DECISION LENS

Transportation Capital Planning

Achieve performance based planning and resource allocation with Decision Lens.

MAP-21 ushered in a new era of accountability and transparency in transportation planning. To satisfy the expectations continued by the FAST ACT, a performance-based approach is needed to evaluate and balance safety, preservation, and mobility needs, among other goals.

While the concepts of performance management and performance measures are generally understood, deciding how to best allocate limited resources across acceptable transportation system performance continues to pose a persistent and difficult challenge.

Decision Lens enables performance-driven decisions by linking agency planning and programming activities through the best practices described in the National Cooperative Highway Research Program (NCHRP) Report 806. Report 806, which defined and developed methodology that links transportation planning and programming through performance-based resource allocation.

Decision Lens helps you enhance your Transportation Decisions:

Identify Criteria
Prioritize based on both objective performance data and more subjective assessments of project importance.

Weight Relative Importance
Gather stakeholder opinion on the relative importance of one performance criterion against another.

Rate Alternatives
Blend data with expert judgment to score projects on a level-playing field.

Prioritize & Optimize
An interactive, prioritized list of projects and investments is generated after data is input into Decision Lens.

Evaluate Trade-offs
Trade-offs at both the project and portfolio levels are available with Decision Lens.

Gain Insights with Visualizations
Advanced visualizations allow organizations to view the impact of dynamically shifting inputs.

IDENTIFY CRITERIA

Decision Lens software makes it easy to prioritize based on both objective performance data and more subjective assessments of project importance collected by decision stakeholders. Decision Blueprints®, based on our many years of experience working with over twenty transportation agencies, are available and can be used as a starting point to further customize and refine your criteria. Most states develop criteria that represent their ability to achieve & preserve a state-of-good-repair, provide safe & secure travel, enable economic activity & mobility choices, and prioritize more critical systems.

Most states will use slight variations of these criteria.

Preservation

- Reduction in Structurally Deficient Deck Area
- Reduction in Structurally Obsolete Deck Area
- Reduction in Poor Lane-Miles (Based on Overall Pavement Condition Index)
- Reduction in Poor Lane-Miles (Based on International Roughness Index)
- Years of Extended Service Life Produced by Maintenance Activity

Safety

- Reduction in Fatal & Serious Injury Crashes
- Percent Design Deficiency Needs Met

Mobility

- Total Truck Delay Savings
- Total Non-Truck Delay Savings
- Impact on Reliability Index

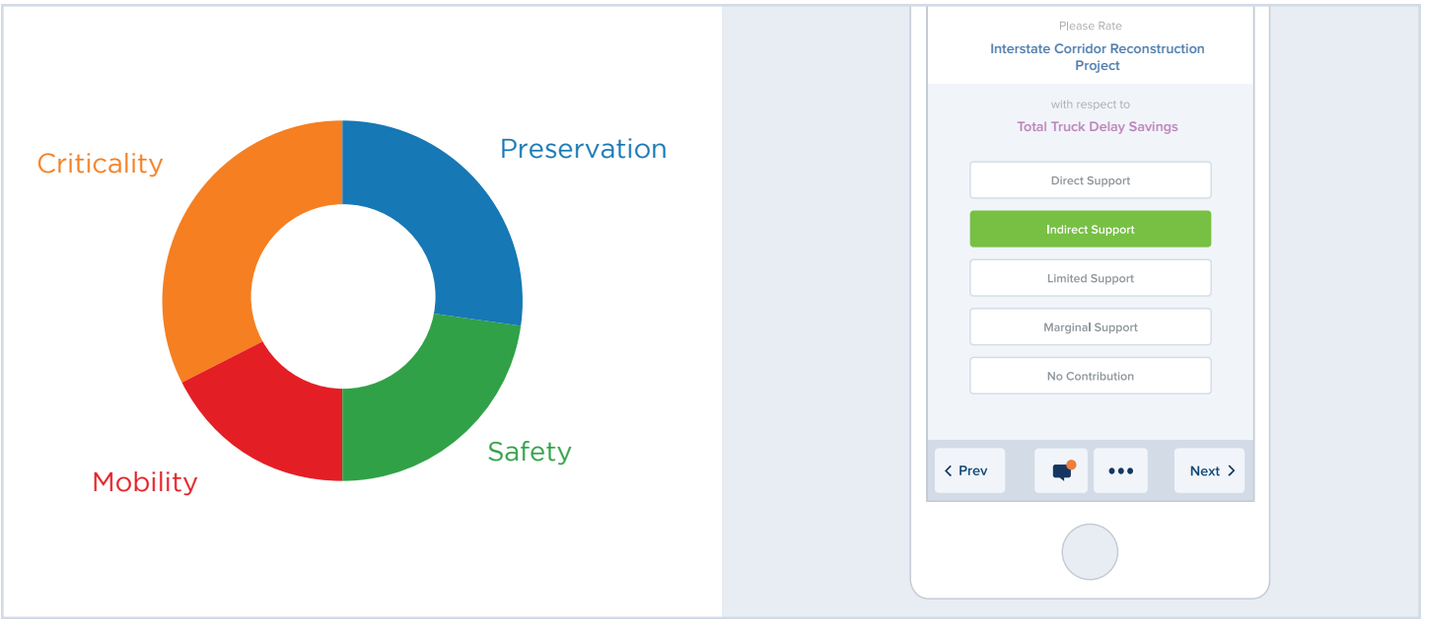
Criticality

- National Highway System Status
- Freight Network Status
- Vehicle Miles Traveled
- Regional Priority Score

- *Preservation often balances structural and functional (user) considerations.*
- *Safety balances nominal and substantive impacts.*
- *Mobility balances congestion reduction and reliability.*
- *Criticality is used to assign bonus points to more important systems.*

WEIGHT RELATIVE IMPORTANCE

When project selection criteria weights are not mandated, a pairwise comparison process can be applied to gather stakeholder opinion on the relative importance of one performance criterion against another. Strategic alignment is enhanced by comparing participant group weightings and opening a dialogue about programmatic and regional needs. Decision Lens Professional Services is available to lead customized workshops for organizations that would like further insight into their priorities.



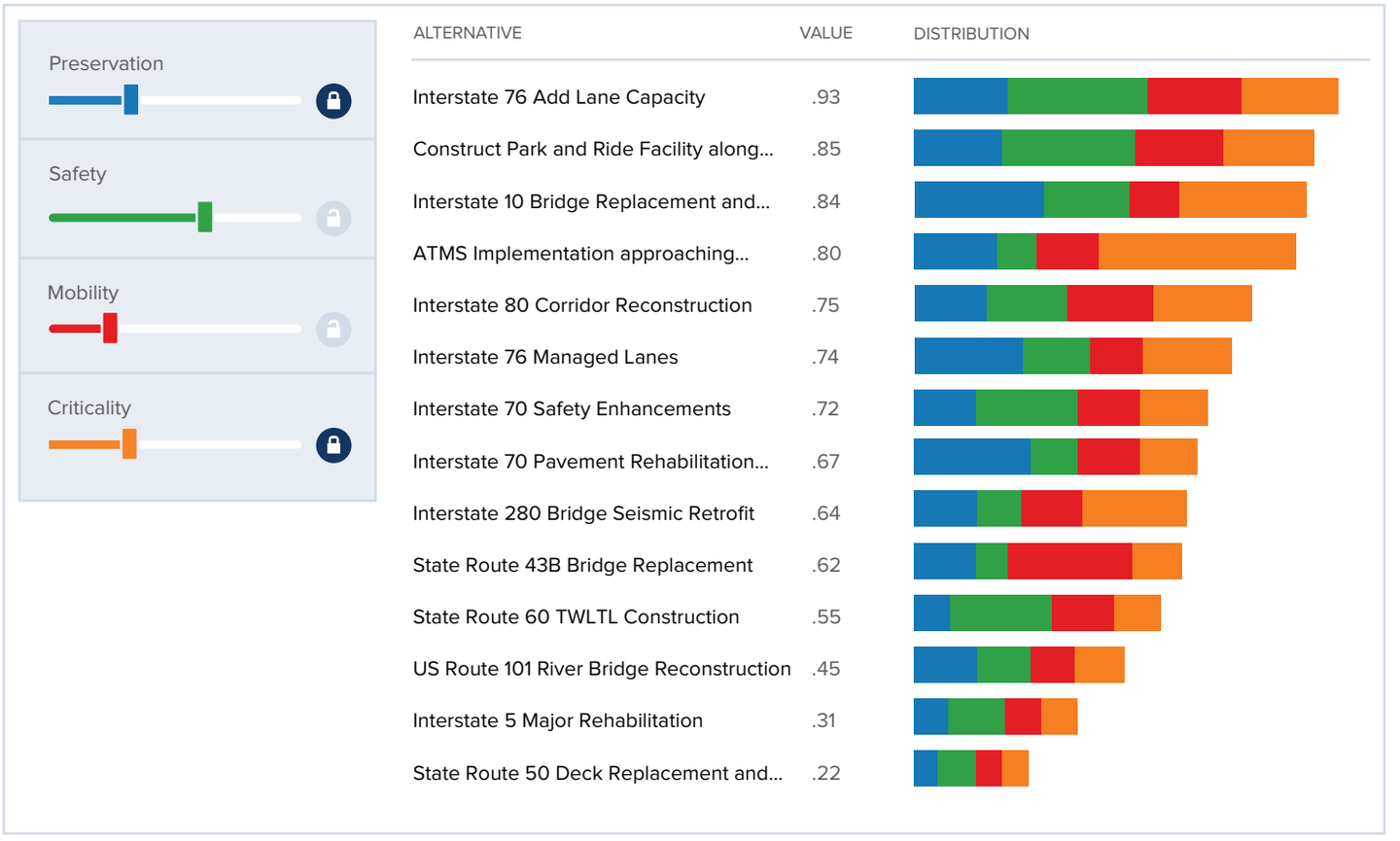
RATE ALTERNATIVES

Decision Lens assisted in making our budget and planning process more open. The facilitators helped us articulate individual and group biases, thus allowing us to have a greater level of clarity and buy-in to the final results, and thus a better outcome. This is a formula for having decisions endure in an organization.

Michael Allegra, UTA

Investment choices can have a diverse set of benefits that can be quantified in different ways. To put these benefits on a level playing field, Decision Lens makes use of rating scales. These scales transform raw data inputs onto a normalized value scale based on stakeholder preference for one rating over another. The data inputs to the scale can be crowd-sourced for qualitative scales and integrated with other data systems for quantitative scales.

Various transformations of data can be incorporated into Decision Lens. For instance, more mature organizations can make use of criteria to predict what impact an investment choice will have, others may be comfortable using existing conditions as a proxy for the importance of funding a project or investment. Decision Lens works for any level of data maturity and can help serve as a catalyst for improved collection efforts in the future. As your data evolves, Decision Lens will be able to further add clarity, helping to enhance predictive models.



PRIORITIZE & OPTIMIZE

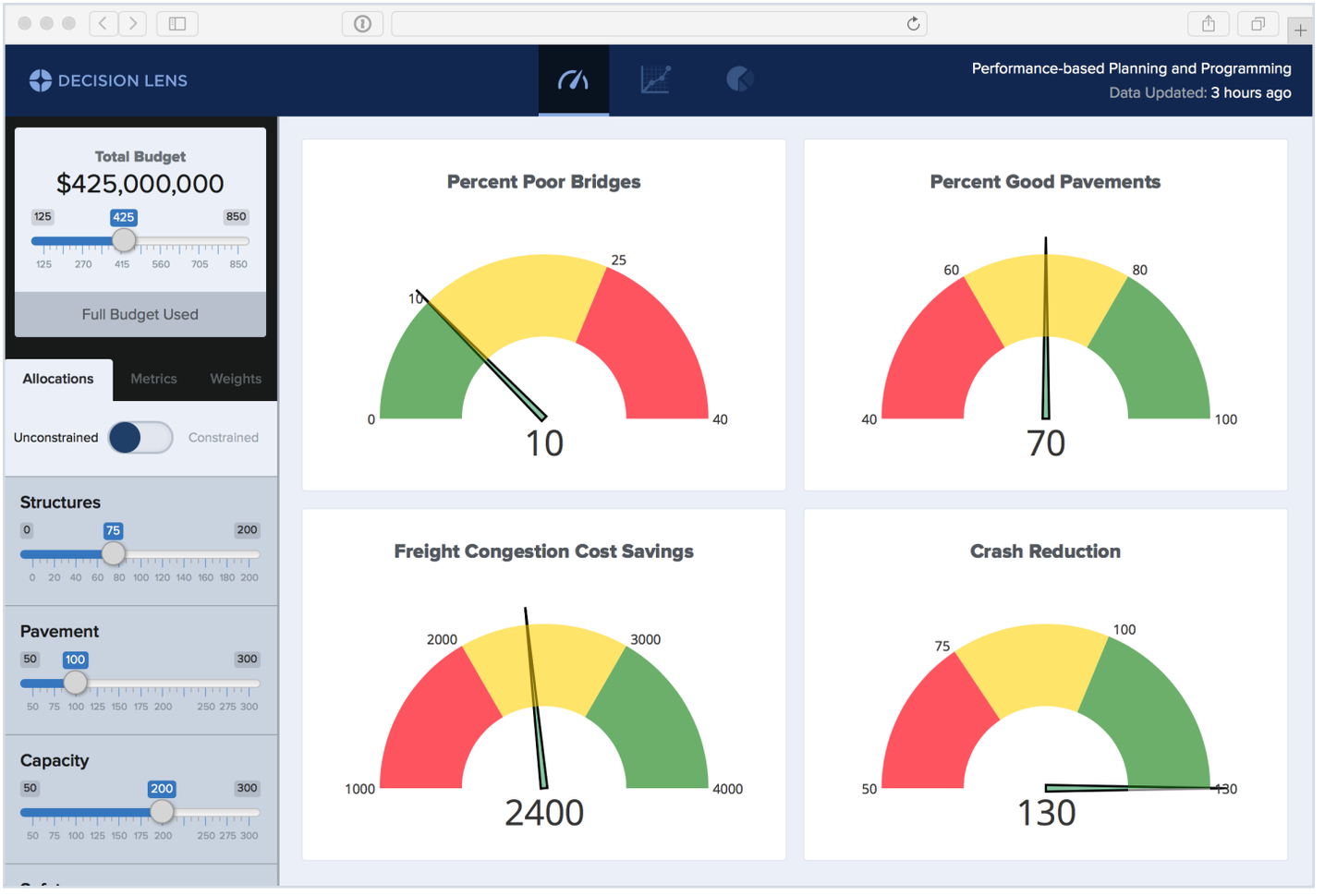
An interactive, prioritized list of projects and investments is generated after data is input into Decision Lens. The sum of each project or investment's weighted rating represent its value score. You are able to assess the impact of varying weights on the ranked project list and drill-down by category.

The optimal mix of projects from the full prioritization list can additionally be generated amidst financial, political, and other constraints. Advanced algorithms are used to maximize the portfolio value given multiple resource budgets, time periods, dependencies between projects (e.g., can choose Project A or Project B, Project A and Project B, Project B requires Project A before starting), must-fund projects, fixed schedules, resource pools, and various cost profiles. Such advanced constraints don't need to be included in any initial implementation but are available as agencies mature.

Agencies can also forgo the optimized scenario and instead manually create funding scenarios for comparison.

Decision Lens has brought a new level of transparency to our capital investment decision-making process and in doing so has provided a foundation for meaningful discussions with the public and partner agencies around the state.

Christopher Clement, NH DOT



EVALUATE TRADE-OFFS

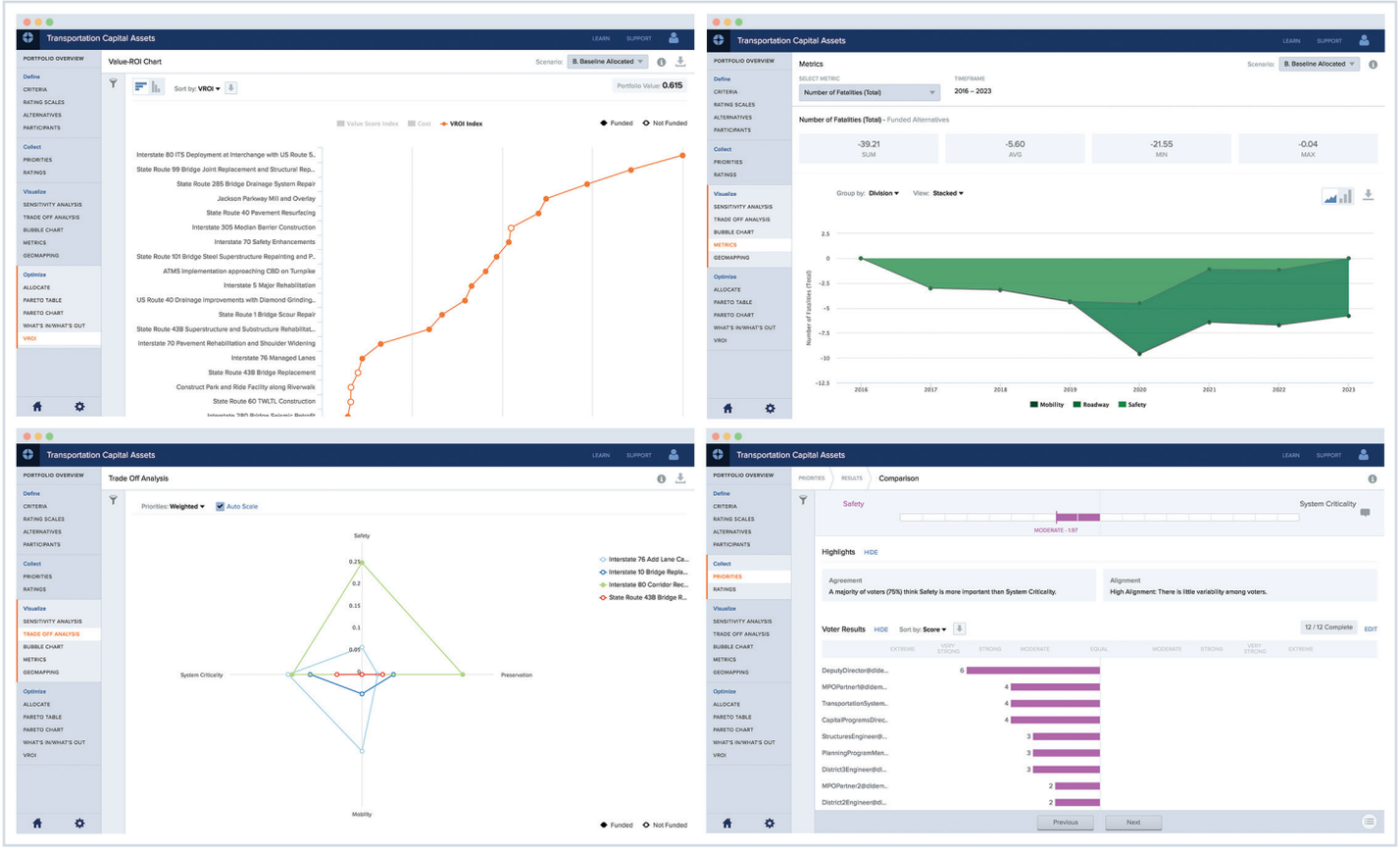
Trade-offs at both the project and portfolio levels are available with Decision Lens. At the project level, users can view how projects on the bubble of being funded directly compare across criterion and metrics. At the portfolio level, a wide-array of what-if analyses are supported:

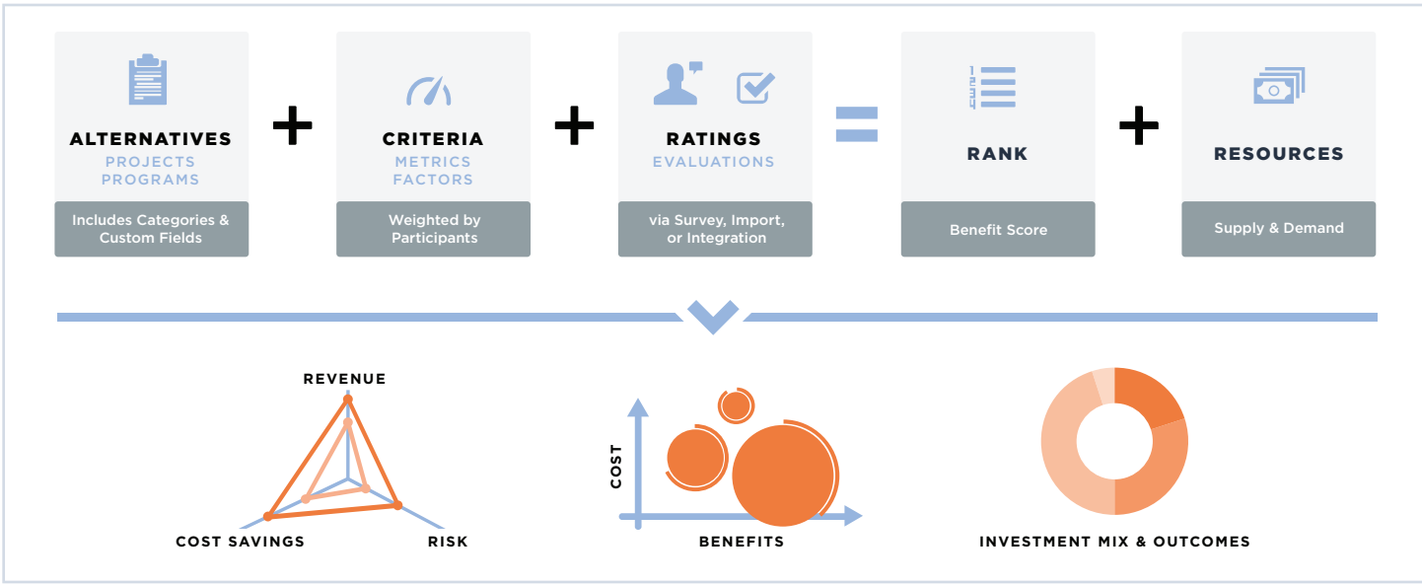
What if I had to achieve these targets?
What if I invest more or less in a region?
What if I shift money from one category to another?
What if I was not mandated to fund this way?
What if my priorities change?

You can save and compare multiple scenarios and analyze the change in portfolio composition (i.e., What's In / What's Out) to achieve different objectives and the relative trade-offs in system performance. Most commonly, customers will take advantage of Decision Lens' Pareto Analysis to communicate projects that would be funded or would drop off the list with more or less funding and to show the minimum cost to achieve different levels of performance.

VISUALIZATIONS & INSIGHT

Advanced visualizations allow organizations to view the impact of dynamically shifting inputs. Each visualization is configurable to client criteria and business drivers. Users can slice and dice across a number of categories (sub portfolio views) participant groups, and resource scenarios or may look across the agency at a statewide level. In a flexible environment, decision makers can set targets and manipulate or fix or skew characteristics to view how different conditions affect the organization's optimal portfolio. The result yields customized scenario(s) providing the highest value return on investment.





Decision Lens is the enterprise solution for identifying, prioritizing, analyzing, and measuring the capital investments, projects, and resources that will deliver the highest returns to your organization, while empowering you to quickly react to ever-changing data.

Decision Lens is a cloud-based, comprehensive and collaborative solution that enables the powerful analysis of complex scenarios in an easy-to-use interface. With eight current patents and eight more pending, Decision Lens is built upon years of research & development in the Science, Technology, Engineering, and Mathematics (STEM) fields. Techniques such as the Analytical Hierarchy Process (AHP) and the application of custom evolutionary, genetic algorithms uniquely combine to form the prioritization engine for decision making and empowers you to optimize limited resources given numerous constraints. Such rigorous analysis ensures improved performance and streamlines your project selection and resource allocation process, making it easy to defend your highest benefit investments and sustain critical funding over time.

Over twenty transportation agencies leverage Decision Lens to enable accountability and traceability for prioritization and performance-based planning and programming. With Federal and oftentimes State legislation mandating a transparent process for prioritization and achievement of performance based outcomes, transportation agencies have found incredible value in going above and beyond requirements by using Decision Lens' state-of-the-art approach to achieve outcomes with the highest value and returns.