process in NVivo, the top three most frequently mentioned responses (see list below) were identified based on the number of times they were referenced and coded within NVivo (total number of coding references). Many of the interests were referenced either comparable or the same number of times, earning them a shared spot in one of the top three categories.

Most Frequent Responses

- Utilize existing partnerships and resources
- Engagement, communication, and outreach with a diversity of stakeholders

2nd Most Frequent Responses

- Collaboration and mutualistic relationships
- Integrated planning
- Approach and method development
- Cross-agency consistency

3rd Most Frequent Responses

- Finding common goals
- Political and legislative influence
- Public/private partnerships
- Consideration of regional needs and specifications
- Reporting out and sharing results in informative way
- Serving municipalities and communities

Other (Less Frequent) Responses

- Monitoring change over time
- Improvement in state collected datasets
- Public perception
- Central data clearinghouse
- Participation in decision-making process
- NHDOT Balanced Scorecard
- Timely distribution of data, results, and knowledge
- Organizational & company growth
- Transparency
- Connect measure trends with actions
- Manageable measures
- Enhanced communication between state and municipalities
- Identifying key barriers, challenges, and new areas of need
- Quick implementation of final measures

- Relevancy of measures/priorities with federal regulations

Discussion of Results

The top stakeholder interests resemble two of the key goals of this performance based planning effort: increased partner collaboration through utilization of current resources and partnerships, and enhanced engagement of diverse stakeholder groups. Interview participants also expressed interest in ensuring consistency and efficiency of practices and operations across agencies and organizations. Other top interests included integrating planning, which may include the integration of concepts, trends, and principles from the sectors of land use, environment, and public health with long range transportation planning. Interviewees also expressed an interest in influencing legislative authorities, enhancing and strengthening public/private partnerships, working off common goals, serving their assigned communities, and communicating data and trends in an informative way.

Stakeholder Barriers, Concerns, and Challenges

Interview participants were asked about any barriers, concerns, or challenges they had within their representative groups and organizations. Through the manual coding process in NVivo, the top three most frequently mentioned responses (see list below) were identified based on the number of times they were referenced and coded within NVivo (total number of coding references). Many of the barriers, concerns, or challenges were referenced either comparable or the same number of times, earning them a shared spot in one of the top three categories.

Most Frequent Responses

- Data and Calculation Related
 - Data and modeling accuracy, reliability, and limitations
 - Data availability [and access]
 - Data collection, processing, and maintenance challenges
 - Data updates and frequency
 - [High] cost of data collection
 - Lack of central data clearinghouse and/or system
 - Work load for measures
 - Ability to monitor change over time
 - Ethical use of data

2nd Most Frequent Responses

- Effective communication, education, and outreach
- Funding and investments

3rd Most Frequent Responses

- Collaboration, coordination, and partnerships
- Federal [level] understanding & ensuring relevancy to NH geographic scales (state, MPOs, rural RPCs, and municipalities)

- Breaking political and bureaucratic barriers
- Public perception
- Meaningfulness of measures
- Adapting measures and PBP framework to regional nuances and needs
- Efficiency, utilization of current resources, removal of redundancy
- Decision-making related to measures
- Control-influence over measure outcomes & trends
- State [level] support and understanding of regional or contextual reality

Other (Less Frequent) Responses

- Approach, methods, and techniques
- Uncertainty
- Relevancy to and influence of [governmental] rules and policies
- Engagement of diverse stakeholders
- Impacting policy and legislature
- Proprietary, license, & competition barriers (private sector)
- Compliance and reporting
- Agreement on the final list of measures, trends, & PBP framework
- Specialized, local, or institutional knowledge
- Agreed-upon definitions
- Privacy
- Identifying priorities and goals [lack of]
- Accountability and responsibility for measure outcomes and strategies to meet targets
- Current workload [challenging]
- Implementation
- Products sitting on the shelf
- Too many measures
- Identifying reason for change in trends (cause-effect)
- Target-setting
- Making judgements and subjectivity
- Being compared to others
- Keeping to budgeted UPWP tasks
- Equitable project distribution
- Balanced Scorecard
- Process of prioritizing measures
- Lack of trust
- Too few measures

Discussion of Results

The most frequently mentioned barrier, concern, and challenge was related to data, quantitative or qualitative. Whether it is accuracy or reliability of a dataset, availability and access to datasets, frequency of updates, cost, processing, or maintenance challenges, data related issues were

prevalent among all interviews. Another observation that stands out from the overall results is that “data” was also the most frequently occurring word in interviews (refer back to the Word Frequency Cloud on page 24). This commonality is an example of why using NVivo for qualitative analysis is so useful: the word frequency analysis indicated that “data” was a frequent topic of discussion within the interviews, but the in-depth coding provided the context and a deeper meaning of that discussion.

See Appendix E for listing of which of these barriers/concerns/challenges were referenced the most by key planning partners (MPOs, rural RPCs, DOT, and FHWA).

Intended Use and Application of Performance Measures

Interview participants were also asked about the intended use and application of performance measures and performance based planning. The most frequently mentioned uses of performance measures were identified based on the number of times they were referenced and coded within NVivo (total number of coding references). Many of intended uses and applications were referenced either comparable or the same number of times, earning them a shared spot in one of the top three categories.

Most Frequent Responses

- Influence funding and investment
- Communication and public engagement

2nd Most Frequent Responses

- Project prioritization and programming
- Self-evaluation
- Identify areas of needs and gaps
- Cross agency consistency

3rd Most Frequent Responses

- Redirect resources
- Legislative change and support
- Develop recommendations, strategies, and implementation actions for improvements
- Discover new and emerging patterns
- Increased transparency & accountability
- Identify flaws in current system

Other (Less Frequent) Responses

- Objective decision-making
- Strengthened partnerships and collaboration
- Integration of [transportation] sectors & system
- Dataset improvement and/or emergence of new data

- Integration of and with planning documents
- Refine and/or evaluate goals and objectives
- Contradiction of preconceived assumptions
- Identify and track individual project impacts
- Become more proactive
- Enhance scenario planning
- Compliance with the law

Discussion of Results

A significant observation of these results is that communication, outreach, and funding were the second most frequently mentioned topic of barriers/concerns/challenges, and also appear as the most frequently mentioned application of performance measures. Such results indicate that stakeholders recognize communication and funding related issues as barriers, yet envision using performance measures and performance based decision-making as tools to tackle those barriers. For example, performance measures and associated trends may help with the portrayal of the current state of the transportation system to the public, or with legislature focused advocacy for increased multi-modal funding. Overall, stakeholders are making connections between their current state of organizational well-being and how measures can help them improve that wellbeing.

Data Sharing Ability

Interviewees were asked about any data sources or sets they may have access to, and whether or not they would be willing to share those resources with the MPOs and the DOT for the purpose of this project and performance based planning. Figure 16 is a pie chart demonstrating the results of responses by the *number of times a particular response was coded* (known as the number of references coded). Half of the coding attributed to this “Data Sharing” node included responses where the interviewee had access to some sort of a data source. Most of those that had access to some sort of data said they would be willing to share that data with the MPOs and the DOT. Some responses indicated that the interviewee would not be able to share the data, which was usually due to proprietary reasons provided by private companies and organizations. Interviewees who did not have any specific data to share suggested a data source that could be used as a reference for this project (roughly half of the responses to this question).

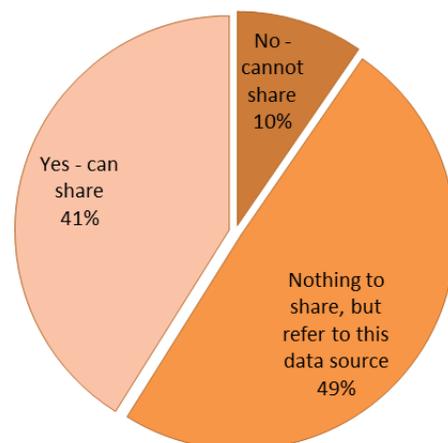


Figure 16. A pie chart indicating interviewees’ ability to share their data.

Current Requirements and Use of Performance Measures

Interviewees were asked about any requirements they currently have to use performance measures or implement performance based planning. Federal mandates, such as MAP-21 were referenced the most, followed by either DOT, Unified Planning Work Program (UPWP), or other state mandates. Internal measures were also frequently referenced by participants. See Figure 17 for a breakdown of which performance measure reporting or tracking mandates (if any) were mentioned the most by interviewees.

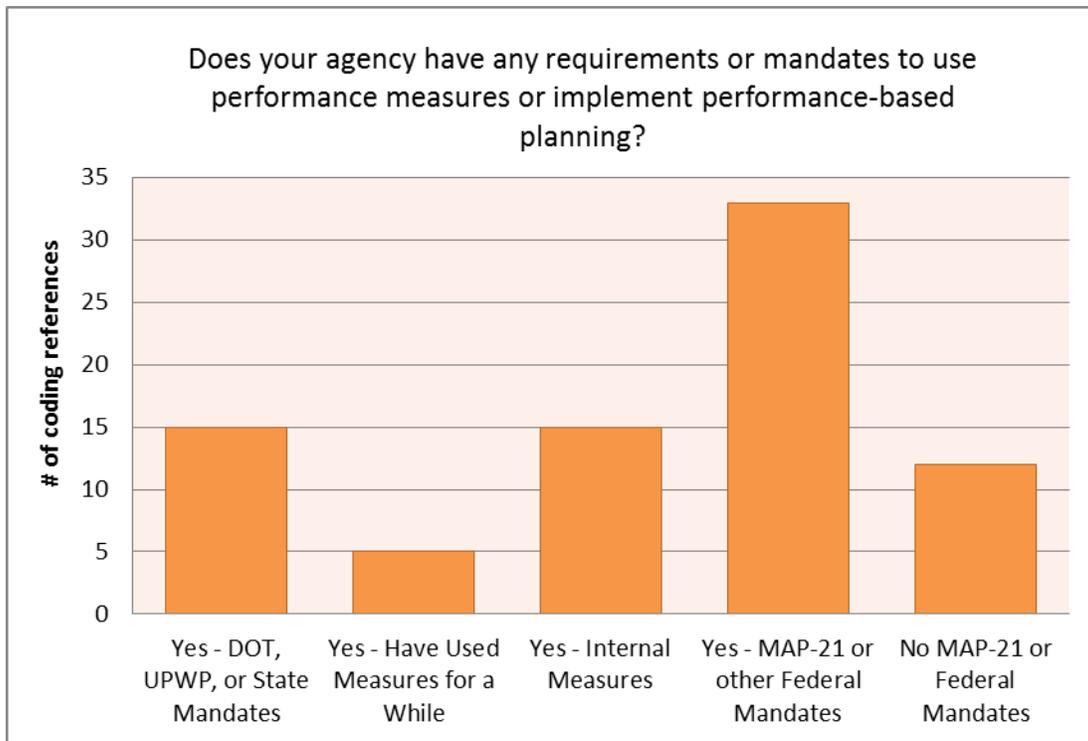


Figure 17. Performance measure reporting or tracking mandates mentioned by interviewees

Performance Measures of Interest

One of the key objectives of this study was to obtain a list of the most commonly mentioned performance measures to be included in the interagency list of measures. Stakeholder preferences varied widely, with roughly four hundred unique measures mentioned either via stakeholder interviews or submitted via e-mail in a form of an Excel spreadsheet.

A Matrix Query was used in NVivo to identify the most frequently mentioned performance measures of interest, whether they were mentioned via interviews or remotely via a spreadsheet. The content of the cells within the matrix query (and thus the ranking of the measures) was sorted via two different approaches:

- Sorting Approach #1: by the number of coding references.
 - This refers to the number of times a specific measure was mentioned, and therefore coded to its affiliated node. This approach is beneficial because it shows the number of times a measure was talked about (or submitted via a spreadsheet). It is important to note however, that a measure may have been mentioned multiple times by one organization, so this one organization may have caused the measure to look like it is of interest to many, when really it is of interest to a few. The number of coding references does not equal the number of people or organizations who mentioned the measures.
 - Figure 18 shows results of some of the top measures of sorting approach #1. The first column shows the number of references to a measure from the spreadsheet, the second column shows references from the interviews, the third column shows the total number of references from all project data (spreadsheet and interviews), and the fourth column shows whether the measure overlaps with the Granite State Future core metrics project (the yellow cells indicate overlap, and red cells indicate no overlap.)

- Sorting Approach #2: by the number of cases/organizations referring to the measure.
 - This refers to the number of organizations who referenced the measure in an interview or via submission in the spreadsheet. This approach is beneficial because it does not take into account the number of times the same organization mentioned the measure, but rather the number of unique stakeholder organizations.
 - Figure 19 shows results of sorting approach #2. The first column shows the number of cases/organizations who referenced the measure via the spreadsheet, the second column shows cases/organizations who referenced the measure via interviews, the third column shows the total number of cases/organizations who referenced the measure via all project data (spreadsheet and interviews), and the fourth column shows whether the measure overlaps with the Granite State Future core metrics project (the yellow cells indicate overlap, and red cells indicate no overlap.)

Figure 20 shows the overlapping measures between sorting approaches #1 and #2, and may provide a more adequate representation of the most frequently mentioned measures of interest.

	A: Source - Spreadsheet	B: Source - Interview Data	C: Source - AI Date (Interview & Spreadsheet)	D: Granite State Future
1: PMRELATED TO - Sprawl and development density	25	6	31	2
2: Commute to Work Mode Share	22	8	23	3
3: Miles of road by pavement condition (NHS, state, local)	15	23		3
4: # of red list bridges (state and local)	12	4	16	3
5: Local Transit Ridership (Fixed-Route)	9	6	15	1
6: Traffic Volume	7	7	14	2
7: # Highway fatalities (5-year) (MAP-21; Safety)	9	3	12	2
8: # VMT per capita	6	5	11	3
9: % population with access to multi-modal transportation	3	8	11	2
10: Elderly Disabled Ridership (# of riders)	7	4	11	0
11: Volunteer Driver Program Ridership (# of Rides Provided)	3	8	11	0
12: Access to employment	7	4	11	0
13: Transportation emissions (ozone or particulate matter)	5	5	10	3
14: Bike infrastructure (lane miles per capita)	8	2	10	2
15: pedestrian infrastructure (miles or percentage)	8	2	10	3
16: PMRELATED TO - Roadway impacts within conservation areas	7	3	10	0
17: Access to healthcare (by education and income)	0	9	9	0
18: # and severity of accidents	4	4	8	0
19: Access to Community Anchor Institutions	3	5	8	0
20: Tons of freight shipped via all modes	6	2	8	2
21: # CO2 emissions per capita	4	3	7	0
22: Miles of rail lines capable of 40mph speed	6	1	7	3
23: Bicycle Level of Service (LOS)	3	4	7	3
24: Pedestrian Level of Service (LOS)	3	4	7	0
25: # Volume-Capacity Ratio (Grade) - high priority	1	5	6	0
26: Congestion-Operational Level of Service on Key Corridors	2	4	6	0
27: Level of Traffic Stress (bicycles)	0	6	6	0
28: Inter-city Transit Ridership (# of Riders)	3	3	6	0
29: Percentage of Population With Access to Public Transport	2	4	6	0
30: Plan for mixed land-use patterns that are walkable and bikeable	4	2	6	0
31: Regulatory revisions adopted to promote bike-ped friendly development (# of ordinances or land use regulations)	3	3	6	1
32: Fuel consumption	5	1	6	3
33: New dwelling units within 1 mile of transit (# of dwell)	2	4	6	0
34: Acres of protected and conserved lands	6	0	6	0
35: # TAC meetings per year & % of TAC members-towns attend	5	1	6	0
36: Feet of sidewalk by condition	3	3	6	0
37: PMRELATED TO - Finance of Transit	1	4	5	0
38: Electric Charging Stations (# of stations) (#vehicles)	2	3	5	0
39: Passenger Rail Ridership (# of Boardings and Alightings)	4	1	5	1
40: User experience & perception of safety, per mode	0	5	5	0
41: Community growth patterns & demographic trends	0	5	5	0
42: % roadway culverts sized appropriately per BMPs	1	4	5	1
43: Green Certifications	5	0	5	0
44: Bus stop and shelter quality	3	2	5	0
45: PMRELATED TO - Finance of Highway Trust Fund	1	3	4	0
46: PMRELATED TO - Finance of Infrastructure & System Preservation	1	3	4	0
47: # of Complete Streets projects	1	3	4	0
48: # of injuries, by mode share	2	2	4	0
49: Non-Attainment Days (number)	3	1	4	0
50: # Stream crossings ranked for geomorphic compatibility	1	3	4	0
51: % Stream crossings ranked for AQP (Aquatic Organism Passage) by NHGS	1	3	4	0
52: % of persons that are obese (3rd grade, HS, adults)	4	0	4	1
53: # Bicycle crashes per 1,000 cyclists	4	0	4	0
54: # Pedestrian accidents per 1,000 pedestrians	4	0	4	0
55: Airport Runway Condition (FAA Runway Condition)	3	1	4	0
56: Access to Healthy Food Options	3	4	4	0
57: Annual # of public transit passengers; annual # of miles	4	0	4	2
58: Walk Score Index	3	1	4	1
59: Fatalities - Bicyclists and Pedestrians (# of fatalities per year)	4	0	4	0
60: # Road miles within SJR affected areas (Sea-Level Rise)	1	3	4	0
61: % population within walking distance of frequent transit service	3	1	4	0
62: % Household income spent on Housing and/or Transportation	3	1	4	1

Figure 18. Top performance measures of interest, represented by Sorting Approach #1 (sorted by the number of coding references). Red, hollow oval indicates measures referenced by all sources. Black, hollow circles indicate examples of measures which overlap with the Granite State Future core metrics.

	A : Source - Spreadsheet	B : Source - Interview Data	C : Source - All Data (Interview & Spreadsheet)	D : Granite State Future
1 : Miles of road by pavement condition (NHS, state, local)	7	6	11	1
2 : Transportation emissions (ozone or particulate matter)	3	8	11	1
3 : Commute to Work Mode Share	6	5	10	1
4 : Local Transit Ridership (Fixed-Route)	6	5	9	1
5 : Traffic Volume	3	8	9	1
6 : # of red list bridges (state and local)	7	4	8	1
7 : # Highway fatalities (5-year) (MAP-21; Safety)	7	3	8	1
8 : # VMT per capita	3	5	7	1
9 : % population with access to multi-modal transportation	2	7	7	1
10 : Access to healthcare (by education and income)	0	7	7	0
11 : # and severity of accidents	3	4	7	0
12 : # CO2 emissions per capita	3	5	7	0
13 : Elderly Disabled Ridership (# of riders)	4	3	6	0
14 : Volunteer Driver Program Ridership (# of Rides Provided)	3	4	6	0
15 : Access to Community Anchor Institutions	2	5	6	0
16 : PM RELATED TO - Finance of Highway Trust Fund	1	6	6	0
17 : PM RELATED TO - Sprawl and development density	4	2	5	1
18 : Access to employment	3	3	5	0
19 : Bike infrastructure (lane miles per capita)	4	2	5	1
20 : Tons of freight shipped via all modes	4	2	5	1
21 : # Volume ~Capacity Ratio (Grade) - high priority	1	4	5	0
22 : Congestion ~Operational Level of Service on Key Corridors	2	3	5	0
23 : Level of Traffic Stress (bicycles)	0	5	5	0
24 : Inter-city Transit Ridership (# of Riders)	3	3	5	0
25 : Percentage of Population With Access to Public Transport	2	4	5	0
26 : PM RELATED TO - Finance of Transit	1	4	5	0
27 : PM RELATED TO - Finance of Infrastructure & System Preservation	2	3	5	0
28 : Trails (miles ~capita)	2	3	5	1
29 : Number of VMTs reduced as a result of transit:	1	4	5	1
30 : # dollars per capita contribution to the Highway Trust Fund over time	0	5	5	0
31 : pedestrian infrastructure (miles or percentage)	3	2	4	1
32 : Miles of rail lines capable of 40mph speed	4	1	4	1
33 : Bicycle Level of Service (LOS)	3	3	4	0
34 : Pedestrian Level of Service (LOS)	3	3	4	0
35 : Plan for mixed land-use patterns that are walkable and bikeable	2	2	4	0
36 : Regulatory revisions adopted to promote bike-ped friendly development (# of ordinances or land use regulations)	1	3	4	0
37 : Electric Charging Stations (# of stations) (#vehicles)	2	2	4	0
38 : Passenger Rail Ridership (# of Boardings and A lightings)	3	1	4	1
39 : User experience & perception of safety, per mode	0	4	4	0
40 : # of Complete Streets projects	1	3	4	0
41 : # of injuries, by mode share	2	2	4	0
42 : infrastructure vulnerability	0	4	4	0
43 : # Transportation Cost Index	1	3	4	0

Figure 19. Top performance measures of interest, represented by Sorting Approach #2 (sorted by the number of cases/organizations referring to the measure). Red, hollow oval indicates measures referenced by all sources. Black, hollow circles indicate examples of measures which overlap with the Granite State Future core metrics.

Common Measures Between Two Sorting Approaches

(Not listed in order of rank)

Commuter to work mode share
Miles of road by pavement condition (NHS, state, local)
of red list bridges (state and local)
Traffic volume
Local transit ridership (Fixed-Route)
Highway fatalities (5-year)
VMT per capita
Elderly/disabled ridership (# of riders)
Volunteer driver program ridership (# of rides provided)
% population with access to multi-modal transportation
Access to employment
Transportation emissions (ozone or particulate matter)
Bike infrastructure (lane miles per capita)
pedestrian infrastructure (miles or percentage)
Access to healthcare (by education and income)
Tons of freight shipped via all modes
and severity of accidents
Access to community anchor institutions
PM RELATED TO - Sprawl and development density
Miles of rail lines capable of 40mph speed
Bicycle Level of Service (LOS)
Pedestrian Level of Service (LOS)
Mixed land-use patterns that are walkable and bikeable
Regulatory revisions adopted to promote bike-ped friendly development (# of ordinances or land use regulations)
Volume/Capacity Ratio (Grade)
Congestion/operational Level of Service on key corridors
Level of Traffic Stress (bicycles)
Intercity transit ridership (# of riders)
Percentage of population with access to public transport
Electric charging stations (# of stations) (#vehicles)
Passenger rail ridership (# of boardings and alightings)
PM RELATED TO - Finance of Transit
User experience & perception of safety, per mode
of Complete Streets projects
PM RELATED TO - Finance of Highway Trust Fund
PM RELATED TO - Finance of infrastructure & system preservation
of injuries, by mode share
CO2 emissions per capita

Sorting Approach #1



Top Performance Measures of Interest (sorted by the number of times a measure was mentioned/referenced, even if by the same organization)

Minimum # of references = 4

Sorting Approach #2



Top Performance Measures of Interest (sorted by the number of organizations who mentioned the measure)

Minimum # of organizations = 4

Figure 20. Overlapping measures between Sorting Approaches #1 and #2, indicating a more comprehensive representation of the most frequently mentioned measures of interest.

Broader Transportation Topics of Interest

Asking stakeholders about specific measures they thought were important provided insight into which measures may be considered for implementation in Phase II of the project, It is also helpful to look at broader transportation topics that stakeholders discussed to ensure that their priorities are addressed in this project.

A hierarchical tree map produced in NVivo³⁴ can help visualize the specific transportation topics and themes with the most data coded to them, demonstrating relative interest of each topics. Figure 21 shows a tree map where the size of rectangles shows the number of coding references (the number of times something from the interview or the spreadsheet was coded to the node represented by the rectangle). Results indicate that the themes of “Environment, Public Health, and Sustainability” (orange rectangle) and “Mobility, Connectivity, Accessibility” (grey rectangle) were coded to the most out of all the performance measure themes. The sub-rectangles within the largest rectangles represent sub-themes of the topic, and eventually unique performance measures within that topic. The tree map in Figure 21 serves as a visual reference for overarching topics of interest, which is why many of the sub-theme titles are not visible.

³⁴ Ibid.

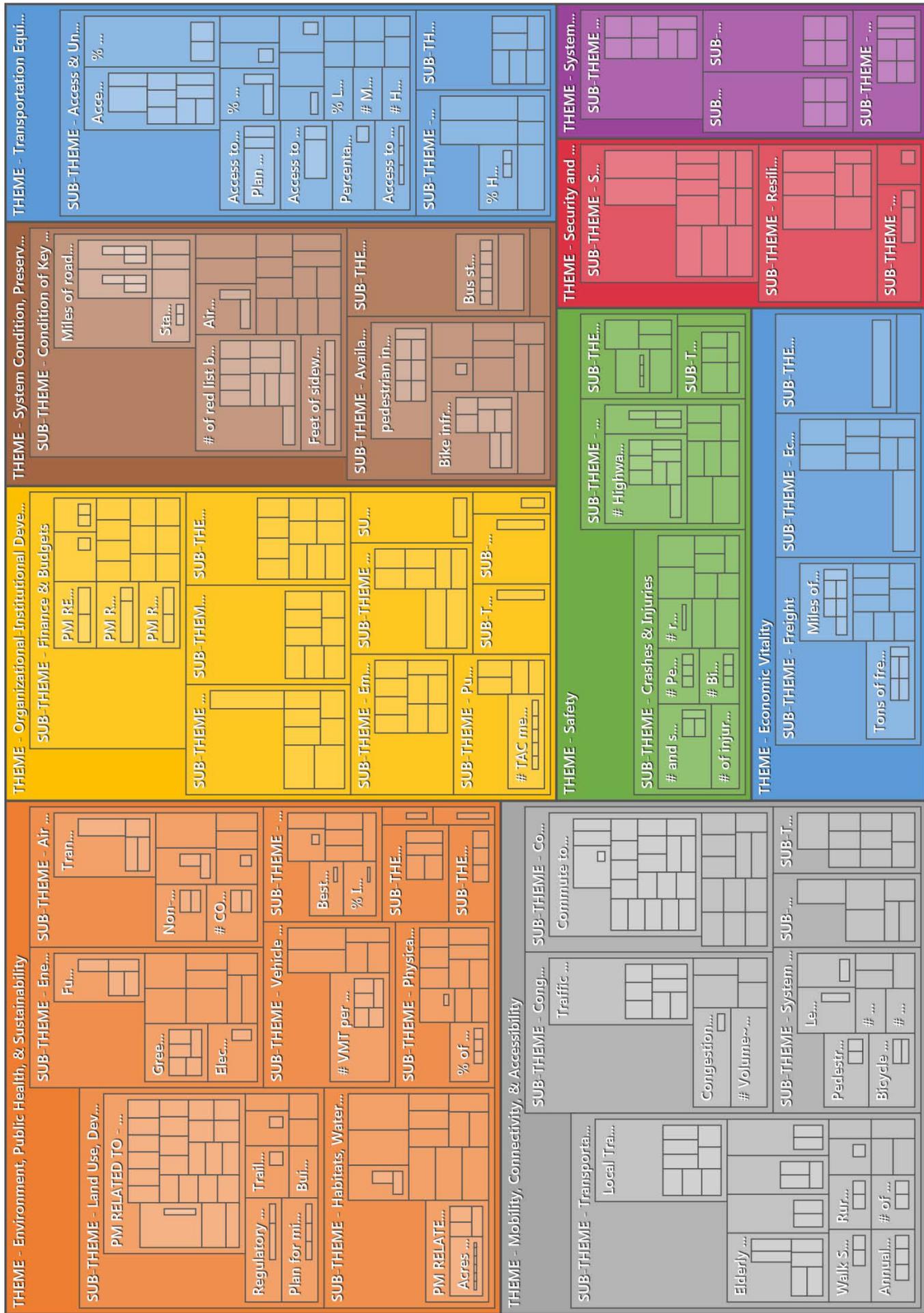


Figure 21. A hierarchical tree map showing the most coded to transportation performance measures themes.

Preventing Products from Sitting on the Shelf

Interviewees were asked for any suggestions they may have to keep final project products and outputs of this effort from 'sitting on the shelf'. This is in reference to the many documents, plans, and reports produced by public agencies that often are not implemented, communicated to stakeholders via outreach, or otherwise used in any effective manner. One of the goals of the interagency performance based planning Workgroup is to create a final product (e.g. performance measure report card, dashboard, etc.) that is useful to its member communities, stakeholders, and partners. When asked about strategies to ensure that project outputs are used by the intended audience, interviewees provided the following responses (in order of most frequently mentioned):

- Make the product relevant, useful, and informative:
 - Answer the questions that people are asking;
 - Use meaningful data;
 - Ensure that the product is a resource where communities can obtain relevant information about themselves and their neighbors;
 - Ensure that the measure is relevant to the local level to address the question, 'what does this mean for my community?';
 - Include measures that decision-makers and legislators can understand;
 - Ensure that level of specificity for selected measures is appropriate for audience;
 - Be clear and concise about the measure being tracked, methods used, its relevance, benefits of tracking, and meaning behind the data;
 - Tell a compelling story with the measures and the product;
 - Relate the measures to individuals, the general public, and to objectives of municipalities and stakeholders.
- Establish an attractive platform and mode of delivery for the final product:
 - Assign a letter grade or other symbols of progress, such as on a report card;
 - Ensure frequent and consistent updates of the data on a report card;
 - Use perspective graphics/maps to help visualize units of measure (e.g. miles of roadway in poor condition, stretched from New Hampshire to Alaska).
- Include "good" and SMART performance measures:
 - Use measures that are specific, measurable, agreed-upon, realistic, and time-bound;
 - Use measures that can serve as indicators of overall conditions, have accurate data available, show a trend over time, and that the reporting agency can have some degree of control over;
 - Use measures for which you have baseline, historic data;
 - Include measures that can be easily communicated with audiences.
- Using existing partnerships:
 - Those being established via the New Hampshire Statewide Asset Data Exchange System;
 - Work with other RPCs and MPOs;
 - Work with previously established partnerships, such as those between the RPCs and NH Geographically Referenced Analysis and Information Transfer (GRANIT) System during the Granite State Future project.

- Other less frequent responses, such as:
 - Product that works toward tangible goals;
 - Reduction of jargon and acronyms in final output;
 - An implementation and action plan providing assignments and responsibilities of implementation actions for partners.

VI. Challenges & Recommendations

Project Challenges

Several challenges were encountered throughout stakeholder interview recruitment attempts. Challenges included difficulties reaching the referenced individual directly, lack of response from the individual contacted, potential hesitation of participation in an interview where responses are considered public information, and logistical difficulties such as scheduling and inclement weather.

Another challenge was limitation of resources, especially as it is related to the number of interviews the project team was able to conduct. Due to resource limitations throughout the duration of this project, the team was not able to interview all of the referenced individuals. The Project Team instead strived for obtaining a diverse and equitable sample of interview participants (see the “Assumptions and Limitations” and “Methods” sections of this report for more information).

The time commitment needed to manually transcribe the interviews was a significant challenge for the project staff. Transcribing a clear, one hour long audio recording of an interview can take four to six hours.³⁵ After careful evaluation and thorough research, and an internal transcription of nine interviews, it was decided that outsourcing interview transcriptions to an external, professional transcriber would be more cost and time effective. The hired contractor, TranscribeMe! provides verbatim transcriptions for audio recordings with technical language (such as the language used in this project), which are transcribed by real people and not automated software.

Recommendations

For others seeking to implement performance based planning:

- Assess your situation – identify your priorities, needs, stakeholders, resources, mandates, and the context you are operating within;
- Collaborate with partners – build relationships and work together with your partners (there is power in numbers);
- Build on common goals – work with your partners to identify and focus on common goals and build off mutual benefits;

³⁵ Richards, L. (2009). *Handling qualitative data: a practical guide* (2nd ed.). Thousand Oaks: SAGE Publications.

- Reach out to your stakeholders – establish two-way communication and stakeholder participation throughout the process; involve your stakeholders and partners early in the process;
- Work within your means – use SMART (see Figure 1) and feasible measures; consider your resources, time, and staff needed to collect and analyze data;
- Know your audience – develop measures that are meaningful and understandable to your intended users, stakeholders, and decision-makers.

For use of results in planning processes:

- Implement a mixed-methods approach into your process, using both quantitative and qualitative data sets and techniques;
- Realize that by using both quantitative and qualitative methods, you have a broader foundation for future stages;
- Incorporate check points into your process to check for success, changes, or unmet needs occurring within your project.

VII. Appendices

Appendices A-F in this section are best interpreted when used in conjunction with the main body of the report (Sections I – VI).

Performance Based Transportation Planning in New Hampshire: Stakeholder Input

Background

Background information on what the MPOs are doing:

New Hampshire Metropolitan Planning Organizations (MPOs) along with the Department of Transportation (NHDOT), Federal Highways Administration (FHWA), and Federal Transit Administration (FTA) have formed a preliminary *Working Group* to establish and implement performance-based transportation planning in New Hampshire, on both regional and state levels.

Federal legislation, *Moving Ahead for Progress in the 21st Century* (MAP-21) requires the MPOs and the DOT to track performance measures in the emphasis areas covered by the 7 National Goals, and align them with Federal Planning Factors (see last page). Performance measures are metrics used to assess progress toward meeting an objective³⁶. On behalf of the Working Group, SRPC is conducting focused interviews/discussions with stakeholders to ensure that the MPOs consider all angles and perspectives during the establishment process of additional transportation performance measures (those not covered under MAP-21). As a Working Group, we would like to develop a list of common *inter-regional and/or statewide* measures that all of the MPOs in NH can use collaboratively with the DOT.

SRPC is interviewing representatives from state agencies (e.g. DOT, DES), federal agencies (e.g. FHWA, FTA), advocacy groups (all modes), regional planning commissions and MPOs, freight (rail, truck, port, and air), public and private bus transit providers, passenger rail, expert groups (e.g. Volpe, Boston Region MPO, Coastal Adaptation Workgroup, etc.), and other entities. The Working Group is interested in hearing from *the Department of Safety* about measures that we should consider related to safety and other specialty areas within the context of transportation and transportation system planning.

For more information on performance based transportation planning efforts, please contact Natallia (Natasha) Leuchanka at nleuchanka@strafford.org or at (603) 994-3500.

³⁶ US Department of Transportation, Federal Highways Administration. *Performance-Based Planning and Programming Guidebook*. 2013. Available at: http://www.fhwa.dot.gov/planning/performance_based_planning/pbpps_guidebook/

Interview/Discussion Guide

Guiding Questions:

NOTE: Bold and numbered questions are leading and primary discussion topics. Bulleted questions/comments are follow-up discussion topics.

1. Does your agency have any requirements or mandates to use performance measures or implement performance-based planning? Please explain.
 - If 'YES', what is the requirement and/or mandate?
 - If 'NO', do you think you will have any mandates in the future?

2. How does _____ (insert agency name) plan to use *inter-regional and statewide* measures in the future?
 - How do we (transportation agencies) make *inter-regional and statewide* measures, as well as their associated projects and products useful?
 - How do we (transportation agencies) prevent products (particularly those derived from performance measures) from sitting on the shelf? – Mode of delivery
 - How do you see the measures being used in improving the transportation system and regional planning? How do we relate measures and performance into planning?

3. What measures is _____ (insert agency name) interested in seeing in the *inter-regional and/or statewide* list of performance measures?

4. What measures is _____ (insert agency name) currently tracking?
 - What is the data source for the measure(s)?
 - How easy is it to compile the measure?
 - What is the estimated level of effort for deriving the measure (easy to complex)?
 - Who is the reporting agency for the measure?
 - Who calculates the measure?
 - Does your agency have influence over this measure?

5. Based on the measures currently being tracked and/or on the measures being proposed by your partners, *are there any particular areas that you have any concerns about?* Describe them.
 - E.g. data availability, data privacy, topical concerns in certain regions [such as sea level rise in the Rockingham region], staffing/resource costs for performance measures, etc.

6. What data does _____ (insert agency name) have that can be used by the MPOs and the DOT to track [other] meaningful measures (on regional and/or statewide scales)?

- Also think about data access via partner organizations that may have a more specific mission (e.g. advocacy groups) or may have expertise/data in areas that you do not.

7. What other agencies or leaders do you think should be involved in this discussion?

- Who else do you think we should speak with?
- Are we missing any major transportation stakeholders in the area?
- Currently, we have identified stakeholders in the areas of public and private bus transit, passenger rail, freight, advocacy, MPOs, state departments (NHDOT bureaus; DES), and federal transportation agencies.

National Performance Goals

- Goal 1. Safety—to achieve a significant reduction in traffic fatalities and serious injuries on all public roads.
- Goal 2. Infrastructure condition—to maintain the highway infrastructure asset system in a state of good repair.
- Goal 3. Congestion reduction—to achieve a significant reduction in congestion on the NHS.
- Goal 4. System reliability—to improve the efficiency of the surface transportation system.
- Goal 5. Freight movement and economic vitality—to improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.
- Goal 6. Environmental sustainability—to enhance the performance of the transportation system while protecting and enhancing the natural environment.
- Goal 7. Reduced project delivery delays—to reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices.

Federal Planning Factors

1. Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency;
2. Increase the safety of the transportation system for motorized and nonmotorized users;
3. Increase the security of the transportation system for motorized and nonmotorized users;
4. Increase the accessibility and mobility of people and for freight;
5. Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and state and local planned growth and economic development patterns;
6. Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;
7. Promote efficient system management and operation; and
8. Emphasize the preservation of the existing transportation system.

Appendix C - Top 100 Most Frequently Mentioned Words in Interviews

Word	Length	Count	Weighted Percentage (%)	Similar Words
data	4	798	1.74	data
measuring	9	622	1.36	measurable, measure, measured, measurement, measurements, measures, measuring
states	6	476	1.04	state, states, stating
people	6	451	0.99	people
works	5	451	0.99	work, worked, working, works
transportation	14	365	0.80	transport, transportation, transported, transporter, transporting
plans	5	331	0.72	plan, plan', planned, planning, plans
performing	10	328	0.72	perform, performance, performed, performing
systems	7	324	0.71	system, systems, systems'
needs	5	308	0.67	need, needed, needing, needs
dot	3	300	0.66	dot, dot', dots
regional	8	296	0.65	region, regional, regionalized, regionally, regions
transit	7	288	0.63	transit, transit', transition, transitions, transits
goods	5	258	0.56	good, goods
roads	5	255	0.56	road, road', roads
service	7	242	0.53	service, services
collects	8	239	0.52	collect, collected, collecting, collection, collective, collectively, collects
public	6	231	0.50	public, publications, publicize, publicly
information	11	230	0.50	inform, information, informational, informative, informs
number	6	226	0.49	number, number', numbered, numbers
tracks	6	219	0.48	track, tracked, tracking, tracking', tracks
project	7	218	0.48	project, projection, projections, projects
funds	5	211	0.46	fund, funded, funding, funds
metrics	7	209	0.46	metric, metrics
development	11	204	0.45	develop, developed, developer, developing, development, developments, develops
report	6	202	0.44	report, reported, reporting, reports
community	9	199	0.43	communal, communicate, communicating, communication, communications, communities, communities', community
health	6	176	0.38	health
trucks	6	170	0.37	truck, trucking, trucks
area	4	169	0.37	area, areas, areas'
provide	7	169	0.37	provide, provided, providence, provider, providers, provides, providing
help	4	167	0.36	help, helped, helpful, helping, helps
safety	6	162	0.35	safety
goals	5	161	0.35	goal, goal', goals

freight	7	154	0.34	freight, freights
issue	5	145	0.32	issue, issued, issues
group	5	141	0.31	group, groups
important	9	140	0.31	import, importance, important, importantly, importing
change	6	140	0.31	change, changed, changes, changing
rail	4	139	0.30	rail, rails
programs	8	136	0.30	program, program', programmed, programming, programs
company	7	127	0.28	companies, company
agencies	8	125	0.27	agencies, agency
operators	9	125	0.27	operate, operated, operates, operating, operation, operational, operationally, operationals, operations, operator, operators
process	7	122	0.27	process, processed, processes, processing
management	10	116	0.25	manage, manageable, managed, management, manager, managers, managing
route	5	113	0.25	route, routes
traffic	7	113	0.25	traffic
access	6	111	0.24	access, accessed, accessibility, accessible
crash	5	110	0.24	crash, crashed, crashes, crashing
highway	7	109	0.24	highway, highways
interesting	11	109	0.24	interest, interested, interesting, interests
infrastructure	14	106	0.23	infrastructure, infrastructure', infrastructures
money	5	106	0.23	money, moneys
town	4	106	0.23	town, towns
federal	7	105	0.23	federal, federally
bus	3	102	0.22	bus
specific	8	102	0.22	specific, specifically, specifications, specifics
vehicle	7	96	0.21	vehicle, vehicles
better	6	94	0.21	better
moving	6	93	0.20	move, moved, moves, moving
local	5	91	0.20	local, locally, locals
cost	4	90	0.20	cost, cost', costing, costs
runs	4	87	0.19	run, running, runs
parking	7	87	0.19	park, parked, parking
passenger	9	87	0.19	passenger, passengers
business	8	86	0.19	business, businesses, busy
statewide	9	86	0.19	statewide
requirements	12	85	0.19	require, required, requirement, requirements, requires, requiring
industry	8	83	0.18	industries, industry
places	6	83	0.18	place, placed, places
understand	10	83	0.18	understand, understandable, understanding, understands

driving	7	82	0.18	drive, drives, driving
populous	8	82	0.18	populate, populated, population, populations, populous
congestion	10	81	0.18	congested, congestion
everything	10	81	0.18	everything
rural	5	81	0.18	rural, rurals
drivers	7	80	0.17	driver, drivers, drivers'
cars	4	79	0.17	car, cars
stop	4	78	0.17	stop, stopped, stopping, stops
building	8	77	0.17	build, building, buildings
condition	9	75	0.16	condition, condition', conditions
hours	5	75	0.16	hour, hours
ends	4	74	0.16	end, ended, ends
available	9	73	0.16	avail, availability, available
improve	7	73	0.16	improve, improved, improvement, improvements, improves, improving
city	4	73	0.16	cities, city
sharing	7	73	0.16	share, shared, sharing
national	8	72	0.16	nation, national, nationally
biking	6	71	0.16	bike, bikes, biking
boston	6	71	0.16	boston
paying	6	70	0.15	pay, paying, pays
concern	7	70	0.15	concern, concerned, concerning, concerns, concerns'
include	7	70	0.15	include, included, includes, including
maps	4	69	0.15	map, mapped, mapping, maps
bridges	7	69	0.15	bridge, bridges, bridges'
mpos	4	69	0.15	mpos
travel	6	69	0.15	travel, traveled, traveler, traveling, travellers, travelling, travels
private	7	67	0.15	private, privately
person	6	67	0.15	person, personal, personally, persons

Appendix D – List of Stakeholders Referenced in Interviews

Stakeholders Referenced in Interviews	Interviewed? (Y/N)
5310 Seniors and Persons with Disabilities Program - Transit Providers	Not Applicable
Advance Transit	Yes
Alliance for Community Transportation (ACT)	No
American Association of Retired Persons (AARP)	No
American Council of Engineering Companies (ACEC-NH) (BIA member)	Yes
Associated General Contractors (AGC) of NH	No
Associated Grocers of New England (AGNE)	No
Bike Walk Alliance of NH	Yes
Boston Region MPO	No
BSP Transportation, Inc.	No
Business and Industry Association (BIA)	Yes
C&J Trailways	Yes
Central NH RPC	Yes
City of Dover	Yes
City of Keene	No
City of Portsmouth - Transportation Planning	No
City of Somersworth	Yes
Commuter SMART Seacoast	No
Concord Coach Lines~Dartmouth Coach~Boston Express	Yes
Conservation Law Foundation	Yes
Cooperative Alliance for Regional Transportation (CART)	Yes
Cooperative Alliance for Seacoast Transportation (COAST)	Yes
Eagle Companies	Yes
Easter Seals	Yes
East-West Express (Flight Line, Inc.)	No
Emergency Management agencies	No
Endowment for Health	No
Fay, Spofford, & Thorndike (BIA member)	Yes
Federal Express (Fed Ex)	No
Federal Motor Carrier Safety Administration - NH Division	No
Federal Railroad Administration (FRA)	No
FHWA - NH & VT Divisions	Yes
First Transit	Yes
Foundation for Healthy Communities - Health Equity Partnership	No
Frisbie Memorial Hospital	No
FTA Region 1	Yes
Grace Limousine	No

Healthy Eating Active Living (HEAL)	No
Infrastructure and Climate Network (ICNet)	Yes
Lakes Region RPC	Yes
Law Motor Freight	No
Lending institutions	No
Local Chambers of Commerce	No
Major manufacturers (those who use freight)	No
Manchester Health Department	No
Manchester Transit Authority (MTA)	Yes
Manchester-Boston Regional Airport	No
MARAD North Atlantic Regional Office (NY)	No
Massachusetts Bay Transportation Authority (MBTA)	No
Medicaid Managed Care Commission	No
Municipal Planners or Municipalities	Not Applicable
Nashua MPO	Yes
Nashua Transit System	Yes
National Rural Health Resource Center	No
Neighboring States	No
New England Central Railroad (NECR)	No
New Hampshire Northcoast Corporation (NHN); Boston Sand & Gravel Co.; Ossipee Aggregates	No
NH Association of Counties	No
NH Association of Public Works	No
NH Automotive Dealers Association	No
NH Center for Public Policy Studies	No
NH Coastal Adaptation Workgroup (CAW)	Yes
NH Department of Resources and Economic Development (DRED)	No
NH DES Air Resources Division	Yes
NH DES Coastal Program	Not Applicable
NH DES Water Division	Not Applicable
NH DHHS Division of Public Health Services	Yes
NH DOS Bureau of Emergency Medical Services	No
NH DOS Division of State Police	Yes
NH DOS Emergency Operations Center	No
NH DOS~DMV Fatal Crash & FARS Units	Yes
NH DOT Bicycle and Pedestrian Transportation Advisory Committee (BPTAC)	No
NH DOT Bureau of Aeronautics	Yes
NH DOT Bureau of Materials and Research	No
NH DOT Bureau of Planning & Community Assistance	Yes
NH DOT Bureau of Rail & Transit	Yes

NH DOT Division of Aeronautics, Rail, Transit	Yes
NH DOT Division of Operations; Bureau of Highway Maintenance	No
NH Driving Toward Zero	No
NH Good Roads Association	No
NH Highway Safety Agency	No
NH Hospital Association	No
NH Housing Authority	No
NH Motor Transport Association (NHMTA)	Yes
NH Municipal Association	No
NH Planners Association	No
NH Rail Transit Authority (NH RTA)	Yes
NH Railroad Revitalization Association (NHRRA)	No
NH Road Agent Association	No
NH State Coordinating Council (SCC)	Yes
NH Transit Association (NHTA)	Not Applicable
Non-Profits, Advocacy, & Grassroot Organizations	Not Applicable
Normandeau Trucking	No
North Country Council RPC	Yes
Northern New England Passenger Rail Authority (NNEPRA); Amtrak Downeaster	No
Office of Energy and Planning	No
Pan Am Railways (PAR)	No
Pavement Coatings Technology Council	No
Pease Tradeport~Airport	No
Pike Industries (BIA member)	Yes
Plan NH	No
Plymouth State University	No
Port of NH or NH Port Authority	No
Public Works and Highways Committee of the NH House of Representatives	No
Rockingham MPO	Yes
Ross Express	No
Rural transit agencies (5311)	Not Applicable
Seacoast Area Bike Routes (SABR)	No
Social Service agencies	No
Southern Maine Planning & Development Commission (SMPDC)	No
Southern NH MPO	Yes
Southwest RPC	Yes
Strafford MPO	Yes
TrainRiders~Northeast	No
Transport NH	Yes
Transportation Committee of the NH State Senate	No

UNH Campus Planning	Yes
UNH Community & Environmental Planning degree program	No
UNH GRANIT	No
UNH Stormwater Center	Yes
UNH Sustainability Institute (food system)	No
UNH Technology Transfer Center (T2)	No
UNH Wildcat Transit	Yes
United Parcel Service (UPS)	No
Upper Valley Lake Sunapee RPC	Yes
Volpe, The National Transportation System Center	No
Walmart Regional Distribution Center (6030); Raymond, NH; Walmart Transportation, LLC	No
Wentworth-Douglas Hospital	No

Appendix E – Matrix Table of Barriers/Concerns/Challenges Referenced by Key Planning Partners (MPOs, rural RPCs, DOT, and FHWA).

	A : Regional Status - MPOs	B : Regional Status - RuralRPCs	C : FHWA - NH & VT Divisions	D : NH DOT Bureau of Planning & Community Assistance
1 : Accountability & Responsibility for Measure Outcomes & Strategies to Meet Targets	3	1	0	2
2 : Adapting Measures & PBP Framework to Regional Nuances & Needs	13	3	0	0
3 : Agreed-Upon Definitions	0	0	0	0
4 : Agreement on the Final List of Measures, Trends, & PBP Framework	6	0	0	0
5 : Approach, Methods, & Techniques	5	1	0	0
6 : Balanced Scorecard	0	1	0	0
7 : Being Compared to Others	0	0	0	0
8 : Breaking Political & Bureaucratic Barriers	5	5	1	3
9 : Collaboration, Coordination, & Partnerships	8	6	3	4
10 : Compliance & Reporting	0	1	0	0
11 : Control-Influence Over Measure Outcomes & Trends	6	1	2	6
12 : Current Workload - Challenging	3	0	0	2
13 : Ability to Monitor Change Over Time	0	0	0	0
14 : Cost of Data Collection [High]	1	0	0	0
15 : Data & Modeling Accuracy, Reliability, & Limitations	10	14	0	1
16 : Data Availability [and Access]	9	15	3	0
17 : Data Collection, Processing, [& Maintenance] Challenges	8	10	2	3
18 : Data Updates & Frequency	5	9	0	0
19 : Ethical Use of Data	0	0	0	0
20 : Lack of Central Data Clearinghouse & System	0	0	0	0
21 : Work load for measures	2	1	0	0
22 : Decision-making related to measures	6	2	1	0
23 : Effective Communication, Education, & Outreach	11	6	2	7
24 : Efficiency, Utilization of Current Resources, Removal of Redundancy	6	3	1	1
25 : Engagement of Diverse Stakeholders	3	0	0	3
26 : Equitable Project Distribution	2	0	1	0
27 : Funding & Investments	10	5	0	2
28 : Identifying Priorities & Goals (lack of)	0	0	0	0
29 : Identifying Reason for Change in Trends (Cause-Effect)	0	0	0	0
30 : Impacting Policy & Legislation	1	1	0	1
31 : Implementation	2	1	0	0
32 : Keeping to Budgeted UPWP Tasks	3	0	0	0
33 : Lack of Trust	0	0	0	0
34 : Making Judgements & Subjectivity	1	1	0	0
35 : Meaningfulness of Measures	5	2	2	1
36 : NOT a concern, issue, or worry	2	2	0	0
37 : Privacy	2	0	0	1
38 : Process of Prioritizing Measures	1	0	0	0
39 : Products Sitting on the Shelf	1	0	0	0
40 : Proprietary, License, & Competition Barriers (Private Sector)	1	3	0	0
41 : Public Perception	8	1	0	1
42 : Relevancy to and Influence of [Governmental] Rules & Policies	4	2	1	0
43 : Specialized, Local, or Institutional Knowledge	0	0	0	0
44 : State [Level] Support & Understanding of Regional or Contextual Reality	9	5	1	0
45 : Target Setting	1	1	0	1
46 : Too Few Measures	0	0	0	1
47 : Too Many Measures	3	0	0	0
48 : Uncertainty	8	2	0	1
49 : Fed [Level] Understanding & Ensuring Relevancy to NH Geo Scales - State, MPOs, Rural RPCs, & Municipalities	13	10	2	1

Appendix F - Memorable Quotes from Interviews*

*Non-italicized text in brackets is meant to provide context to the quote, but is not part of the original quote.

Regarding Issues in Transportation

"It's such a challenging situation in New Hampshire because transportation is so underdeveloped and underfunded."

"Planning efforts are fragmented and layered and siloed."

"If you're going to develop transit systems that are responsive to people, that's what you concentrate on: making it more efficient, making it more accessible, making it readily available, so that people will get out of their car and use transit."

"Connectivity - connecting the dots. That's the end goal here, I think."

"They know when you get up here there's no truck stops, there's no place to stay if you've got-- Trucking companies don't like to send their drivers up here because they know it's a nightmare."

"There's just a huge imbalance of freight because we don't have enough manufacturing up here anymore. We're losing the outbound freight to get us out of here."

"Safety is always a concern in my industry [referring to truck freight operations] and anyone else's industry."

"Give them [referring to truck drivers] a safe environment. This is their work environment, it's necessary for us to haul products in, haul products out... to keep the economy going. Let's treat them with a little more respect. "

"I mean these guys are regulated heavily and then they need to be recognized for that. To be a truck driver today it's not that easy, that's the problem in our industry today - there is no new truck drivers. The older truck drivers are retiring... there's very few ones coming in the industry."

"There's such a shortage of drivers right now. That as people retire they just-- you can't replace them. I can have ten more trucks on the road tomorrow making money and paying people good wages, I just can't find the drivers. It's a huge, huge issue within our industry."

"Our population is getting older. They don't want to go into nursing homes. They want to stay as long as they can in their home."

"One area where I think there is a cross between freight and transit again is on the rail side. So on the Downeaster line, for example, you got a shared single track line in most places. So the freight trains are competing against the passenger service. And even if the money was there, you couldn't have 12 round trips a day because the line doesn't have that capacity. So this gets really to a bigger picture infrastructure issue about rail signings and rail capacity. I think on the rail side, there is a link between free capacity and transit capacity and the same issue on the New Hampshire Capitol Corridor someday."

"In our student world, it might be X percent of students don't have access to a car because they're paying for tuition. So we don't want to lose students that can't afford to pay for tuition, so we need to provide the transit options for them."

"There's two questions that determine how freight is moved. Whether it's by air, rail, or truck. And that is, How fast do you want it there? And what are you willing to pay to get it there? It's very simple."

"And one of our largest problems that we have right now is lack of drivers. That's probably our single, one biggest issue."

"That is a universal concern. And the reason that is, just so you know, is that the older generation is retiring. So, the folks that are my age and all the '60s and '70s, they're retiring. You need to be 21 to legally drive a truck interstate. So, you can't get out of high school and drive right away. So, if you don't want to go to college, you don't want a secondary education, you want to work outside or work your hands, at least for three years you have to do something else. So, if you're spending that time in another trade, electrician, plumber, construction. Most of the time, you're not going to put that time in and then get up and leave."

"And there is a huge demand for truck drivers coming in the next four years. Huge. So, if you want to drive a truck, you're probably going to make a lot of money 10, 15 years from now, because there's not going to be enough of you."

"So, when you talk about congestion and traffic, anybody in New Hampshire that says, 'We have congestion and traffic,' has not ventured out very far. We really don't."

"But most of our delays are either due to weather, or construction, or accidents in these states. There is not as much congestion."

"And the other thing to know about New Hampshire very specifically for freight movement - there is water and there is air [referring to other modes of freight transportation]. Even in both those two cases, a truck still has to pick it up. So, almost a 100% of freight delivery in our state is all done either interfacing with or done completely by truck."

"Over 95% of everything starts with a truck and ends with a truck in our state."

"And our state and our country needs this industry, because there's no-- people take it for granted. You go to the supermarket, whether it's Shaw's, Market Basket, Hannaford's, you name it. Folks just expect to walk in there and find a gallon of milk on the shelf."

"In rural areas, my region in particular, and other regions as well, we don't have the geographic reach of public transportation services that maybe you do in the southeastern part of the state, so we become heavily reliant on volunteer drivers to get people from rural areas to non-emergency medical transportation and other essential services."

"I know some people who are up in the north country that do trucking, and those roads up there are atrocious."

"I'd also like to try to use that data to show the gaps between access in the rural area in the state versus the metropolitan areas of the state."

"We'd like to think we're meeting an important part of the transportation system needs in public policy goals, and providing that access to Boston for all of New Hampshire and Maine. And we're proud of that."

"Part of the challenge is, New Hampshire doesn't have a very well-defined vision of the goals of transportation in New Hampshire. There isn't a very good consensus-based vision on what the policymakers and taxpayers want for the future of the New Hampshire Transportation System and how it can impact obviously, transportation connectivity; safely moving people and goods. But the impact that can have on all the other important policy challenges we're facing: housing, aging, energy, environment. So part of the challenge for all of us is, until the State House and the 430 state-elected officials start creating more of a consensus on what they're hoping to achieve statewide, it's going to be hard for all policy areas to kind of have a broad impact on these issues. The goal posts need to be set for us to all measure them and figure out how we participate in the process."

"I think one of the things that's lacking in New Hampshire is the real kind of comprehensive policy about what our transportation systems should look like and what our needs will be in the future."

"When I talk to the average people, they all say their roads are in terrible shape, and some of them have different ideas about what's going on with funding. But the common point is that roads are in terrible shape and New Hampshire's going backwards. And we used to have the best roads in New England. People from out of state and in state all knew that."

"You're talking about economies, people's jobs you might be talking about. So whether it's the tobacco industry, or any other industry, people have vested interest in what's happening, and change is not always to their best interest, even though it's for the best collective interest. And very often, we find ourselves being caught in this tragedy of the commons."

"So we are either building infrastructure that enables people to get out and walk and bike or we are building infrastructure that blocks people from walking and biking. Over the last 50 years I think it's been more of the latter. So we need to redo that."

"If you make less than \$19,500 a year, you are three times more likely to bike or walk to a job than if you make a median income. So, looking at economic data as you plan for bike and ped infrastructure. Those poor-er census tracts have typically had the worst infrastructure when they are the most needy of it."

"We're trying to unlock that 60% of the population that wants to ride, would get on a bicycle if it was safe and is basically scared off the roads."

"When it comes to bicycling, one scary intersection will kill the trip. It's the high point, not the average."

"We're interested in seeing the state and more municipalities adopt Complete Streets as their policy for street planning. New Hampshire has the distinction of being the only New England state without a statewide Complete Streets policy. A little behind the curve there."

"If you have learned to ski, you know that after enough experience you can ski on Black Diamond, Double Black Diamond type trails but you have to go and learn somewhere where it's safe and all the mountains construct their trails to have enough green and blue terrain to learn on so you can then progress, and this LTS [referring to Level of Traffic Stress] essentially does the same thing. It gives you enough connectivity that you can get the mainstream population out there and over time they'll develop skills and ride on the rest of this stuff."

"What would get to the core of describing a better transportation network for citizens? I would think if you could drive cost down, overall costs, so less of my money has to go moving me around, I'd be a happier fellow."

"Goal seven. The language about reducing project delivery delays. Reducing regulatory burdens to the extent that it's code for undermining the National Environmental Policy Act and the typical environmental review that comes into play, especially with major projects. That's of concern - to the extent that the state's metrics can again qualify that to prevent certain planning and impact assessment protection processes from being undermined."

"The odds of someone in this state only travelling within their own community, it's pretty low."

"It makes sense that someone's going to have to travel between communities to get all of the services and goods they need, if they're not shopping fully online."

"We are the granite state, and there's a lot of extraction industry out there, and they certainly need roads and they certainly have heavy wear and tear because of the weight of the vehicles."

"Being able to measure how successfully people are getting to healthcare services... I think that's an especially important metric in rural areas. Because in a lot of New Hampshire rural areas there's very little access to transportation which means it's tough to get to the doctor."

"So, we want to be good neighbors. So we think as they go down this path, we want to be included in discussion. But what I'll tell you what happens in our industry is, each time we've had an environmental mandate, it cost a lot more money to buy a new truck."

"The national performance goal number three - congestion reduction. The goal of achieving a significant reduction in congestion on the NHS. That can be done by simply building bigger, wider highways and I think we found that that's not the way we should be headed. It's counter to a number of policy objectives in terms of energy, land use. We keep investing in highways, we're investing in cars which is antithetical to smart growth and just fosters more sprawl. And it's not financially sustainable to think about the per lane mile maintenance costs. So I think on that issue of congestion reduction, it would be great if New Hampshire could be explicit about strategies other than just expanding capacity - highway capacity - to reduce congestion. Looking at transportation demand management, transit, other strategies. I think it's key because congestion reduction standing alone, it just reinforces where we've been."

"I would love to see some education and some metrics telling us how we're going to improve that [referring to shortage of truck drivers]."

Regarding Funding in Transportation

"We've been unfunded. We have a great board of volunteers that put in a lot of time and a lot of effort, totally unpaid."

"Rail systems were all built with private money including MBTA in New York, and they've been running pretty much on their own. They need to be funded. The freights run their own system. They don't ask for any federal money, but the passenger rail systems need some subsidies, or investments."

"And the money that we do raise, we want to make sure it all goes to roads and bridges and not to other purposes."

"Let's talk about diversion of funds - highway funds. We do not believe any of those other modes of transportation should be sticking your fingers in the pie, whether it's rail, water movement, bicyclist, whatever. You pay for gallon a gas, that portion of that gas should go to that kitty."

"It's so difficult. I can tell you, if you're interested in aviation online, we just finished the system plan which has an economic piece to it. Probably won't see it again funded by FAA, because they said they stripped it."

"The issue is that there is no additional funding for the existing transit platforms to expand their service to create one-stop shop centers, or whatever that region determines. Everyone is just trying to keep the services they have on the road as best they can in this terrible situation that we are facing."

"And I think that, in terms of performance goals, you not only have to look at the provider of transportation, but we have to look at the people who are funding and developing transportation at a national and a state level. And what efforts are they making to efficiently use all transit moneys to develop a public community system?"

Regarding Integrated Planning

"That's the joke from an economic vitality standpoint - the only thing worse than having a parking problem is not having a parking problem."

"There is such a strong connection between air quality and transportation".

"Passenger rail is just one piece of the puzzle. You still need expansion 93, Everett Turnpike. You need to upgrade the freight rail system. You need a good bus system. You need good airport system. So you give people choices. We're a piece of that [referring to passenger rail]."

"A system approach means not only are all those modes important, but they work together in a unified way. And that's going to require all of us to have a willingness to come together and talk about the transportation needs of the state or region we operate and live in, and how transportation can benefit all the public policy goals we have in economic development, energy, environment, etcetera. "

"And any business that's even considering the state as a place to come. Right now, they kind of don't really know what the future of New Hampshire's transportation system looks like."

"I'm a road guy. So you'd expect me to say, "I want all roads. I want all roads." But if the state plan includes having a rail corridor, and we're going to have rail. Well, that helps us plan for our business, of what we're going to be doing, and to kind of foresee what the future looks like, and where the state wants to go would be beneficial. I don't think just for my business, but for any business in this state."

"Looking at a problem, whether it's a transportation problem, or a health problem, or environmental problem through multiple lenses, I think that makes it more compelling case for change and improvement."

"We're trying to be more systematic and look at what we do as a system."

"Once you start to fragment ecosystems, you may have had one large 100-acre area. If you cut that into 10 pieces and put them 10 miles apart, you still have 100 acres, but it's not the same value."

"Smart growth feeds better transportation outcomes."

"It is very important that a strong metric get on there that's linking public health to transportation. We're spending more money on the DHHS side for preventable chronic diseases than we are for transportation and they're linked."

"I think mixed use [referring to mixed-use development] has to somehow come in if we're really talking about walkable communities."

"Protecting the environment, boosting the economy, boosting tourism, increasing public health and general well-being. When looking at these metrics and looking at the goals, it would be a good idea to see how those are related to other state goals."

"Stormwater management is a huge component of transportation infrastructure."

"Dover has had some moderate success in attracting younger people and it experienced somewhat of a renaissance. Having that data so it can tell us, well, is there an opportunity in Dover?"

"I was going to Portsmouth today, and there was an accident on the bridge over the Bellamy River. Traffic backed up to Dover. It wasn't that there was too much traffic. It wasn't that the road couldn't handle it. It's a safety issue. If you didn't have that accident, none of that would have happened."

"The question gets to who is at the table. And I see, as I've said before, there's a land use component to transportation, a public health component to transportation and then transportation is moving people in the middle. I think if we're going to have really the best outcomes possible, we do need to be inclusive of land use policies as well as public health policies."

"We would like to see certain trends within modes. Ideally, we would like to see an increase in transit ridership for example. We would like to see a decrease in per capita VMT. I'm not quite sure of how to get about it, but better integration of transportation and its various modes - transit, walk, bike - with land use planning."

"When you're talking transportation, you need to talk intermodal, because that is where the re-authorization of MAP-21 is going and that means you need to talk about everything. Even rail to trails is part of intermodal. Bike riding, snowmobiles, all that is part of-- it's a recreation piece of intermodal transportation, but it's part of the big picture. "

"The biggest issue with rail is getting people to understand that we need a quality passenger rail system/intermodal transportation system. We need all modes of transportation."

Regarding the Performance Based Planning Process

"Nobody wants to be measured for things that they don't have control over."

"We have a long way to go before we are a truly performance management agency"

"The one size fits all is something to avoid rather than to strive for."

"I think the challenge is going to be to come up with performance measures that are going to be useful and acceptable to the regions and the DOT."

"Glad you're moving this forward because... instead of just doing the minimum, we need to kind of customize for our particular state needs. "

"And then you really talk about what's more important. Is it the on-time performance, which we feel, as a state, is one of the three most important things to get people to trust and rely and use transit, or is it that the councilmen would rather have every mortar, every part of the city covered?"

"So I think if we know what the big goal is and sort of work down from there, it can help maybe figure out what the key indicators are that need to be tracked. And then maybe in each agency, it's tracked to the nth degree differently, but I think having that level of information can help you have discussions, and talk with funders, and do that trade-off and that analysis on which attribute or which outcome is more important than the overall success of the system."

"...making sure that everyone is defining every criteria is the same."

"You have to figure out what your goal is, and with transit we're saying, "Well, is the goal to increase ridership? Is it to provide access for a higher percentage of the state's population, or is it more municipalities having service."

"If new measures are created, will the people who need to collect it - which in our case is going to be the transportation providers themselves, whatever sector or mode it is - are they going to be capable of being able to do it without additional resources?"

"I think technical assistance can be provided to operators to not only help in determining what are the most important things to measure, but also what are cost effective ways to do it."

"The easier the reporting burden, the more likely you're going to get willing participation and good information."

"We've done a lot of work on how to identify good performance measures. It does take work."

"Our initiative around performance management, which includes performance measurement and quality improvement, is something that all public health departments are gearing up towards largely as a part of public health accreditation."

"The more and more of these things that you throw in, I think it makes it challenging to actually come up with what you want to."

"Going back to being clear about your definitions, defining congestion reduction not as a condition on highways but in the amount of time it takes people - not cars but people- to get to their destination. That makes it a different goal."

"If you look at these seven [referring to National Goals], it's all through the lens of highways."

"Usually my main concern is going out and getting all this data. You should have a plan and a goal of what you're going to accomplish and know how you're going to measure it and how it's going to be presented, instead of just collecting a bunch of stuff."

"You should be clear, understandable, planned right to the end. As I always say, "Let's back up. What are we trying to accomplish? What's the end goal?" And now work backwards and get the data to serve that goal and framework."

"It's a process. And you're dealing with a lot of moving parts, and a lot of different interests. When you have a lot of different interests and a lot of moving parts, it's not going to be easy. It'll get done, but it won't be easy."

"There's levels especially for public health where we do a lot of our delivery of service at a very small granular level in hopes that it touches the other needles that make those big needles go. So we measure at the state, but we also want to start doing better work at measuring outcomes at the short, intermediary and long-term. Some of those would include just building capacity, which we would define as something like increase of knowledge of proprietors or knowledge within our stakeholders. The use of that information would be kind of intermediary, so say a change in policy or systems, and then ultimately a change in health outcome or behavior that leads towards those health outcomes. So we're learning how to measure what matters at all those stages, not every possible thing we could possibly measure, but the vital few as they say."

"The metrics that create barriers to coordination of public and private resources I think is something that I would like to see mapped out and looked at."

"It's exciting how you guys are doing this work and reaching out. It's really good."

"I think MAP-21 really is a first time that we've had any external requirements that will be placed on us other than our traditional reporting for the national transit database."

"New Hampshire is really strange in that it has four MPOs in such a small state - This would be one MPO in any other part of the country, or maybe two."

Regarding Adaptation of the Performance Based Planning Process

"So the big thing with electronic logs is a lot of the bigger companies like Swift Transportation, JB Hans, Prime, bigger nationwide carriers that have got 1200 to 5800, 2000 trucks on the road. They already have the electronic logs. That's fine. That works, they need that because they've got so many on the roads and it's the only way they can track it. When you get in to the smaller people like myself and the one-truck guys, that's where it gets really expensive for them to look at that kind of technology to put it in their trucks at this point. So you can still regulate it but we got to look at the costs, what is it going to do to the little guys. "

"What might work in the cities isn't going to work in the rural area."

"The ridership in one town is going to be a lot different than the ridership in another town, so the measure of success is incredibly different depending on where you go."

"I don't think we can have a statewide target for, say, passengers per mile or something like that. I just don't think that's feasible."

"So I think if we're looking at this from a regional perspective or statewide perspective, we have to be cognizant of whatever measures we're coming up with or measures that the whole industry can live with and that the state can live with. Maybe it's not pure numbers. Maybe it's access to services, or maybe it's the number of vehicles on the road, or maybe it's the on-time reliability. Maybe there's other indicators that are more leveler or can be applied in different environment that we all operate."

Regarding Use of Measures

"The broader data is really important for shaping investment and the direction of policy, and what we fund as a state."

"Without even seeing what the final product is, I know that these metrics will be useful in measuring change, and measuring the effectiveness of our advocacy, and the effectiveness of the strength of the network in working for change."

"Just having an agreed upon set of metrics is really important for people to move forward."

"A number of the things that I mentioned we do across our business because we think it's just good practice. It's not necessarily subsidized or non-subsidized, it's just sort of us checking ourselves. How are we doing? Finances aside, how are we performing as an operation? For us that means having staff. Our turnover is something that we measure; we don't want to be losing employees constantly. That's not good business, that's not the kind of company that we want to be operating. How many accidents are we having? We don't care whether that's subsidized or non-subsidized. That's something that we just want to be capturing."

"Tracking VMT is related to the mode share in that it's actually an indirect way of tracking the shift to all other modes besides individuals driving their own vehicles. So, even if at the beginning we don't have a good way to measure mode share, seeing the VMT go down is an indirect measure of watching people choose other ways of getting around."

"I think the idea, of this performance-based planning, is really that it comes back around and gets used in MPO and statewide planning decision making."

"I think the idea of them [referring to performance measures] is that on a regional scale, and on a local and statewide scale, you use those metrics both to see what's working, and also you can double down on policies that seem to be effective, and move away from ones that aren't."

"It helps build public understanding and confidence in what the planning process does, so if you show that you're transparent about what's happening I think people are more likely to recognize the work that you're trying to do."

"It keeps you on your game."

"Our philosophy is we measure what matters, and performance measures for us are ways to show our achievement of bigger objectives and ultimately our health outcome goals."

"It's up to the person utilizing the data or manipulating the data to try to spit out some sort of priorities, to kind of take the politics out of, "We want this road," "This road's bad, because our constituents complain about it more than anything else." But look at actually, look at measures."

"I think that a metrics system like this is an opportunity to sort of show this area is low on these metrics. Wouldn't it be interesting to see if we improve some of the access to healthcare, if some of the other things would change or vice versa? Maybe something completely related to transportation would change the health outcome.'

"A smaller culvert you may have to replace more frequently, because it gets washed out, but it's cheaper as capital cost. A larger culvert's going to cost you a lot more capital cost, but you may never have to replace it. So when you look at the life cycle cost, maybe the larger culvert is the better one."

"The data speaks for itself. It's how we choose to do what we want to do with it. You can even take that political process right up to the national level and look at how the two parties can look at one thing completely different. It has everything to do with their own belief structure because very, very often, they spelt something that has nothing to do with the facts and the science, just from their belief structure. "

"You can predict where the most extra cycling would take place so you can really prioritize your investments."

"We have a history of advocating for transportation solutions for which we believe performance metrics can be very helpful, assuming we choose the right performance metrics."

"But they [freight truck companies] have all internal productivity goals and measures that they use. And the ones that do it well are still here. And the ones that don't, aren't."

"Technology has become a big part of what they do. There's many more onboard computers that help manage or show what the drivers are doing."

"So, it becomes an enforcement tool, good or bad. And it also becomes a management tool, the technology does."

Regarding Data

"If you are tracking traffic congestion and you are using probe data from cell phone and whatever else that you can purchase, that we have access to as a MPO – that tends to set off the red flag for some people who think that we are watching their every move, monitoring them. The truth is that we are not. It is disaggregated, you can't figure out whose phone is where at any given time."

"State agencies, just like federal ones; we don't necessarily exchange data easily. Certainly not with some of the safety data. It was a long process to get where we are."

"If we get through it all in one time... that may be the dataset we have for a long time. And I think that's where most of our data is. We have a lot of data sets that were maybe collected once, but not necessarily updated."

"People aren't going to give all the information. It's like pulling teeth trying to get information out of distributors as to what they're actually shipping and receiving because they're worried, that gets into the wrong person's hands, the competitor gets that information..."

"It would be nice to have more direct access to the same information, from all of the transit providers, regardless of whether or not we fund them or not. Because it's still part of the transportation system, it's still part of the network, it's still part of the solution."

"We have to make sure that people are collecting the data in the same way."

"Nobody's going to share their secrets and lose their footing in the system"

"I mean transparency is not necessarily a bad thing per se, but when you're talking about a private company with volunteering information... It's a little different than a public entity sort of being transparent."

"We're interested in the metrics, but I think we rely on credible sources."

"It's the district engineers or the town engineers who know where their problem areas are. But in terms of trying to have a strategy for dealing with it on not just a local scale but trying to look at the big picture, that information isn't available for folks like us to easily grab and do some analysis with... That's the type of analysis that then leads back to being able to plan. If you talk about climate change and what's likely to happen over the next 20 years, what we need is some ability to be able to understand not just where the failures occur but have some causation related to that. If we have some understanding about the causation, then what we can start doing is looking forward into the future, say is that-- are those events likely to happen more often, less often, how will they likely change?"

"In the Hampton beach area, there's a lot of storm damage that occurs. The roads get over washed or they're closed for periods of time. And so, there's institutional knowledge. If you could ask the engineer in that region, "How often is this closed? When is it closed? For how long? What was the cause?" That institutional knowledge exists in people's heads but it doesn't exist in any sort of data set. "

"Historically, you'll hear that New Hampshire is 80% self-compliant [regarding seat belt use]. I struggle with that, because I don't see-- on my every day drive - if you just watch - I don't see 80% self-

compliant. 50, 60? Maybe, maybe less by my guesstimate. But why is that important? Well, we're talking about reducing crashes. We're talking about reducing injury. We're talking about safety. The public should know that when we're really not 80%. They think it's okay to have a non-compulsory seat belt law. Those of us who go to the crashes see on the other hand exactly what happens when you're not wearing a seat belt."

"There is a real need to get hard data for planning purposes on where bicycling and pedestrian activity was taking place."

"We're in a time of technology change."

"It [referring to the infrared pavement assessment system] allows you to assess the condition in two days and you can do it once every three years for the cost it would have taken for a year to do it once... The idea, from my understanding, is you remove the garbage-in, garbage-out by putting good data in, that is not subjective. Because someone's not looking at it and saying, "I had a bad day. That looks like a bad alligator crack"

"State of New Hampshire is leading the way in reporting to FARS typically within 24 hours of a crash occurrence, so we're head and shoulders above many other states in that regard."

"In spite of personal preferences, the data speaks."

"State police is extremely good at what they do, and they supply me with a tremendous amount of data extremely accurately. Some of the smaller towns, they may not have the resources or the abilities to do, especially the roadway mapping that state police does, so the reports do not contain as much information or material."

"We've looked at centralized reporting and developing some kind of a consistent method for all providers within that system, or at least being able to coordinate the information in these systems and then be able to use that data to move transit forward in the future."

"If there is, say for example, flooding of a road, was it just inundated? How long was it inundated? How long did it have to be closed? Was there damage that occurred? Did it get washed out? Was there repair that was done? How was the decision made on what repair to do?... How much did the repair cost? ... Who was impacted?"

Regarding Target Setting

"And if they are going to tie future funding decisions to performance targets and performance measures, does it behoove us to be more realistic about what those targets could or should be."

"You set a target for five, but really you want zero, and anything lower is better, regardless of whether you hit any sort of arbitrary target or not, and so I guess my only concern is that people will focus too much on a specific target, rather than on the directionality of the performance metric. In some cases, and this is again my personal opinion, I feel it's more important to say this is the metric and this the direction we want to go in, and maybe this is a reasonable level to expect for the year. Rather than this is the metric and this is the target, just be like, this is the metric, we want it to go down. This is the metric, bicycle mode share, we want it to go up."

"If you focus on a specific measure too much, people will either see that as something more under the MPOs control than it actually is, or alternately the MPO will feel like they can't set an ambitious target because they're worried that they'll get dinged for not meeting it, and consequently they'll set a lackluster target. That's why I like the idea of directionality, because everybody knows we should be trying to make the roads more safe, and so that should be the goal, and we should do that to the best of our ability."

Regarding Outcomes

"One of the ways to keep the measures from sitting on the shelf is to... answer the questions that people are asking"

"Can you establish a cause and effect relationship between an activity and a measure and the results for that matter?"

"You can play a game with taking credit for things you didn't have anything to do with."

"So hopefully, that's going to be one byproduct that we are going to be able to provide to our member communities - is some sort of a guideline or a measure of how well we are doing and how well the MPOs and the state are doing the job of utilizing the funding that we are getting for these capital improvements."

"What I would like to see more of are actual outcomes. So this increase in ridership. What has that done for employment rates in that area? What has that done for environmental consideration somehow in those areas because there is more accessible transportation available for people? Has that reduced the number of social service recipients because they can access?"

"You could be so data wealthy, but what do you do with it?"

"I think we are curious and mindful of what's going to be happening with this data once it's reported. If our number in terms of accidents per million miles is going to land on the front page of the newspaper singularly, then that's not exactly our objective in participating in this process. But if it is for the good of measuring how we're doing as a state or how maybe one operation is doing against another, we would have no problem reporting this."

"We're a little bit more complicated. We're dealing with people not widgets."

"Actually all during the downturn in the economy, 2007, '08, '09, '10, '11, we survived. We didn't cut wages, we didn't take away 401Ks, we kept our healthcare rates the same for our employees. It was really important to us."

"At the end of the day, if you put us in a nutshell, it's all about creating a better experience, and the proof is really the number of people who continue to use us."

"I think the real important thing for us is we participate to make sure that New Hampshire as a state is recognized for the people it moves in and out."

"Wide range of studies ranging from New Hampshire's Climate Action Plan to the Long-Range Statewide Transportation Plan for the last 20 years has said all the right things and it sat on a shelf accomplishing very little."

Regarding Stakeholder Engagement

"That's why I applaud you for what you are doing because you're bringing all these groups together. We're typically left out of the picture and it's not working."

"They [referring to the Federal Motor Carrier Safety Administration] need to get the public more involved in establishing any new metrics. There is a lot of good people in the truck industry that run safe and clean -- and they need to listen to us on what will work and what won't work."

"It's not so much hoping to get additional performance measures on us. It's to have a voice in how they're developed which is why we appreciate this opportunity to be here."

"The MPOs exist between the Merrimack River and the Atlantic Ocean in just the bottom-- One fifth of the state. So you're leaving out the whole population, the White Mountains, the Hanover Upper Valley area."

"I think that in the last three or four years, they [referring to the NHDOT] have really stepped up their game in terms of public outreach and trying to create awareness with the motorists in New Hampshire and about needs and the short falls, and their efforts to control their spending, and I think they've done a really good job with that. I think they've had some real good champions."

Regarding Public Perception

"I think we're portrayed poorly in that area when there are accidents. Particularly, when almost 90% of the accidents where fatalities are involved are not even caused by the truck. You can get that number from the Department of Safety if you follow up. That high percentage is caused by the car driver."

"I think transportation in this state has been grossly underdeveloped and underfunded, and is continually fighting like a welfare program for existence rather than as something that should be invested in to develop the economy."

"We tend to talk about roads in terms of lane miles. So if you're on 95, that's five lanes wide. You can tally up some lane miles really quick. Whereas you got to drive five miles over Route 107 to get the same amount of lane miles you get in one mile on Route 95... It's not so much accuracy as is the perception of what it creates."

"My concern is there's been such a lack of faith and trust in the government right now. It makes them very difficult even if you demonstrate the need. It makes it difficult to make your case because people lost faith with government being able to do something positive."

"That's my biggest concern - human dimension. That you're in the middle of, again, a paradigm shift and that typically takes a number of generations. It doesn't happen in one generation unless there is some very significant emergency event that happens. But it's like the Fukushima Power Plant blowing up that makes us change our way of doing business. "

"We work shoulder to shoulder with communities. A lot of that again is breaking down this human dimension barrier about green infrastructure. There's all sorts of folklore out there about the cost, the maintenance, performance, that they won't work in winter. It just goes on and on and they're all unfounded. But you're challenging a belief system of many other people that have done, or been involved with stormwater infrastructure for decades. This new type of stormwater infrastructure, they're just not familiar with, so the challenge is their belief system."

Regarding Communication

"You take even industry jargon or words, and everyone interprets it slightly differently and collects their data differently."

"There needs to be some standardized set of definitions and rules on how to do the data collection that are provided to everyone who's collecting them. So that when you get it you know that it's apples-to-apples, and you're not concerned about someone just giving you numbers."

"There is a value to having some standard performance measure that a legislator or the Senate or the House of the State could get a grasp of."

"I think a lot of us have discussed the fact that we want to measure that, but that the way it's defined currently, there's some confusion around it."

"We are kind of very-- kind of reactive. It's like being in a Great Bay when the tide comes in and out. You just kind of slushing around in there."

"If we're utilizing your capital or utilizing operation funding, you and every other taxpayer has a right to know how it's being used... And we believe in that. We're not just doing it [referring to reporting of measures] because we have to. We believe in that as a company."

"So, when you're talking about political things, grass roots efforts are usually the most effective, as town selectmen don't want to hear from a guy like me that's telling them that you need to do this and it's the responsible thing to do and it's a service important to people. They listen when one of their constituent's mother uses the system to maintain their independence in the community. And you can provide enough information that they feel like they're getting their bucks worth out of this service. So you've got to be able to provide that kind of information when you're dealing with multiple communities that support a greater good."

"What measures would resonate with local people if you were trying tracking them?"

"So the power of storytelling, the power of bringing it home to your kitchen... will trump any data."

"So trying to tell a story in a way that is compelling and not shaming or blaming individuals. I think that's really important. That's something we really have to work on with obesity."

"That takes a lot of time and energy to get those consistent definitions."

"I've spent six months or more trying to get somebody to define that for me and no one at DOT knows what that means. That person who first put that in the Scorecard is gone. And nobody seems to know what it means... It would be really good to have that transit metric more clearly defined. And it's not clear what a terminal is and it's not clear what they defined as transit routes."

Regarding Collaboration

"I would advocate for much more extensive partnerships between planning commissions."

"How do we get Health and Human Services and the DOT to coordinate their requirements in a meaningful way and consolidate some of their existing funding to provide a more efficient service and to cut down on waste if there is any."

"We're a for profit company but we are proud of the fact that we meet a lot of public policy goals of the state, and we view a lot of what we do as private-public partnerships."

"We believe strongly in being a good corporate citizen, and we believe that we can run a successful business while at the same time helping to achieve some public policy goals."

"The private sector, we meet transportation goals and not only don't take from the public revenue but we add to it. So we're grateful for the opportunity to provide that service, and we're obviously grateful that it ends up being a profitable business for us."

"Strafford Regional Planning could act as an inventory and guidepost of saying, 'Hey, are you aware these communities are doing it in this way?'"

"We're not trying to supplant, we're trying to supplement. So you say, "Look, this is a regional goal, but we all have-- we recognize that you can't do it on your own. We want to take the lead on it."

"Focus on regional things we all share. Create something that will help all the communities move forward with that."

"You would hope for some kind of communal effort to develop a system. Not in New Hampshire."

"We're trying to continue to move forward with anything that would be useful to help the participating agencies to coordinate and find ways to work together."

"In terms of transportation resiliency and-- transportation plays a really big role in disasters, and so having some sort of coordination with them would be great."

"Partner with them, not just extract data and leave."

"We are also willing to work with your organization in the collection of data."

"And if you talk about Hanover, New Hampshire they interact with Vermont so thinking about how do you take a little bit more of an eye not just to what's happening in New Hampshire, but what's coming in and out of those boundaries."

