Statewide Education Accountability Reporting Study

Submitted to:

Colorado General Assembly

By:

Colorado Department of Education: Strategy Office

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October 2026

Executive Summary

House Bill 25-1278 Education Accountability System directed the CDE to study options for improving how education accountability information is reported and accessed in Colorado. The study builds on recommendations from the HB 21-1241 Accountability, Accreditation, Student Performance, and Resource Inequity Task Force and examines how Colorado can make school and district information more understandable, transparent, and useful to the public.Currently, the Colorado Department of Education (CDE) provides substantial school and district information through its website, including SchoolView, District and School Dashboard (DISH), Performance Snapshot Dashboard, Unified Improvement Plan Dashboard, State Accountability Data Explorer, Education Statistics and Data resources, and other reporting tools (see Appendix A for examples of these reports). These resources serve different purposes and audiences and users must navigate multiple systems to locate and interpret information.

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For this study, CDE contracted with the American Institutes for Research (AIR) to conduct an independent review and make recommendations. AIR examined Colorado's existing reporting environment, engaged stakeholders, synthesized approaches used in four other states, conducted an extensive cost analysis, and evaluated potential options for improving statewide reporting. The study considered accountability across the elements of the accountability system (i.e., performance frameworks, public reporting, improvement planning, stakeholder engagement, support and intervention, accreditation, and awards). Their findings are reflected in the full report (see Appendix B).

Figure: Elements of the State Accountability System



Key Findings from AIR's Report

AIR's recommendations fall into three overarching areas (1) usability and user-centeredness, (2) transparency, accuracy, and clarity, (3) equity and accessibility:

- **Usability and User-Centeredness**
  - Create a single, unified statewide entry point with pathways tailored to different users.
  - Organize information from high-level overviews to greater detail, allowing users to explore as needed.
  - Embed guidance and support directly into the user experience.
  - Make it easier to examine trends over time and comparisons across schools and districts.
  - Provide a more complete picture of school and district performance by incorporating relevant context and information.
- **Transparency, Accuracy, and Clarity**
  - Clearly explain measures, methodologies, and data sources so users understand what results mean and where they come from.
  - Use plain language and consistent terminology across reporting tools.
  - Strengthen data literacy through contextual explanations and interpretation supports.
- **Equity and Accessibility**
  - Ensure reporting is multilingual, accessible, and mobile-responsive so information can be used across languages, devices, and user needs.
  - Make student group results more visible and meaningful, helping users more easily find and understand outcomes for different groups.

Recommended Dashboard Approach

After exploring multiple options and sifting through the extensive data collection of the study, AIR recommended ***significantly enhancing Colorado's current accountability reporting system*** rather than maintaining the status quo or replacing the system with an entirely new platform. AIR's recommendation provides an opportunity to improve the user experience while better coordinating CDE's existing reporting investments. The approach would create a more unified statewide experience through a common entry point, role-based pathways, clearer navigation, plain-language explanations, embedded guidance, and improved trend and comparison tools, while also balancing cost and feasibility.

Study Overview

Background. House Bill 25-1278 Education Accountability System directed CDE to gather stakeholder input on the data elements and visual reporting format for a potential statewide dashboard and to summarize three primary areas for the General Assembly: (1) stakeholder input, (2) estimated costs, and (3) reporting format. Under C.R.S. § 22-11-505, the dashboard is envisioned as a statewide resource for accessing local and statewide education accountability data as well as postsecondary and workforce readiness data, including information available through the statewide longitudinal data system.

This HB 25-1278 dashboard study occurred alongside CDE's Statewide Student Information Solution (SSIS) Study, a complementary effort focused on improving Colorado's education data infrastructure. The two studies address different points in the data continuum: the SSIS Study examined how data is collected and enters the state system, with an emphasis on improving data quality and reducing district reporting burden, while this study examined how data is presented, accessed, and used, with an emphasis on accessibility and usability. Together, the studies provide an opportunity to strengthen Colorado's education data ecosystem from data collection through public reporting and use, supporting greater consistency, transparency, and informed decision-making.

Study Approach. To fulfill the requirements of HB 25-1278, CDE partnered with the AIR to combine stakeholder engagement with a review of Colorado's existing reporting environment, interviews with other states, and a structured analysis of potential solutions.

Stakeholder Engagement. AIR engaged more than 100 stakeholders across six sessions, including parent groups, accountability advisory groups, CDE staff, rural representatives, and members of the HB 21-1241 Task Force. AIR also offered a broader survey to provide an additional opportunity for input.

State Research and Interviews. AIR reviewed Colorado's existing accountability and reporting tools and interviewed representatives from California, Indiana, Louisiana, and New York. Stakeholder priorities informed these discussions, allowing AIR to examine how other states have approached similar reporting needs and identify considerations for Colorado.

Options and Cost Analysis. AIR evaluated five potential approaches using a common set of criteria, including stakeholder responsiveness, estimated costs, organizational capacity, technical fit, and implementation timeline. Consistent with the study's emphasis on user needs, stakeholder responsiveness received the greatest weight in the analysis.

- **Option A — Maintain Current System:** Make minor improvements to existing dashboards and tools.
- **Option B — Significantly Enhance the Current System:** Improve and better coordinate the user experience while building on existing infrastructure.
- **Option C — Contractor-Built Dashboard:** Develop a new custom dashboard with an external contractor.
- **Option D — CDE-Built Dashboard:** Develop a new custom dashboard using internal CDE capacity.
- **Option E — Commercial Platform:** Purchase and configure an existing dashboard product.

Option B (Significantly Enhance the Current System) received the highest overall score (3.60) in AIR's analysis, reflecting its balance across stakeholder responsiveness, cost, organizational capacity, technical fit, and implementation timeline. AIR's analysis therefore provides a basis for considering how Colorado could improve the user experience and coordination of existing reporting resources while building on current infrastructure.

Recommended Dashboard Format and Approach from Stakeholder Input

Colorado has a strong foundation of education data and reporting tools, with an opportunity to better connect them for users.

CDE already publishes extensive information about school and district performance. The challenge is not necessarily the absence of information; it is that information has developed across multiple systems, dashboards, webpages, reports, and program areas over time.

A user looking for information about a school may encounter performance framework results in one location, improvement planning information in another, enrollment or demographic information elsewhere, and additional statistics through separate CDE reporting resources. Each tool may serve a legitimate business purpose, but the collective experience can be difficult to navigate, particularly for users who do not already understand CDE's organizational structure or reporting systems.

The AIR report recognizes this distinction. The study identifies greater coordination across those resources as an opportunity to create a more coherent experience. **A common statewide entry point would allow CDE to organize information around what users are trying to understand rather than requiring users to know where CDE stores it.**

The recommended dashboard approach recognizes that accountability is broader than performance framework ratings.

CDE's accountability system includes multiple interconnected components: performance frameworks, public reporting, improvement planning, stakeholder engagement, support and intervention, accreditation, and awards. Stakeholders participating in the study communicated a need to consider accountability through this broader system rather than only through school and district ratings.

That distinction is important for implementation. Families may want to understand how a school is performing and what programs it offers. District leaders may need detailed data to support improvement planning. Policymakers may want statewide trends and comparisons. Educators may need information that helps identify patterns and inform action. **The recommended dashboard approach recognizes these different uses and connects information across reporting systems rather than creating a single one-size-fits-all dashboard.**

Better reporting requires better context.

A consistent theme in the stakeholder feedback was the importance of helping users interpret information. Stakeholders expressed interest in clearer scoring guides, benchmarks, explanatory materials, reference points, and interpretation frameworks that explain what indicators measure and what results mean. Some also sought greater transparency regarding methodology and data updates.

This finding highlights that a reporting system can make large amounts of data available while still being difficult for the public to use. **Modernization should therefore focus on what information is displayed, ensuring users can understand it and place it in appropriate context.**

A coordinated approach can preserve existing investments while improving the overall system.

Significantly enhancing the current system does not require every existing reporting tool to be immediately replaced. Stakeholders communicated that many of the current systems support specialized

business requirements and contain functionality valued by particular audiences. A common statewide entry point could initially coordinate and connect those resources while CDE evaluates where consolidation, redesign, or replacement would provide additional value.

This approach provides a practical path between maintaining the status quo and attempting to rebuild the entire reporting environment at once. It creates an opportunity to **establish common design standards, definitions, documentation, and governance across reporting tools so that systems increasingly operate as parts of a coordinated statewide reporting environment rather than as independent dashboards.**

Implementation and Cost Considerations

AIR estimates that implementation could occur in phases over one to two years, at an estimated cost of $500,000-$801,000. A phased approach would allow CDE to prioritize the highest-impact improvements first.

AIR emphasized that improving the user experience requires attention to both the reporting tools users see and the data systems that support them. A new website or dashboard alone will not address differences in data definitions, business rules, update schedules, validation processes, or connections across reporting systems—all of which affect data quality and CDE's ability to efficiently maintain its reporting tools.

AIR therefore recommends pairing front-end modernization with improvements to the underlying data environment. Emerging technologies, including artificial intelligence, may support this work by improving documentation, data lineage, consistency checks, testing, quality review, and maintenance of reporting guidance. These tools would complement strong data governance, integration, validation, and human review.

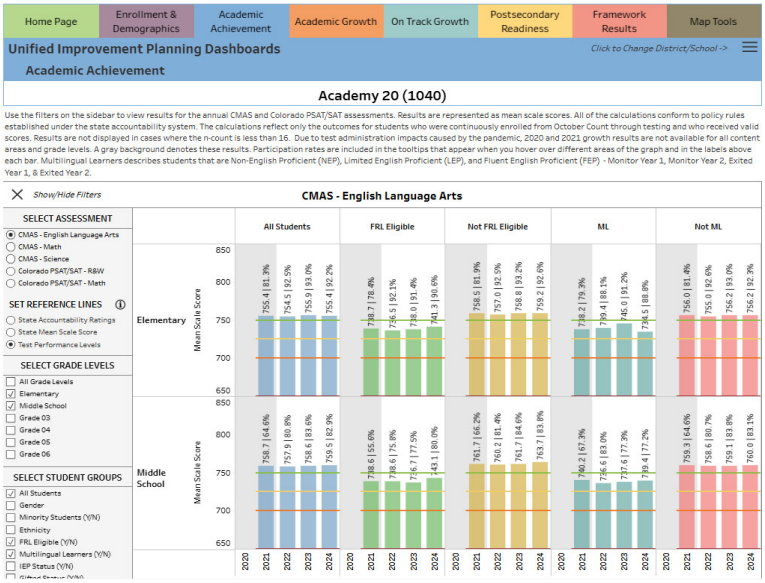
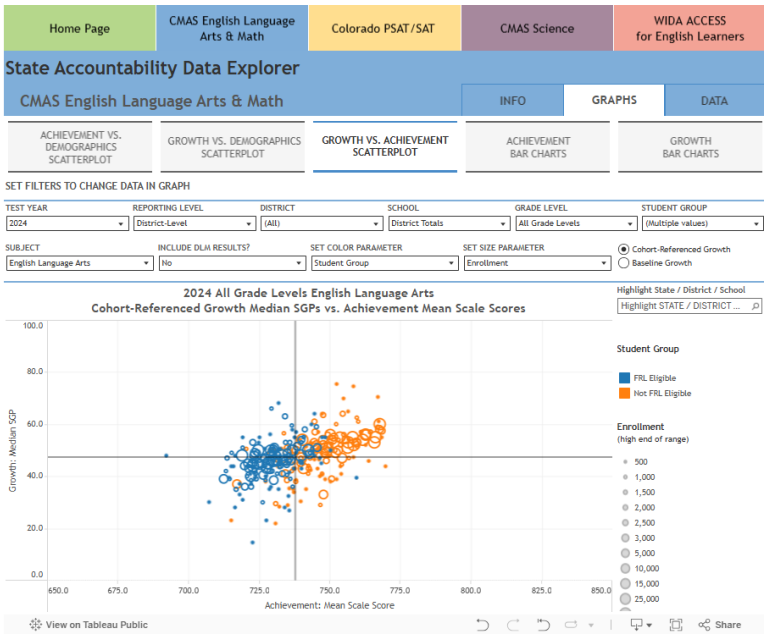
Throughout implementation, continued engagement with families, educators, district leaders, policymakers, and other users would help ensure improvements remain responsive to user needs.

Recommended Path Forward

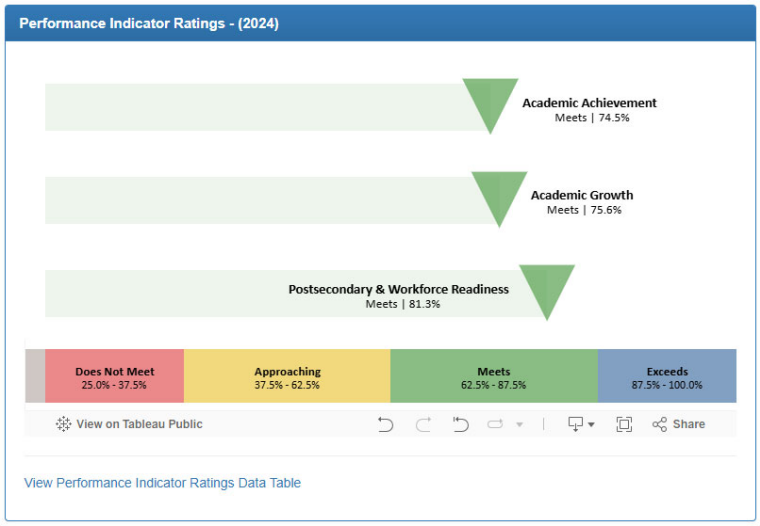
CDE agrees with the findings and recommendations of the AIR report, including adoption of option B (Significantly Enhance the Current System). In considering next steps, CDE recommends that subsequent planning and implementation be guided by several principles: establish a common statewide entry point; organize information around user needs and audiences; build on existing CDE investments where appropriate; improve context and interpretability alongside access; coordinate accountability and broader education reporting; and modernize underlying data infrastructure and governance over time.

The opportunity identified through this study is to better organize and coordinate the reporting environment CDE already maintains and create a more intuitive way for users to navigate it. CDE believes this direction reflects both stakeholder feedback and the Department's longer-term need to modernize how information is organized and communicated.

Appendix A. Sample Accountability Tools & Reports

Dashboard Example	Description
	**[School and District Dashboard]** This dashboard is made up of a suite of reports with longitudinal data. The dashboard allows users to interact with graphs and tables showing demographic information along with performance data and ratings generated under the state accountability system. **Purpose:** Offers five-year school and district data trends to inform improvement planning. **Release/Refresh Timeline:** Every August, December, and March
	**[State Accountability Data Explorer]** This tool provides access to graphs and tables showing performance outcome measures calculated at the state, district, and school levels. Data tables can be exported to spreadsheets, and graphs can be downloaded in PDF format or as image files. *District users may access a [secure version] that displays data even in cases where there are not enough records to meet the minimum n-count thresholds for public reporting.* **Purpose:** Compare schools and districts across the current year and download longitudinal performance framework data. **Release/Refresh Timeline:** Every August

Dashboard Example



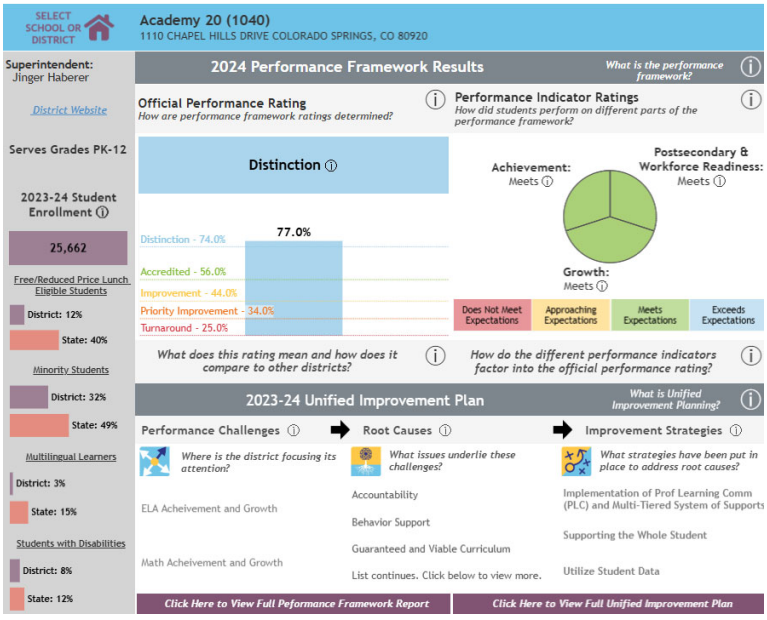
Description

Online Frameworks and Unified Improvement Plans

This tool provides an interactive version of the frameworks that is designed for the public. Users can see high level reports and then can dig into accountability data more deeply. There are links to official SPF/DPF PDF reports, school and district UIPs, and district accreditation contracts. *Every district's most recently signed accreditation contract is also available in the online accreditation contract portal.*

Purpose: Access historical performance framework data (including PDF reports), UIPs, and district accreditation contracts to better understand accountability outcomes.

Release/Refresh Timeline: Every December



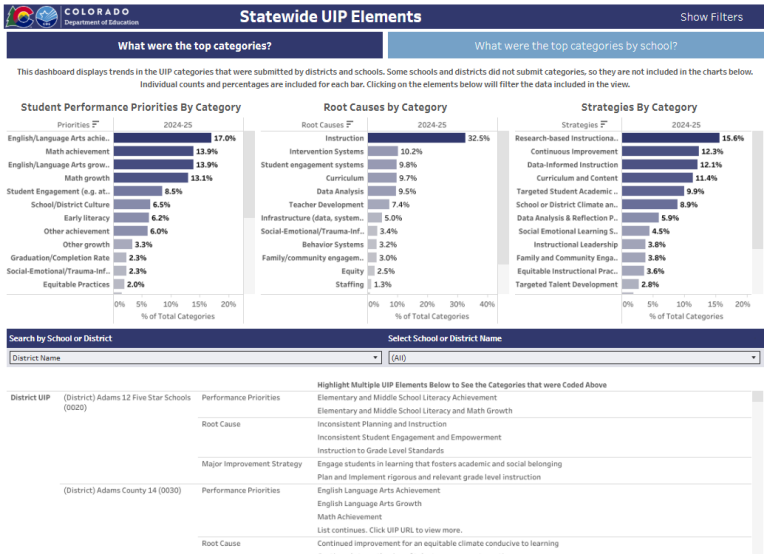
Performance Snapshot

The Snapshot provides an overview of key elements from the most recent District and School Transitional Performance Framework Reports and Unified Improvement Plans. This report is primarily designed for users with existing knowledge of the performance frameworks and improvement planning process, but provides a significant amount of explanatory information that makes it accessible to broader audiences. Use this tool to access reports for individual districts and schools.

Purpose: A single-year snapshot of performance framework and UIP data to understand accountability and improvement planning processes.

Release/Refresh Timeline: Every December

Dashboard Example



Description

Statewide Unified Improvement Plan (UIP) Elements Dashboard

This tool is intended to make UIP data more transparent and actionable. The dashboard can be used to identify trends in Student Performance Priorities, Root Causes, and Improvement Strategies statewide and within districts. The dashboard displays UIP elements data for schools and districts that self-selected from predefined categories (available in the Category Guidance).

Purpose: Access state, district, and schoolwide UIP data trends to enhance the development of targeted supports, foster collaboration across sites that are working on similar focus areas, and support planning processes.

Release/Refresh Timeline: Every October and January

Appendix B. AIR Full Report: Colorado Statewide Education Accountability Dashboard Recommendations Report



August 2026



Colorado Statewide Education Accountability Dashboard

Recommendations Report

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Executive Summary

Clear, accessible accountability reporting helps families, educators, policymakers, and community members understand school and district performance, monitor progress, and make informed decisions. In 2025, the Colorado General Assembly enacted HB 25-1278, directing the Colorado Department of Education (CDE) to examine the feasibility, design, and cost of options for strengthening Colorado's accountability reporting and to provide recommendations to the General Assembly. This work builds on recommendations from the Accountability, Accreditation, Student Performance, and Resource Inequity Task Force (1241 Task Force), which called for a coherent statewide dashboard and a more comprehensive, accessible, and user-friendly reporting experience.

CDE partnered with the American Institutes for Research® (AIR®) to examine how stakeholders access, use, and interpret accountability information; identify improvements that would better support stakeholder needs; and assess alternative approaches for strengthening Colorado's accountability reporting system. Stakeholders considered accountability as a broader system extending beyond school and district performance frameworks and ratings to include public reporting, improvement planning, stakeholder engagement, support and intervention, accreditation, and awards, consistent with CDE's approach. The study used "accountability information" to encompass the resources, processes, and reporting associated with this broader system. To develop recommendations grounded in stakeholder priorities, current reporting practices, and practical implementation considerations, AIR conducted three complementary activities:

- **Stakeholder engagement:** AIR gathered perspectives from educators, families, community representatives, advisory groups, researchers, policymakers, and CDE staff through virtual and hybrid engagement sessions.
- **Research on other states and existing tools:** AIR reviewed publicly available information from six states, conducted interviews and related information-gathering activities with representatives from four state education agencies, and examined CDE's current reporting tools and data systems.
- **Analysis of dashboard options:** AIR assessed five approaches using weighted criteria related to stakeholder responsiveness, cost, organizational capacity, technical fit, and implementation timeline.

CDE provides school and district information through accountability-focused tools, including SchoolView, the District and School Dashboard, Performance Snapshot, the Unified

Improvement Plan Dashboard, and the State Accountability Data Explorer, as well as broader public reporting resources available through the Education Statistics and Data website. Although these resources make substantial information available, they were developed over time for different purposes and audiences and do not always function as a coordinated system. Stakeholders described difficulty determining where to begin, navigating among resources, understanding how measures relate to one another, and interpreting the information presented. The findings point to a need for greater coordination and a more coherent user experience that makes school and district information easier to find, understand, and use.

Stakeholder-Informed Recommendations

AIR identified 10 recommendations for improving the accountability reporting system, based on feedback from 108 Colorado stakeholders. These recommendations focus on making information easier to navigate and use (usability and user-centeredness), helping users understand and interpret data (transparency, accuracy, and clarity), and ensuring that all users can access and use accountability information (equity and accessibility).

	Usability and User-Centeredness	Transparency, Accuracy, and Clarity	Equity and Accessibility
Usability and User Centeredness			
1	**Establish a single, unified statewide entry point with role-based pathways.** Stakeholders described Colorado's accountability information as fragmented across tools and were often unsure which platform contained the information they needed. A common public entry point should guide users toward relevant information based on their roles or goals while allowing them to move easily among pathways. Consistent design, terminology, and navigation would create a coherent reporting system even when multiple underlying tools remain in use.		
2	**Structure the dashboard from overview to detail.** Users should be able to begin with key findings and progressively access supporting context, analysis, and detailed data. Current tools sometimes present detailed information before users understand the main takeaway; in other cases, users must navigate through multiple layers to reach the information they need. A layered structure would better balance simplicity with access to comprehensive data.		
3	**Provide embedded guidance to support navigation and use.** Accountability information is often accessed by people who use the tools infrequently. Contextual help, quick-start guides, short instructional videos, searchable resources, and on-demand walkthroughs can help users find information, navigate the system, and complete common tasks without relying on separate documentation or prior familiarity with the system. Artificial intelligence–assisted navigation also could help users locate relevant reports and resources, provided that it relies on approved CDE content and complements rather than substitutes for effective design.		
4	**Enable users to explore trends over time and compare performance.** Stakeholders want to understand whether performance is improving, declining, or remaining stable and how results compare with appropriate benchmarks or peers. Colorado should make multiyear trends, state and district benchmarks, and comparisons among schools or districts with similar characteristics easy to locate and interpret. Comparison tools should use meaningful reference points and be designed carefully to avoid misleading conclusions.		

Usability and User-Centeredness	Transparency, Accuracy, and Clarity	Equity and Accessibility

Usability and User Centeredness	
5	**Present a more complete picture of school and district performance.** Statewide measures do not always capture local priorities, community strengths, distinctive programming, or evidence of continuous improvement. Colorado should preserve and strengthen opportunities for schools and districts to provide locally meaningful context alongside accountability results. This information could include more consistent use of school-authored profiles, locally selected measures, school climate information, opportunity-to-learn indicators, and evidence of improvement.
Transparency, Accuracy, and Clarity	
6	**Clearly explain measures, methodologies, and data sources.** Users need to understand what indicators measure, what reported results mean, where the underlying data come from, and how the results were determined. Colorado should provide layered explanations that range from concise definitions and interpretive guidance at the point of use to more detailed information about methodologies, data sources, calculations, updates, and significant changes over time. This approach would allow users to access the level of explanation they need without overwhelming those seeking a concise overview.
7	**Use plain language and consistent terminology.** Technical language, unfamiliar acronyms, lengthy explanations, and inconsistent labels create barriers for families, community members, and other infrequent users. Public-facing information uses concise, accessible language, with specialized terms and acronyms defined where they appear. Shared terminology and definitions would help ensure that the same concepts are described consistently across reporting tools and over time.
8	**Build data literacy through contextual explanations and interpretation supports.** Access to data does not guarantee understanding. Reporting tools should help users understand what results do and do not indicate and how the information relates to relevant benchmarks, peer contexts, improvement planning, and broader educational goals. Examples, interpretation cautions, explanatory scenarios, and links to authoritative resources can help users draw appropriately supported conclusions and use accountability information more effectively.
Equity and Accessibility	
9	**Ensure equitable access through multilingual, accessible, and mobile-responsive design.** Language, disability, mobile access, and limited internet connectivity can prevent stakeholders from using accountability information. Multilingual content, compatibility with assistive technologies, keyboard navigation, accessible color and text alternatives, mobile-responsive design, and reliable performance with slower internet connections should be treated as core requirements rather than optional enhancements. Automated translation of high-priority content should be reviewed for accuracy and clarity.
10	**Make student group results more visible and meaningful.** Aggregate results and summary ratings can conceal important differences in outcomes across student groups. Disaggregated results should be easy to locate, interpret, and explore across measures and over time while protecting student privacy and avoiding misleading comparisons involving small or dissimilar groups. Reporting should highlight both strengths and opportunities for improvement rather than encourage deficit-oriented interpretations of student group performance.

Dashboard Options Considered

To help CDE and state policymakers identify a path toward a more coherent, accessible, and useful accountability reporting system, AIR evaluated five implementation options ranging from limited modifications to existing tools to development or acquisition of a new dashboard

platform. AIR assessed the extent to which each option would address the stakeholder-informed recommendations (stakeholder responsiveness); the resources required to implement and sustain it (cost); the staffing and expertise CDE would need to implement and maintain it (organizational capacity); its alignment with CDE's existing technology environment, data systems, and operational requirements (technical fit); and the time required to design, develop, and deploy it (implementation timeline). AIR subject matter experts applied a common rubric informed by stakeholder feedback, the review of CDE's current reporting environment, information from other states, and the cost analysis. Stakeholder responsiveness received the greatest weight because it most directly reflects the study's primary objective.

Option	Description	Summary assessment
A. Maintain the current system with minor modifications	Retain existing tools and make a limited set of targeted improvements using existing CDE resources and vendor-supported tools.	This option would require the smallest investment and could be implemented most quickly, but it would leave most major stakeholder priorities unaddressed.
B. Significantly enhance the current system	Expand and better integrate existing reporting tools through more substantial improvements led by CDE and implemented within the current technology environment.	This option would address most stakeholder priorities while building on CDE's existing reporting environment. Some capabilities would remain constrained by the current technical environment, but the option provides the strongest overall balance among the evaluation criteria.
C. Contract for development of a custom dashboard	Engage an external vendor to design, build, and initially support a new statewide accountability dashboard tailored to Colorado's needs, with CDE assuming responsibility for long-term maintenance after transition.	This option would offer substantial flexibility to address stakeholder priorities but would require the largest financial investment, substantial integration work, and a lengthy procurement and development process.
D. Develop and maintain a custom dashboard in-house	Build, operate, and maintain a new statewide accountability dashboard using CDE staff and internal resources.	This option would offer substantial control and flexibility but would require significant new technical capacity, sustained staffing, substantial integration work, and the longest implementation timeline.
E. Acquire and configure a commercial off-the-shelf dashboard platform	Procure a commercial dashboard platform from a vendor and configure it to support Colorado's accountability reporting needs, with CDE overseeing implementation and operations.	This option could provide a relatively rapid path to modernization and reduce the need for custom development, but its responsiveness and cost would depend heavily on platform fit, customization limits, licensing terms, and long-term vendor dependence.

Recommended Approach

AIR recommends Option B: Significantly Enhance the Current System on the basis of the weighted evaluation. This approach provides the strongest balance between responsiveness to stakeholder priorities and practical implementation considerations. It would allow CDE to address most stakeholder priorities while retaining existing data pipelines, reporting assets, and technical infrastructure, where practical.

Option B would not consolidate every reporting tool into a single underlying platform. Instead, it would create a more unified public experience by adding a common entry point, role-based pathways, shared navigation, and consistent design across existing tools. It also could support an overview-to-detail reporting structure, expanded trend and comparison capabilities, improved multilingual access, clearer explanations of accountability measures, embedded guidance, and richer contextual and disaggregated student-group information.

Some limitations would remain. The existing technical environment may constrain full consolidation of the underlying tools, comprehensive mobile optimization, and certain advanced or highly customized reporting features. Even with these constraints, Option B would address substantially more stakeholder priorities than Option A while avoiding many of the financial, technical, organizational, and implementation demands associated with developing a new custom platform.

Implementation and Cost Implications

Option B would likely require a phased implementation across 1 to 2 years. Early phases could focus on low-complexity, high-visibility improvements, such as clearer navigation, plain-language revisions, standardized terminology, and user-support resources. Later phases could address larger enhancements, including the common entry point, role-based pathways, visualization redesign, accessibility improvements, trend and comparison features, and mobile optimization to the extent supported by the current environment.

Planning estimates place implementation costs at approximately $525,000 to $774,000, including about 6,240 to 9,360 CDE labor hours, assuming a 1-year implementation schedule. Costs may increase modestly if implementation extends into a second year. Incremental annual operating costs are estimated at approximately $159,000 to $252,000 in 2026-equivalent dollars, including 2,000 to 2,970 labor hours for maintenance, monitoring, user support, content updates, accessibility reviews, governance, and continued enhancements. These figures are intended to support comparison and planning and should not be interpreted as procurement-ready budgets.

Successful implementation would depend on sufficient staff capacity, coordination across reporting systems, clear prioritization of enhancements, shared design and terminology standards, and decisions about which tools should be integrated, consolidated, or retained. Principal risks include expansion of the project beyond available resources, limitations in the existing technical environment, inconsistent implementation across tools, and stakeholder expectations that exceed the approved scope. CDE could reduce these risks through an early technical assessment, phased releases tied to priority recommendations, shared governance and design standards, continued stakeholder engagement, and a clearly communicated implementation roadmap.

Option B offers Colorado a practical path toward a more coherent, accessible, transparent, and useful accountability reporting system. It builds on existing reporting assets, addresses the most important stakeholder concerns, and creates a foundation for continued modernization without requiring the cost, delay, and organizational demands associated with replacing the current reporting environment with a new custom platform.

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Introduction

Why We Conducted This Study

Clear and accessible accountability reporting helps families, educators, policymakers, and community members understand school and district performance, monitor progress over time, and make informed decisions. Recognizing the importance of effective public reporting, the Colorado General Assembly enacted HB 25-1278 in 2025. The legislation directed the Colorado Department of Education (CDE) to examine the feasibility, design, and cost of options for strengthening Colorado's accountability reporting, ranging from enhancing existing tools to developing a new statewide accountability dashboard, and to provide recommendations to the General Assembly. This work builds on recommendations from the Accountability, Accreditation, Student Performance, and Resource Inequity Task Force (1241 Task Force), which was established by HB 21-1241. In its final report, the 1241 Task Force called for improvements to the accessibility, transparency, and usability of Colorado's accountability information.

In response to this legislative direction, CDE partnered with the American Institutes for Research® (AIR®) to examine the state's current approach to reporting accountability data and identify opportunities to strengthen how information is organized, presented, and accessed. Building on the recommendations of the 1241 Task Force, the study focused on how stakeholders access, use, and interpret accountability information; what improvements would better support stakeholder needs; and what approach would provide the strongest path forward for Colorado's accountability reporting system. Stakeholders were asked to consider accountability through the broader state accountability system rather than solely through school and district performance frameworks or ratings, consistent with CDE's approach to accountability. Colorado's accountability system includes multiple interconnected elements, including performance frameworks, public reporting, improvement planning, stakeholder engagement, support and intervention, accreditation, and awards. Accountability information referenced throughout this report encompasses the resources, processes, and reporting associated with these elements.

WHAT THE 1241 TASK FORCE SAW AS PRIORITIES FOR PUBLIC REPORTING

In reviewing Colorado's accountability system, the 1241 Task Force identified opportunities to make information easier to find, understand, and use. Two of its recommendations provided the foundation for this study:

- Create one coherent statewide dashboard that includes local and statewide data aligned with statewide instructional and postsecondary and workforce readiness priorities
- Enhance the user experience with reporting functionality and support that offers all stakeholders a comprehensive, accessible, and user-friendly way to utilize data

For more information, see the 1241 Task Force's final report.

CDE currently provides accountability information through several reporting tools (see Appendix A for an overview of current tools). SchoolView serves as a primary entry point for families, community members, and other general audiences, aggregating information from across multiple reporting systems and providing access to a wide range of school and district data. The District and School Dashboard (DISH) supports more detailed exploration of school and district performance data, whereas additional tools, including the Performance Snapshot Dashboard, Unified Improvement Plan (UIP) Dashboard, and State Accountability Data Explorer, provide more specialized accountability information and analyses. Beyond these accountability-focused resources, CDE also makes available a broader set of school and district data through its Education Statistics and Data website. Together, these tools make important information available to educators, families, policymakers, and the public. However, they were developed over time for different purposes and audiences and do not always function as a coherent system. As a result, stakeholders may encounter challenges navigating among tools, understanding how measures relate to one another, or making sense of the information presented.

How accountability information is organized and presented influences how it is used. When information is difficult to locate, navigate, or interpret, stakeholders may struggle to draw accurate conclusions or identify appropriate actions based on the information available. To address these challenges, CDE sought an independent assessment of how to strengthen the coherence, accessibility, and usability of the state's accountability reporting.

How We Conducted This Study

AIR conducted this study through three complementary activities: stakeholder engagement, research on other states and existing tools, and analysis of dashboard options, including cost and feasibility. Together, these activities informed the recommendations presented in this report. Additional details on study methods are provided in Appendix B.

- **Stakeholder engagement:** AIR worked with CDE to engage a diverse group of stakeholders, including educators, families, community representatives, and advisory groups, through virtual and hybrid sessions across the state. Through these sessions, AIR gathered perspectives on how accountability tools are used, challenges that stakeholders experience, and priorities for improving Colorado's accountability dashboards and reporting tools.
- **Research on other states and existing tools:** AIR examined accountability dashboards in other states through a review of publicly available materials and interviews with staff from four state education agencies (SEAs). AIR also reviewed CDE's existing reporting tools and data systems to better understand current capabilities, potential limitations, and operational considerations.
- **Analysis of dashboard options:** AIR analyzed multiple options for strengthening accountability reporting, including enhancements to the current system and development of new solutions. For each option, the team examined how well it addressed stakeholder priorities and the practical considerations associated with implementation using information gathered from CDE staff and other states.

What the Report Covers

This report is intended to support informed policy and budgetary decisions about the future of Colorado's accountability reporting system, including the potential development of a new statewide accountability dashboard. The report provides information on stakeholder priorities, reporting requirements, implementation considerations, and the costs and benefits of different options.

The report is organized into two main sections:

- The **Recommendations** section presents proposed directions for strengthening Colorado's accountability reporting system. Recommendations are organized around three domains: (a) usability and user-centeredness; (b) transparency, accuracy, and clarity; and (c) equity and accessibility.
- The **Analysis of Dashboard Options** section examines approaches available to CDE for enhancing or redesigning its accountability reporting tools, including the strengths, limitations, and tradeoffs associated with different implementation pathways.

Together, these sections provide the evidence and analysis needed to inform decisions about the future of accountability reporting in Colorado.

Key Constructs for Effective Dashboard Design and Data Use

This report organizes recommendations around three domains that reflect widely recognized principles of effective dashboard design and data use:

- **Usability and user-centeredness:** The extent to which tools are easy to navigate and designed around the needs of different users.
- **Transparency, accuracy, and clarity:** The extent to which information is presented clearly and accurately, and whether users can understand what the data show and how results were produced.
- **Equity and accessibility:** The extent to which all users can access, understand, and use accountability information.

Recommendations

The recommendations that follow identify opportunities to strengthen Colorado's accountability reporting system. Although each recommendation addresses a specific aspect of accountability reporting, many are interconnected and work together to improve how stakeholders access, understand, and use accountability information.

Usability and User-Centeredness

Effective accountability reporting must be designed with the people who use it in mind. Dashboards that reflect their intended audiences' needs, priorities, and preferred ways of engaging with information—whether families comparing schools, administrators monitoring performance, or educators acting on data—are more likely to be adopted and used over time (Ahn et al., 2021; Chandler et al., 2021; Data Quality Campaign, 2014; ExcelinEd, 2017a, 2017b). Usability is shaped by deliberate design choices, including layout, navigation, and how information is organized, as well as by the data that a system contains (Almasi et al., 2023; Hornbæk, 2006).

Stakeholder feedback from this study was largely consistent with these findings. Participants across groups identified navigation, system organization, and overall user experience as significant barriers to accessing and using Colorado's accountability data. As Colorado considers future improvements to statewide reporting, stakeholders emphasized that the value of any reporting system depends on how easily users can access and use the information it provides.

This section focuses on design practices that can help Colorado create a more intuitive and useful accountability reporting system. The recommendations emphasize how accountability information is organized, accessed, and presented to users.



RECOMMENDATION 1: ESTABLISH A SINGLE, UNIFIED STATEWIDE ENTRY POINT WITH ROLE-BASED PATHWAYS

Stakeholders consistently described difficulty determining where to begin when accessing accountability information. Across stakeholder groups, participants reported confusion about the relationship between SchoolView and DISH, noting that they were often unsure which platform contained the information they needed. They also described challenges locating specific districts and schools, switching between schools, and identifying which resources were designed for particular audiences or purposes. SchoolView, for example, provides access to several major reporting tools and data resources. However, these connections do not always provide a comprehensive or intuitive path to the full range of accountability information available. Collectively, these experiences contributed to a broader perception that Colorado's accountability information is fragmented rather than organized around a coherent user experience.

Consistent with the 1241 Task Force's call for a coherent statewide dashboard, stakeholders emphasized the need for a clear, unified entry point. Many stakeholders recommended a streamlined landing page that helps users quickly identify the information and resources most relevant to their needs, with pathways organized around user roles or goals. Participants frequently described this as a "choose your own adventure" approach in which families, educators, school and district leaders, policymakers, researchers, and community members can select a pathway aligned with their intended use. Such an approach could reduce navigation burden by providing users with a clear path to the information most relevant to their role and needs. Exhibit 1 summarizes the functionality that stakeholders most frequently identified as necessary to support a unified statewide entry point and role-based pathways.

Exhibit 1. Specific functionality and design choices can help a unified entry point reduce navigation burden while supporting role-based pathways

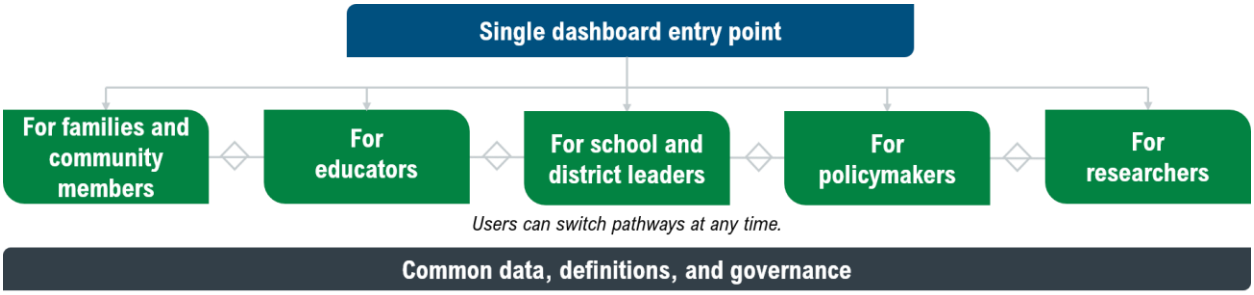
Functionality	Description
Single statewide landing page	Serves as the common point of entry to the state's accountability reporting tools and resources.
Role-based pathways	Route users on the basis of self-identified role to a view of the dashboard tailored to families, educators, school and district leaders, policymakers, researchers, and community members reflecting stakeholders' recommended "choose your own adventure" approach.
Ability to switch pathways	Allows users to move easily between role-based pathways rather than being confined to a single view, recognizing that users may occupy multiple roles while addressing the risk that overly rigid audience segmentation can increase user confusion.
Reduced clicks to reach frequently used information	Minimize the number of steps required to reach commonly sought information, addressing stakeholder reports of navigation feeling cumbersome or repetitive.
Consistent design and navigation across pathways	Ensure that layout, terminology, and navigation patterns remain consistent across all role-based pathways, so that switching between them does not require users to relearn how the site works.

Guidance on public reporting supports this approach. For instance, the Council of Chief State School Officers recommends that states identify priority users and priority actions before structuring school report cards, explicitly cautioning against the creation of information silos (Curl & Peltzman, 2017). Prior work on education data systems similarly emphasizes that different users bring different needs to the same underlying data and that reporting systems are more useful when those needs are considered in the design process (Campos et al., 2021; Data Quality Campaign, 2008; Zapata-Rivera & Katz, 2014).

Exhibit 2 illustrates how a single statewide entry point could function as a common front door for accessing school and district information across CDE's reporting ecosystem, while routing

users into pathways tailored to families, educators, school and district leaders, and policymakers. Each pathway would draw on a shared foundation of trusted data, definitions, and governance while surfacing the information and tasks most relevant to that audience and allowing users to move freely between pathways rather than being confined to one view. By serving as a centralized entry point to accountability information, performance data, improvement planning resources, education statistics, and other school and district information, the system could help users navigate Colorado's reporting ecosystem as a more coherent and coordinated system.

Exhibit 2. A unified entry point can simplify navigation while supporting diverse user needs



RECOMMENDATION 2: STRUCTURE THE DASHBOARD FROM OVERVIEW TO DETAIL

Stakeholders consistently emphasized that accountability reporting should help users quickly find the information most relevant to their needs without requiring them to sort through large amounts of data. Participants frequently described current reporting tools as overwhelming, noting that users are often presented with extensive information before they understand the most important takeaways. Many stakeholders expressed a desire for reporting that highlights key findings and messages upfront, while preserving access to supporting information. Participants suggested that these summaries could, for instance, include performance indicator data aligned with strategic priorities or demographic and school climate trends.

This challenge is common in dashboard design. States that have redesigned school report cards have found that carefully prioritizing information and introducing detail gradually can help users understand dashboard content without becoming overwhelmed. Florida's school report card, for example, begins with an overall accountability rating and allows users to access additional details through topic-based drop-down sections located directly beneath the summary information (ExcelinEd, 2017a). This approach aligns with a core principle of information visualization: Users should first see an overview and then have the option to zoom, filter, and access additional details on demand (Shneiderman, 1996).

Education dashboard research also highlights why achieving this balance can be challenging. Presenting too many indicators at once can overwhelm users, whereas relying on only one or a few summary indicators can obscure important differences in performance (Curran et al., 2024). Experimental research on school report cards has identified similar tradeoffs. Prominently displaying year-over-year change helped users identify which schools had improved the most but reduced overall usability and satisfaction (Chandler et al., 2021). Similarly, users understood school information better when it was presented as simple numerical data than when it was supplemented with graphs, despite reporting greater satisfaction with the graphical displays (Glazerman et al., 2020).

Colorado's existing accountability tools already incorporate some elements of a layered approach, but stakeholders indicated that the progression from summary information to detailed information is not always intuitive. DISH, for example, organizes information into broad categories such as enrollment, academic achievement, and academic growth, with overall ratings and demographic information presented alongside these sections. However, selecting a category often leads directly to highly detailed data displays. For example, the academic achievement section presents English language arts results disaggregated by year and student group rather than beginning with a simpler summary view and allowing users to access additional detail as needed.

SchoolView follows a different approach, providing high-level information such as accountability ratings, enrollment, attendance, graduation rates, dropout rates, and student-teacher ratios. Accessing more detailed information, however, can require navigating through multiple layers of menus and pages. As a result, stakeholders described a disconnect between summary information and deeper analysis: In some cases, users reach detailed data too quickly, whereas in others, they must take multiple steps to reach the information they need. Taken together, these experiences suggest an opportunity to strengthen how information is layered, sequenced, and connected across Colorado's accountability reporting system. If information is presented through a structure that moves from overview to detail, users could begin with key takeaways and progressively access additional context, analysis, and supporting data as needed.



RECOMMENDATION 3: PROVIDE EMBEDDED GUIDANCE TO SUPPORT NAVIGATION AND USE

Stakeholders frequently emphasized that accountability reporting tools should provide more support as users navigate the system. Participants noted that many users access accountability information only occasionally and may need help locating information, using available features, or moving between different views. These challenges were described as particularly significant for families and community members who may have limited experience with education data systems.

Stakeholders recommended navigation supports such as quick-start resources, guided walkthroughs, and embedded assistance that users can access when needed. Participants emphasized that these supports should focus on helping users find information, navigate among reporting features, and complete common tasks. Stakeholders also expressed interest in emerging forms of navigation support, including artificial intelligence (AI)-assisted tools that could direct users to relevant reports and resources and answer basic questions about dashboard features. AI-assisted explanations of accountability measures and interpretation of results are addressed separately in Recommendations 6 and 8.

Colorado's accountability reporting tools already include some features intended to support navigation and use. For example, DISH incorporates instructional text and other forms of in-context guidance to help users locate and interpret information. The CDE website also provides an AI-powered chatbot, Ask CDE, across much of its website and several accountability-related reporting tools (although it is not currently available within SchoolView). This type of conversational support aligns closely with stakeholder interest in AI-assisted tools that can potentially help users locate information and identify relevant resources. However, many existing supports are tied to specific pages or reporting features, which may limit their usefulness when users are trying to navigate across the broader reporting ecosystem. Users may still face challenges identifying where to begin, locating relevant data, or understanding how information is organized across reporting environments. Consequently, existing supports may not fully address the navigation and orientation challenges described by stakeholders, particularly for infrequent users and those with limited experience using education data systems.

Research on user experience and dashboard design suggests that embedded, on-demand guidance can help address these challenges by providing support when and where users need it. User-guidance features tend to be more useful when users choose to launch them rather than encounter them automatically. When walkthroughs appear on their own, such as when a user first arrives on a page, users often skip them, forget their contents after dismissing them, or find them disruptive when they arrive with a specific task in mind (Laubheimer, 2023). By contrast, on-demand walkthroughs are available when they are most relevant and useful. Contextual help features, such as brief explanations that appear alongside a specific tool or function, operate on the same principle by allowing users to access support without leaving the task at hand. Research on visualization onboarding similarly emphasizes that support should be integrated into the interface rather than provided through separate documentation disconnected from where users are working (Stoiber et al., 2019).

K–12 dashboard research further suggests that navigation support benefits both novice and experienced users. A systematic review found that school and district leaders often report needing ongoing training to use dashboard tools effectively, including support for basic tasks such

as entering, navigating, and working within the system (Curran et al., 2024). Providing guidance directly within the reporting system may reduce frustration, improve accessibility for infrequent users, and increase the likelihood that stakeholders can locate the information they need.

To support usability, Colorado's accountability reporting system should provide embedded guidance at the point of use. Examples include contextual help tied to specific features, short how-to videos, searchable quick-start guides, interactive walkthroughs that users can launch on demand, and AI-assisted navigation tools that help users locate information and reporting features more efficiently. Together, these supports would help users orient themselves, complete common tasks, and move through the reporting environment without relying on separate documentation or prior familiarity with the system.



RECOMMENDATION 4: ENABLE USERS TO EXPLORE TRENDS OVER TIME AND COMPARE PERFORMANCE

Stakeholders consistently emphasized that accountability reporting should help users do more than access data. Participants expressed a desire for tools that support analysis and decision making by helping users examine performance over time and understand results in context. Colorado's existing accountability reporting tools already provide some of this functionality. For example, DISH includes multiyear displays and disaggregated results for several indicators, whereas the State Accountability Data Explorer offers more advanced capabilities for trend analysis, comparison, and disaggregation. However, these features are not consistently available across reporting tools, and the most robust analytical functionality may be less familiar to many users. Several stakeholders also noted that comparison features can be difficult to find or require multiple steps to access, limiting their usefulness even when the underlying data are available.

Trend reporting emerged as a particularly high priority. Stakeholders frequently noted that users are often more interested in understanding whether performance is improving, declining, or remaining stable than in reviewing a single year's result. Participants also emphasized the value of comparison tools that help users understand results relative to state averages, similar districts, or other relevant peer groups. Improving the visibility and usability of these features would strengthen stakeholders' ability to use accountability information for planning, reflection, and decision making.

Research on school report cards and school-choice websites supports the value of trend and comparison information while also showing that its presentation can influence usability, interpretation, and decision making. Experimental research on school report cards found that displaying year-over-year change helped users identify which schools had improved the most, although prominent trend displays also reduced overall usability and user satisfaction (Chandler

et al., 2021). Research on school-choice websites found that design decisions, such as the order in which schools were presented or whether district averages were shown as a reference point, influenced which schools parents selected (Glazerman et al., 2020). These findings suggest that comparison tools not only provide additional information but also can shape how users interpret and act on that information.

Comparison features also require careful attention to equity and context. A review of state education dashboards found that comparison tools allowing users to rank schools by any indicator, without comparing schools with similar demographic characteristics, could create misleading impressions by favoring more affluent schools (Curran et al., 2024). Research on public performance reporting also indicates that users are more likely to use comparative information when it is presented with clear benchmarks, ratings, or reference points rather than as raw numbers alone (Hibbard et al., 2002).

To support meaningful use of accountability information, Colorado's reporting system should make trend and comparison tools easy to locate and designed around meaningful reference points. Examples include multiyear trend displays, side-by-side comparisons, comparisons among schools or districts with similar demographic or contextual characteristics, clear benchmarks, and downloadable data sets that support deeper exploration (Exhibit 3).

Exhibit 3. Trend and comparison tools can help users interpret performance in context

Tool or feature	Purpose
Multiyear trend displays	Show whether performance is improving, declining, or remaining stable over time.
State or district benchmarks	Help users understand performance relative to broader averages or expectations.
Peer-group comparisons	Allow users to compare schools or districts with similar demographic or contextual characteristics.



RECOMMENDATION 5: PRESENT A MORE COMPLETE PICTURE OF SCHOOL AND DISTRICT PERFORMANCE

Across stakeholder groups, participants expressed concern that existing accountability reporting tools can provide an incomplete picture of school and district performance. Many participants felt that publicly available reports do not adequately reflect local priorities, community strengths, or evidence of ongoing improvement. These concerns were especially prominent among stakeholders from rural communities and smaller districts, who noted that statewide reporting systems overlook important aspects of their community context. As one respondent explained,

> "It'd be nice to highlight both improvements and opportunities somewhere within the dashboard . . . opportunities in our small rural district, like we have a strong welding program, a strong agriculture program. We're tied to the community in those ways, and I think those kinds of things can be important."

To address these limitations, stakeholders emphasized the importance of reporting systems that situate performance outcomes within local contexts and improvement efforts. Participants expressed interest in incorporating locally selected measures and creating opportunities for schools and districts to share information aligned with community goals, priorities, and definitions of success. Rural stakeholders, in particular, highlighted the value of including data sources beyond statewide assessments to better represent what matters in their communities. As one respondent noted,

> "Something I hear very consistently in rural communities in particular is a desire to have a place where their local data can be profiled and shared beyond just the state assessment data. So if you're using an NWEA, if you have a local assessment that you use, something you find really valuable in your community, I hear really consistently that people want to be able to use that information."

SchoolView already provides a mechanism for incorporating locally authored context through a "message from the school" field near the top of each profile. Use of this feature, however, appears to vary considerably. Some profiles include substantive information about student populations, community partnerships, distinctive programming, or local priorities that aligns closely with what stakeholders described; others contain only basic descriptive information, such as grade levels served or links to external websites. The variation suggests that existing opportunities for local context are limited less by the absence of a feature than by inconsistent implementation. Strengthening accountability reporting may therefore require both expanding opportunities to share locally selected measures and community-relevant information and promoting more consistent, meaningful use of existing self-authored content.

Colorado should preserve and strengthen opportunities for schools and districts to provide locally meaningful context alongside accountability results. This could include more consistent use of existing school-authored profile content, locally selected measures, community priorities, opportunity-to-learn indicators, school climate information, and evidence of continuous improvement. Presenting these elements alongside accountability results could help stakeholders interpret performance more accurately and develop a fuller understanding of how schools and districts are serving students and communities (Bae, 2018; Curran et al., 2024; Modaffari & Jimenez, 2021; Sunderman, 2022).

Transparency, Accuracy, and Clarity

Even the most carefully designed dashboard cannot achieve its purpose if users do not understand what an indicator measures, how a result was calculated, or what the result does and does not indicate about school or district performance. Effective accountability reporting must use accurate data, explain its methodology transparently, and present information precisely enough for users to understand.

Stakeholder feedback gathered through this study reflected many of these concerns. Participants frequently reported difficulty understanding accountability terminology and indicators, interpreting ratings and results, and determining how the information should be used. Stakeholders also expressed a desire for clearer explanations of methodology, greater transparency about how measures are calculated, and additional contextual information to support appropriate use.

Experiences from state accountability systems illustrate both the importance of clarity and the associated challenges. A study of principals and district administrators across three states found that perceptions of clarity were closely tied to perceptions of usefulness: Principals in states with simpler, more transparent methodologies reported a greater understanding of accountability information than those in states with complex, multipart formulas and were more likely to view the information as meaningful for school decision making (Hurlburt et al., 2023). At the same time, simplicity has limits. Accountability systems that incorporate large numbers of indicators can be inherently complex, creating challenges for any dashboard or reporting tool built to communicate them. The goal is not to eliminate that complexity but to communicate it in ways that users can understand while preserving the information needed for meaningful analysis and decision making.

The recommendations that follow focus on making measures and methodologies more transparent, communicating information in clear and accessible language, and supporting informed use of accountability information.



RECOMMENDATION 6: CLEARLY EXPLAIN MEASURES, METHODOLOGIES, AND DATA SOURCES

Stakeholders consistently emphasized the importance of understanding what accountability indicators measure, how results should be interpreted, and where the underlying data originate. Participants reported that dashboards often present ratings, scores, and indicators without sufficient context to help users understand what the results mean and how they were determined. Stakeholders expressed a need for clearer scoring guides, explanatory materials, reference points, and interpretation frameworks that would help users draw appropriate

conclusions from the data. Several stakeholders also noted that information about data updates, methodological changes, and calculation procedures can be difficult to locate or understand.

Colorado's existing accountability reporting tools already provide explanatory content in several forms. SchoolView, for example, embeds explanatory context directly within many data pages, including background information about indicators, descriptions of data sources and methodologies, and, in some cases, definitions of key terms. DISH provides explanatory text for selected measures and terms. Among Colorado's current reporting tools, Performance Snapshot offers perhaps the clearest example of the type of point-of-use guidance stakeholders described. Informational icons positioned alongside ratings, indicators, and accountability processes provide users with immediate access to explanations of how results are calculated, what ratings mean, and how accountability determinations relate to improvement planning. However, the availability, format, and depth of explanatory content vary considerably across reporting tools and indicators.

Research on public reporting suggests that users can make informed use of data only when they understand how results were produced. Studies of state accountability systems have found that unclear methodologies can make findings difficult to interpret, even when the underlying data are sound (Chandler et al., 2021; Data Quality Campaign, 2014; Hurlburt et al., 2023; Matheus et al., 2020). These findings underscore the importance of providing clear explanations of measures, methodologies, and data sources within the reporting environment. Such information may include indicator definitions, data dictionaries, methodology summaries, calculation descriptions, data source documentation, update schedules, version histories, and explanations of significant methodological changes over time. Layering information from brief summaries to more detailed technical documentation allows users to access the level of detail they need without searching for separate materials.



RECOMMENDATION 7: USE PLAIN LANGUAGE AND CONSISTENT TERMINOLOGY

Stakeholders frequently indicated that accountability dashboards contain terminology that is difficult for many users to understand. Participants cited unfamiliar acronyms, technical language, inconsistent terminology, and lengthy explanations as barriers to understanding accountability information. These challenges were described as particularly significant for families, community members, and other users who may access accountability data only occasionally.

When terminology is overly technical, inconsistent, or unnecessarily complex, users may struggle to interpret results even when accurate information is available (Chandler et al., 2021; Data Quality Campaign, 2014). Plain-language communication provides a practical framework for addressing this challenge. Guidance from federal and state agencies recommends that

public-facing communication generally be written at no higher than an eighth-grade reading level (California Department of Technology, n.d.; U.S. Department of Labor, n.d.). This benchmark reflects evidence that comprehension declines as materials become more complex and that public-facing documents frequently exceed recommended reading levels in practice (Walsh & Volsko, 2008). Clear communication therefore requires deliberate attention to vocabulary, sentence structure, and organization.

Clarity also depends on consistency. Stakeholders noted that similar concepts are often described differently across dashboards, reports, and supporting materials, requiring users to determine whether different terms refer to the same underlying concept. Consistent terminology, labels, and definitions across reporting environments can reduce confusion and help users develop a coherent understanding of accountability information over time. This is particularly important for infrequent users, who may rely on familiar language and visual cues to navigate reporting systems efficiently.



RECOMMENDATION 8: BUILD DATA LITERACY THROUGH CONTEXTUAL EXPLANATIONS AND INTERPRETATION SUPPORTS

Stakeholders consistently emphasized that access to data alone does not guarantee understanding. Participants frequently reported uncertainty about how accountability measures should be interpreted, what conclusions can reasonably be drawn from reported results, and how accountability information should inform decision making. Several stakeholders noted that users may misinterpret indicators or draw unintended conclusions when information is presented without sufficient context or guidance. Stakeholders also emphasized the need for explanations that connect accountability indicators to broader educational goals and outcomes, expressing interest in resources that help users understand how measures relate to school improvement, student success, and district performance.

Participants further recommended providing examples and scenarios that illustrate appropriate interpretation of key measures and common misunderstandings that users may encounter. Some stakeholders also expressed interest in emerging tools, such as AI-assisted support, which could help users identify trends, summarize key findings, connect results to relevant resources, and locate promising practices or supports related to their questions.

Existing accountability reporting tools provide some support for understanding what individual measures represent. SchoolView, for example, includes definitional resources such as its “What do these ratings mean?” explanations, discussed further in Recommendation 6, that describe how indicators and ratings are defined. These supports generally do not help users determine what a particular result may suggest about a school’s trajectory, how performance compares with relevant benchmarks or peer contexts, or how accountability information might inform

planning and decision making. Users seeking to move from understanding a measure to understanding its implications therefore receive limited support within the reporting environment itself.

These concerns align with national guidance on data literacy, which identifies the ability to understand and use data as a distinct set of knowledge and skills that varies across audiences and often requires intentional support, particularly for parents, caregivers, and community members who may have less experience with education data systems than educators or policymakers (National Forum on Education Statistics, 2024). Without that support, users may draw inaccurate or overly broad conclusions from available information. Reviews of education data use have documented common interpretation errors and highlighted the value of contextual guidance in helping users understand and apply data appropriately (Mandinach & Schildkamp, 2021; Modaffari & Jimenez, 2021; van Kessel et al., 2025; Young et al., 2020).

Equity and Accessibility

Accountability reporting can fulfill its intended purpose only if all stakeholders have equitable opportunities to access and use the information. Even when dashboards are well designed and information is clearly explained, barriers related to language, disability, mobile use, and limited bandwidth can hinder stakeholders' ability to engage meaningfully with accountability information.

Equity and accessibility cut across all aspects of accountability reporting system design and implementation. Stakeholders consistently emphasized the importance of designing for diverse users and communities. Equitable access therefore depends not only on what information is available but also on whether reporting systems accommodate different users, devices, and access conditions.

The recommendations that follow focus on expanding access to accountability information and ensuring that reporting practices reflect and serve Colorado's diverse communities.



RECOMMENDATION 9: ENSURE EQUITABLE ACCESS THROUGH MULTILINGUAL, ACCESSIBLE, AND MOBILE-RESPONSIVE DESIGN

Stakeholders consistently emphasized that accountability information cannot support transparency or public engagement if some users face barriers to accessing it in the first place. Participants frequently discussed challenges related to language access, accessibility for people with disabilities, and technology access, noting that many families and community members may interact with accountability information using mobile devices, assistive technologies, or internet connections that do not support data-intensive dashboards.

These challenges affect a substantial portion of the public. Rural and low-income households are less likely to have home broadband and more likely to rely on smartphones as their primary means of internet access. People with disabilities and individuals with limited English proficiency also may encounter barriers when public information is not designed for accessible and multilingual use (Pacheco & Burgess, 2025; U.S. Commission on Civil Rights, 2026). Accessibility standards provide concrete requirements for features such as screen-reader compatibility, keyboard navigation, sufficient color contrast, and alternative text, which must be intentionally incorporated into digital tools (World Wide Web Consortium, 2023). Research on accountability reporting similarly emphasizes the importance of designing for diverse users and access conditions from the outset (Chandler et al., 2021; Data Quality Campaign, 2014).

Stakeholders emphasized that language access should be built directly into the dashboard experience. Participants viewed embedded translation as preferable to requiring users to rely on external browser-based translation tools, which may be inconsistent or difficult for some users to access. Colorado's existing accountability reporting tools take different approaches to language support. DISH includes built-in translation options for several languages, although certain data elements and accompanying explanatory text remain available only in English. SchoolView, by contrast, uses Google Translate-powered functionality across a broader range of page content. Because automated translation may not convey technical accountability terminology consistently, any expanded multilingual approach should include review of high-priority content for accuracy and clarity.

Stakeholders also stressed that users who rely on assistive technologies should have access to the same information and functionality available to other users. One participant illustrated this concern by noting, "We wondered if the colors used for the charts were accessible and if the information could all be understood by someone who was color blind or had low vision."

Stakeholders further noted that accessibility extends beyond compliance with technical standards. Participants emphasized the importance of reducing common barriers by supporting mobile use, minimizing data-intensive features where possible, limiting excessive page loads, and ensuring that critical information remains accessible in low-bandwidth environments. One participant also emphasized the importance of interoperability across commonly used platforms: "Ensuring the technology speaks to each other on common platforms would be really helpful." Many participants viewed these features as essential components of a dashboard intended to serve Colorado's diverse communities. Together, these comments reflect a broader desire for an accountability reporting system that is easy to access across devices, platforms, and connectivity conditions.



RECOMMENDATION 10: MAKE STUDENT GROUP RESULTS MORE VISIBLE AND MEANINGFUL

Stakeholders consistently emphasized that accountability reporting should fairly represent the experiences and outcomes of all student groups. Participants expressed concern that summary ratings and aggregate results can obscure important differences in performance, making it difficult to identify areas of strength and need across student populations.

Research suggests that disparities in outcomes often remain hidden without deliberate attention to disaggregated reporting (National Academies of Sciences, Engineering, and Medicine, 2019). Similarly, analyses of state accountability systems have found that summary ratings can mask meaningful differences in performance among student groups (Adams et al., 2016).

Stakeholders emphasized that reporting systems should make student-group results easy to locate and interpret while protecting student privacy and avoiding misleading comparisons. Participants also noted the importance of presenting data in ways that acknowledge both strengths and opportunities for improvement rather than reinforcing deficit-oriented interpretations of performance.

Well-designed reporting systems can help users understand how outcomes vary across student groups, identify patterns that may be hidden in aggregate results, and support more informed conversations about educational equity and improvement.

Analysis of Dashboard Options

The recommendations in the previous section reflect a consistent message from stakeholders: Accountability information should be easier to find, easier to understand, and easier to use. This section examines five alternative dashboard implementation options, ranging from minor enhancements to existing tools to development of a new custom dashboard. These five options are as follows:

- **Maintain the current system with minor modifications:** Retain the existing reporting environment and implement a limited set of targeted improvements using existing CDE resources and vendor-supported tools.
- **Significantly enhance the current system:** Expand and better integrate existing reporting tools through more substantial improvements led by CDE and implemented within the current technology environment.
- **Contract for development of a custom dashboard:** Engage an external vendor to design, build, and initially support a new statewide accountability dashboard tailored to Colorado's needs, with CDE assuming responsibility for long-term maintenance after transition.
- **Develop and maintain a custom dashboard in-house:** Build, operate, and maintain a new statewide accountability dashboard using CDE staff and internal resources.
- **Acquire and configure a commercial off-the-shelf dashboard platform:** Procure a commercial dashboard platform from a vendor and configure it to support Colorado's accountability reporting needs, with CDE overseeing implementation and operations.

To compare these options, AIR assessed each against five weighted criteria: cost, organizational capacity, stakeholder responsiveness, implementation timeline, and technical fit. Each criterion was rated on a 5-point scale, with higher ratings indicating more favorable conditions. Stakeholder

Understanding the Dashboard Option Ratings

Ratings for each dashboard option were assigned using a predefined rubric that described performance at five levels, ranging from 1 (*very low*) to 5 (*very high*), for each of the following criteria. Ratings were informed by the professional judgment of AIR subject matter experts.

- **Stakeholder responsiveness:** The extent to which the option can address the stakeholder-informed recommendations presented in this report.
- **Cost:** The estimated resources required to implement and sustain the option over time.
- **Organizational capacity:** The staffing and expertise required from CDE to implement and maintain the option.
- **Technical fit:** How well the option fits Colorado's existing technology environment, data systems, and operational requirements.
- **Implementation timeline:** The estimated time required to design, develop, and deploy the option.

Because the criteria have different weights, the overall weighted score is not the simple sum of the five ratings. See Appendix B for additional information on the dashboard option evaluation framework, including the rating rubric, weighting approach, and cost-estimation methods.

responsiveness received the greatest weight because it most directly reflects the study's primary objective of strengthening Colorado's accountability reporting system in ways that address stakeholder priorities. The other criteria capture important implementation considerations, including cost, organizational capacity, implementation timeline, and technical fit. The weighted scores provide a structured basis for comparing the options and highlighting their principal strengths, limitations, and tradeoffs, while recognizing that other policy, operational, and procurement considerations also may influence decision making.

Exhibit 4 summarizes the dashboard implementation options and presents them in order of overall weighted score. AIR recommends Option B (Significantly enhance the current system) on the basis of the weighted evaluation criteria. This option offers the strongest overall balance between responsiveness to stakeholder priorities and practical implementation considerations. By building on CDE's existing reporting environment rather than creating a new dashboard platform, CDE can deliver substantial improvements while avoiding many of the costs, risks, and implementation challenges associated with a custom-built solution.

Exhibit 4. Enhancing the current system provides the strongest overall balance between stakeholder responsiveness and implementation considerations.

Rank	Overall weighted score	Implementation option	Stakeholder responsiveness 35%	Cost 20%	Organizational capacity 20%	Technical fit 15%	Timeline 10%
1	3.60	Option B. Enhance current system	4	3	3	4	4
2	3.35	Option C. Contractor-built custom dashboard	5	2	3	2	3
3 (tie)	3.25	Option D. CDE-built custom dashboard	5	3	2	2	2
3 (tie)	3.25	Option E. Commercial off-the-shelf platform	4	2	3	3	4
5	3.20	Option A. Maintain current system	1	4	4	5	5

Note. Scores reflect weighted ratings across the five evaluation criteria. Higher scores indicate more favorable conditions. Options D and E are tied for third on the basis of their overall weighted scores.

Options C (Contract for development of a custom dashboard) and D (Develop and maintain a custom dashboard in-house) offer the greatest flexibility to meet user needs and implement stakeholder-informed recommendations. Both options involve building a new platform independent of Colorado's current reporting environment; however, achieving that flexibility would require substantial integration, infrastructure, and data architecture work to connect the new platform with existing systems and data sources. These additional implementation requirements would likely extend timelines relative to options that build on the current reporting environment. The primary distinction between the two approaches lies in their respective implementation tradeoffs: Option C's reliance on an external contractor would require the largest financial investment, whereas Option D's reliance on internal development and long-term maintenance would place substantially greater demands on CDE's organizational capacity and specialized expertise.

Option E (Acquire and configure a commercial off-the-shelf dashboard platform) would address many priorities while reducing some internal development and maintenance responsibilities but would introduce ongoing licensing costs and dependence on a vendor-supported platform. Option A (Maintain the current system with minor modifications) represents the least disruptive approach. Because it largely preserves the current reporting environment, it performed favorably on cost, organizational capacity, technical fit, and implementation timeline. However, it also was the least responsive to stakeholder priorities, leaving many of the most frequently identified needs and recommendations unaddressed.

The option profiles that follow provide additional detail on each implementation approach, including an overview of the option and its ratings across the evaluation criteria, its responsiveness to stakeholder priorities, and key implementation considerations. Labor-hour estimates presented throughout this section include effort from both Information Management Services staff and business teams, including staff responsible for developing, maintaining, and supporting accountability reporting products. Together, the profiles illustrate the principal tradeoffs associated with cost, organizational capacity, technical fit, implementation timeline, and stakeholder responsiveness.

OPTIONAL ENHANCEMENT: AI-ASSISTED GUIDANCE AND SUPPORT

Why Stakeholders Expressed Interest

Stakeholders expressed interest in tools that could help users navigate accountability reporting, locate information, understand accountability measures, and answer common questions. Colorado could consider incorporating a conversational AI assistant into a future dashboard environment, consistent with Recommendations 3 (Provide embedded guidance to

support navigation and use), 6 (Clearly explain measures, methodologies, and data sources), and 8 (Build data literacy through contextual explanations and interpretation supports).

Potential Uses

A conversational AI assistant could help users:

- Locate reports, dashboards, and supporting resources
- Translate plain-language questions into relevant searches
- Explain accountability measures, calculations, and terminology
- Answer common questions about accountability reporting
- Connect users to relevant documentation and resources

Although stakeholders most often discussed user-facing applications, AI also may have utility in selected back-end data and reporting workflows. Potential applications could include assisting staff with documenting data definitions and lineage, identifying inconsistencies in business rules, generating code or test cases, flagging potential data quality issues to review, and supporting the preparation of documentation and website content. Although AI would not eliminate the need for data integration and governance, it could support these efforts by helping staff document dependencies among reporting systems, identify potential impacts of changes to reporting processes, and maintain consistency in definitions and business rules across data sources. When using AI for back-end activities, Colorado should keep in mind that, although these applications can reduce some manual effort and could improve consistency, they do require clearly defined validation procedures and human review.

Implementation Considerations

Colorado could consider implementing a retrieval-augmented generation chatbot. The assistant would rely on approved CDE content, including accountability methodologies, data definitions, user guides, and dashboard documentation. By grounding responses in authoritative sources, the system could provide consistent and transparent support while reducing the likelihood of inaccurate or outdated information.

Maintaining a centralized knowledge base, in addition to supporting users, could provide operational benefits by creating a single repository for documentation and reporting guidance used across accountability programs. Such a repository also could support efforts to coordinate information across reporting platforms and improve consistency in how accountability and school- and district-level data are described and presented. However, an AI assistant would not replace the underlying data infrastructure, governance, integration, validation, and reporting processes required to produce accountability information. Its effectiveness would depend heavily on the quality, completeness, and maintenance of the knowledge resources and the data systems that support it.

A conversational assistant should be viewed as a complement to, rather than a substitute for, effective dashboard design, embedded guidance, and supporting documentation.

Estimated Costs

Implementation Costs. Planning estimates range from $52,000 to $79,000, including approximately 630 to 950 personnel hours for content preparation, AI configuration, testing, and integration activities.

Incremental Annual Operating Costs. Ongoing costs would primarily be associated with maintaining source content, reviewing responses, monitoring performance, and supporting governance processes. Actual costs would depend on the platform selected, usage levels, and the scope of ongoing content maintenance and oversight.

Option A. Maintain the Current System With Minor Modifications

Stakeholder responsiveness	Cost	Organizational capacity	Technical fit	Timeline
■□□□□	■■■■□	■■■■□	■■■■■	■■■■■

This option maintains Colorado's current accountability reporting environment while implementing a limited number of modest improvements. Existing dashboards, reports, and reporting tools would remain in place, and enhancement efforts would focus on addressing technical issues, improving usability where feasible, and maintaining system reliability. No significant changes would be made to the reporting structure, underlying architecture, or overall user experience. As a result, recommendations related to creating a unified statewide reporting experience, implementing role-based pathways, comprehensive mobile and multilingual redesign, or substantially expanding reporting functionality would likely require one of the more substantial approaches represented by Options B through E.

This option received favorable ratings for cost, timeline, and technical fit. However, it received the lowest rating for stakeholder responsiveness because it would address only a limited subset of the recommendations developed through stakeholder engagement and informed by the 1241 Task Force. Most notably, it would not support creation of a unified statewide dashboard experience, a core recommendation of the 1241 Task Force and a central theme reflected throughout the stakeholder feedback collected for this study.

How This Option Responds to Stakeholder Priorities

Although this option would not support a major redesign of the reporting environment, several low-cost improvements could be implemented within existing tools and systems. The following examples are intended as incremental enhancements to content, navigation, and usability.

Improvements That Could Be Implemented

- **Clearer navigation between existing reporting tools:** CDE could improve landing-page language, navigation cues, and connections among existing reporting tools to help users find information more efficiently. Although SchoolView currently links to several accountability-related resources, including Performance Framework Reports, UIP resources, DISH, and the State Accountability Data Explorer, navigation pathways are not comprehensive or consistently structured. For example, Performance Snapshot is not linked from the SchoolView welcome page, and users encounter a mix of SchoolView-hosted pages and separate dashboard tools without clear explanations of how those resources relate to one another. Consequently, users may not realize they are viewing only part of Colorado's accountability reporting ecosystem. Relatively modest improvements could include clearer descriptions of available resources, expanded cross-linking among tools, and consistent breadcrumb navigation to help users understand where they are within the broader reporting system. A persistent tool-switcher would represent a relatively more substantial enhancement, which may exceed the scope of Option A, but it illustrates how users could move more directly among SchoolView, DISH, Performance Snapshot, the UIP Dashboard, and the State Accountability Data Explorer.
- **Plain-language definitions and explanations:** CDE could revise the explanatory content that already exists across current accountability tools to make it more accessible and easier for users to understand. SchoolView's About and Data Methodology sections, DISH's rollover definitions, and Performance Snapshot's informational tooltips already provide explanations of indicators, methodologies, and accountability processes. Revising and standardizing this existing content would likely require less effort than developing new explanatory features, as much of the underlying infrastructure for displaying definitions and supporting information is already in place. CDE also could extend these existing approaches to tools and measures in which explanatory content is currently limited or unavailable, such as the State Accountability Data Explorer and selected indicators within DISH.
- **User-support and communication resources:** This option could include audience-specific guides, quick-start resources, short instructional videos, FAQs, webinars, workshops, and other communication materials that help stakeholders understand and use existing accountability tools. Because these resources would exist largely outside the dashboard

- Architecture itself, they represent one of the most practical opportunities for improving user experience under a low-cost enhancement approach.

Stakeholder Recommendations Addressed

The improvements described earlier would allow CDE to make meaningful progress on stakeholder recommendations related to communication, transparency, plain-language explanations, user guidance, and training resources, while supporting modest improvements to navigation and information presentation within existing reporting tools. However, recommendations requiring substantial redesign of the reporting environment—including role-based pathways, dashboard consolidation, enhanced trend and comparison capabilities, comprehensive mobile and multilingual redesign, more robust context-rich and disaggregated reporting, and interpretation supports—would remain largely beyond the scope of this option. Overall, Option A would fully address only a small number of priorities and provide limited or partial progress on several others.

Stakeholder recommendation	Extent addressed
Unified statewide entry point	Limited
Role-based pathways	No
Dashboard consolidation	No
Overview-to-detail reporting structure	No
Embedded guidance and user support resources	Partial
Enhanced trend and comparison capabilities	No
Plain-language definitions and explanations	Yes
User guides and training resources	Yes
Multilingual redesign	Limited
Mobile optimization	Limited
Disaggregated and context-rich reporting	Limited

What Would It Take to Implement?

Timeline and Dependencies

The improvements described earlier could likely be implemented within 1 year, provided that CDE does not undertake major redesign activities, platform consolidation, substantial customization of existing reporting systems, or more complex enhancements such as a persistent tool-switcher.

Key dependencies include staff availability, prioritization of improvement activities, and agreement regarding which stakeholder recommendations can reasonably be addressed within existing technical constraints. Because this option relies on existing systems, implementation risk is relatively low.

Estimated Costs

Implementation Cost. Option A requires the smallest financial investment of the implementation options considered. Implementation costs are estimated at between $74,000 and $119,000, assuming a 1-year implementation schedule, representing approximately 890 to 1,330 CDE labor hours. Nearly all estimated costs reflect CDE staff time required to remediate identified issues and implement the minor improvements described earlier. Appendix A provides details on the estimation methodology and underlying assumptions for all dashboard options. Although this option provides a relatively inexpensive opportunity to address stakeholder concerns, the modest investment also constrains the scale of improvements that can be achieved.

Incremental Annual Operating Costs. Because Option A largely preserves the current reporting environment, ongoing costs are expected to remain relatively modest. Incremental annual operating costs are estimated at between $60,000 and $95,000 in 2026-equivalent dollars, primarily for project management, user support, content updates, and maintenance of the enhancements implemented through this option. These estimates represent the additional resources associated with the proposed enhancements rather than the total cost of operating Colorado's accountability reporting environment. Based on information provided by the Information Management Services unit within CDE and the assumptions described in Appendix A, the current annual cost of operating the reporting environment is estimated at roughly $1.35 million, including 16,640 labor hours. Accordingly, the additional effort associated with Option A would increase both annual expenditures and labor utilization by roughly 4% to 7%.

Key Risks and Mitigation Strategies

Because this option focuses on incremental improvements within CDE's existing reporting environment, its primary risks relate to stakeholder expectations, the limited ability to address broader reporting challenges, and the continued accumulation of modernization needs within the current architecture.

Risk	Potential impact	Mitigation strategy
Improvements are perceived as insufficient	Stakeholders continue to experience navigation, usability, and integration challenges	Prioritize high-visibility improvements (search, navigation, plain language, user support resources)
Stakeholders expect broader modernization	Dissatisfaction is likely when larger recommendations are not implemented	Clearly communicate project scope, intended outcomes, and limitations
Deferred modernization needs continue to accumulate	Future enhancement efforts become more difficult and expensive	Document architecture issues and use lessons learned to inform future modernization efforts
Multiple reporting tools remain fragmented	Users continue to move among systems to find information	Improve cross-linking, shared navigation, and guidance explaining each tool's purpose

Option B. Significantly Enhance the Current System

Stakeholder responsiveness	Cost	Organizational capacity	Technical fit	Timeline
				

Option B builds on Colorado's current accountability reporting infrastructure while introducing substantial improvements to navigation, accessibility, usability, and reporting functionality. Rather than replacing the current reporting environment, CDE would modernize and better integrate existing reporting tools to create a more coherent statewide reporting experience. Existing data pipelines, reporting assets, and technical infrastructure would be retained where practical, whereas the user-facing components would be significantly improved.

This option received the highest overall weighted score and provides the strongest overall balance across cost, organizational capacity, stakeholder responsiveness, implementation timeline, and technical fit. By leveraging Colorado's existing reporting infrastructure, CDE could address most recommendations identified through stakeholder engagement while avoiding many of the costs, delays, and implementation challenges associated with developing a completely new platform. Although constraints within the current architecture would remain, this option addresses substantially more needs than Option A while carrying less implementation risk than Options C and D.

How This Option Responds to Stakeholder Priorities

Stakeholder Recommendations Addressed

Stakeholder recommendation	Extent addressed
Unified statewide entry point	Yes
Role-based pathways	Yes
Dashboard consolidation	Partial
Overview-to-detail reporting structure	Yes
Embedded guidance and user support resources	Yes
Enhanced trend and comparison capabilities	Yes
Plain-language definitions and explanations	Yes
User guides and training resources	Yes
Multilingual redesign	Yes
Mobile optimization	Partial
Disaggregated and context-rich reporting	Partial (constraints within existing infrastructure)

Because this option modernizes and better connects existing reporting tools, it can address nearly all major recommendations identified through stakeholder engagement and informed by the 1241 Task Force without requiring a complete replacement of Colorado's current reporting environment. Rather than consolidating Colorado's reporting tools into a single underlying platform, this option would create a unified statewide reporting experience by layering a common entry point, role-based pathways, shared navigation, and consistent design across existing tools while retaining current reporting assets, data pipelines, and technical infrastructure where practical. This option also would expand trend and comparison capabilities, strengthen embedded guidance and interpretation supports, improve access through multilingual content and clearer explanations of accountability measures, and provide richer disaggregated and contextual information to help users interpret results in relation to local conditions and priorities.

The primary limitations relate to capabilities constrained by the existing technical environment, particularly mobile optimization, full consolidation of the underlying reporting tools into a single statewide platform, and certain advanced reporting features. Even with those constraints, this option addresses most stakeholder priorities and closely aligns with the vision of a coherent statewide accountability reporting system described by stakeholders and the 1241 Task Force. These limitations are primarily technical in nature and would not substantially affect the core improvements identified through stakeholder engagement. As a result, this option provides one of the strongest overall balances between stakeholder responsiveness, implementation feasibility, cost, and timeline among the options considered.

What Would It Take to Implement?

Timeline and Dependencies

Implementation would likely require 1 to 2 years, on the basis of AIR's technical assessment of the scope and complexity of the proposed enhancements, through a phased enhancement approach. Early phases could focus on low-complexity improvements such as navigation updates, plain-language revisions, and user-support resources. Later phases could address larger enhancements, including role-based pathways, accessibility improvements, visualization redesign, and mobile optimization to the extent supported by the existing technical environment. This phased approach would allow CDE to demonstrate progress while reducing implementation risk. Key dependencies include staff capacity, prioritization of enhancement activities, coordination across reporting systems, and decisions regarding which existing tools should be integrated, consolidated, or retained.

Estimated Costs

Implementation Cost. Implementing these enhancements is estimated to cost between $525,000 and $774,000, assuming a 1-year implementation timeline. Costs may increase modestly if development extends into a second year. The estimate includes approximately 6,240 to 9,360 labor hours for CDE staff, devoted to modernizing dashboard infrastructure, enhancing reporting functionalities, and improving the user experience.

Relative to other options considered, this pathway offers a strong balance of benefits and cost because it addresses most stakeholder priorities while avoiding the substantial development and procurement costs associated with custom platform development.

Incremental Annual Operating Costs. Following implementation, CDE would continue operating and maintaining the enhanced platform using its organizational structures and technical resources. Incremental annual operating costs are estimated at approximately $159,000 to $252,000 in 2026-equivalent dollars, including 2,000 to 2,970 labor hours. These costs would support maintenance, monitoring, user support, content updates, accessibility reviews, and continued platform enhancements. Although these ongoing costs reflect many of the same activities included under Option A, the enhanced dashboard's expanded functionality and greater technical complexity would require additional staff time for maintenance, governance, and ongoing improvement. Compared with our baseline estimate of spending and labor utilization described in Appendix A, this would increase annual expenditures and staffing by approximately 12% to 18%.

Key Risks and Mitigation Strategies

Although this option provides the strongest overall balance among the alternatives considered, successful implementation will require careful management of scope, priorities, and stakeholder expectations.

Risk	Potential impact	Mitigation strategy
Scope expands beyond available resources	Costs increase and timeline is delayed	Implement enhancements through phased releases tied to priority recommendations
Existing architectural limitations constrain features	Some stakeholder requests cannot be fully implemented	Conduct early technical assessment and prioritize high-value enhancements
Implementation is inconsistent across reporting tools	Users continue to experience fragmented navigation	Establish shared design standards and governance
Stakeholder expectations exceed project scope	Modernization effort is perceived as incomplete	Communicate phased implementation roadmap and expected outcomes

Option C. Contract for Development of a Custom Dashboard

Stakeholder responsiveness	Cost	Organizational capacity	Technical fit	Timeline
■■■■■	■■□□□	■■■□□	■■□□□	■■■□□

Under this option, CDE would contract with an external vendor to design, develop, implement, and initially support a new statewide accountability dashboard. Although the resulting system would be owned by CDE, the contractor would perform most design, development, integration, and implementation activities. CDE personnel would provide business requirements, data governance, stakeholder engagement, acceptance testing, contract oversight, and transition planning. This approach would reduce demands on CDE's software-development capacity during implementation while still requiring substantial agency involvement in governance, integration, validation, and preparation for long-term ownership.

A contractor-built dashboard would allow Colorado to redesign its accountability reporting environment from the ground up and incorporate new functionality, accessibility features, and user experiences. Because the solution would be developed specifically for Colorado, it could support the full set of stakeholder-informed recommendations, including dashboard consolidation, role-based pathways, enhanced reporting capabilities, and modern navigation and support features. However, achieving this flexibility would require substantial new integration with CDE's existing data systems and reporting infrastructure rather than building on the current environment, contributing to this option's lower technical-fit rating.

Option C represents the highest-cost implementation option, but it also provides substantial flexibility to redesign Colorado's accountability reporting environment around stakeholder priorities. The additional investment may be justified if a purpose-built solution is prioritized over lower cost and faster implementation. However, the higher cost, longer implementation timeline, procurement complexity, and transition requirements make this a substantially more resource-intensive option than the other implementation approaches considered. Successful execution also would depend on effective governance, stakeholder engagement, and transition planning to ensure that CDE can sustain the platform after deployment.

Stakeholder recommendation	Extent addressed
Unified statewide entry point	Yes
Role-based pathways	Yes
Dashboard consolidation	Yes
Overview-to-detail reporting structure	Yes
Embedded guidance and user support resources	Yes
Enhanced trend and comparison capabilities	Yes
Plain-language definitions and explanations	Yes
User guides and training resources	Yes
Multilingual redesign	Yes
Mobile optimization	Yes
Disaggregated and context-rich reporting	Yes

How This Option Responds to Stakeholder Priorities

A custom-built platform would give CDE substantial flexibility to implement the stakeholder-informed recommendations presented in this report. Because the dashboard would be designed specifically around Colorado's accountability framework, reporting requirements, and stakeholder priorities, it could support a unified statewide entry point, consolidation of existing reporting tools, role-based pathways, enhanced navigation and user supports, expanded trend and comparison capabilities, and more accessible reporting experiences. This assessment reflects the flexibility of a custom-built solution to support these features; however, the extent to which they are ultimately realized would depend on factors such as how well requirements are defined, the quality of implementation, and effective project management throughout development.

This approach also provides the strongest opportunity to incorporate disaggregated data, locally relevant indicators, contextual information, and other reporting features that help users understand performance in relation to community priorities and improvement efforts. Unlike the other implementation options, it is not constrained by existing reporting architectures or the capabilities of a commercial platform, allowing the dashboard to be tailored closely to Colorado's needs. However, that flexibility comes with important tradeoffs; because the platform would be built independently of Colorado's current reporting environment, it would require substantial new integrations, infrastructure, and data architecture work rather than the leveraging of existing systems.

What Would It Take to Implement?

Implementation Approach and Organizational Implications

Under this option, a contractor would lead requirements gathering, user-experience design, application architecture, dashboard development, testing, and deployment. CDE would remain responsible for defining and approving business requirements, approving major design decisions, establishing data and system governance expectations, overseeing the contract, and validating system functionality throughout the project.

Because CDE would ultimately own the dashboard and its supporting technical assets, successful implementation would require extensive documentation, knowledge transfer, staff training, and transition planning. These activities would help ensure that CDE can assume effective responsibility for supporting and maintaining the platform after the contractor's initial support period. Compared with the in-house development options, this approach places less demand on CDE's software-development capacity during implementation while still providing substantial control over the final product.

Experience from another state suggests that contractor-developed dashboards can provide the flexibility needed to create features tailored to a state's accountability system and reporting priorities. However, interview participants emphasized the importance of planning for long-term maintenance from the outset. One participant noted that states should avoid creating systems that become difficult to support after the original developers are no longer involved. Building agency capacity, documenting system requirements, and establishing clear knowledge-transfer expectations can help reduce this risk.

Timeline and Dependencies

Implementation would likely require 2 to 3 years, including procurement. This estimate is generally consistent with the experience of other states that have implemented custom accountability dashboards through contracted development. An interview participant from another state emphasized that implementation extends beyond initial launch: Although some states developed an initial version relatively quickly, they continued investing significant effort in refining reports, adding functionality, responding to policy changes, and expanding platform capabilities in subsequent years.

Major dependencies include procurement timelines, contractor selection, stakeholder engagement activities, data integration planning, and preparation for long-term ownership by CDE.

Estimated Costs

Implementation Cost. Option C requires the largest implementation investment of the options considered because it involves designing and developing a new statewide dashboard from the ground up. Total implementation costs are estimated at between $4.32 million and $6.51 million, assuming a 2-year implementation period, driven primarily by contractor costs projected to range between $4.32 million and $6.51 million. Although the contractor would perform most of the development work, CDE would still need to dedicate staff time to project governance, contract oversight, stakeholder engagement, architectural planning, integration, testing, and transition activities, requiring an estimated 3,350 to 5,020 CDE labor hours.

Incremental Annual Operating Costs. Because CDE would own the resulting platform, it would assume responsibility for ongoing support, maintenance, and future enhancements. Incremental annual operating costs are estimated at between $202,000 and $320,000 in 2026-equivalent dollars, representing roughly 15% to 24% more than estimated current ongoing costs (see Appendix A). These costs primarily reflect labor associated with platform maintenance and updates, training, system monitoring, and hosting, totaling between 2,120 and 3,180 hours (a roughly 13% to 19% increase from assumed current operating costs). These estimates represent incremental operating costs associated with Option C rather than the total cost of operating Colorado's accountability reporting environment.

Key Risks and Mitigation Strategies

Although this option provides substantial flexibility to address stakeholder priorities, it also introduces risks associated with requirements definition, cost growth, procurement, vendor management, knowledge transfer, maintainability, and long-term ownership of a custom platform. State interview participants emphasized that the work does not end when a custom dashboard is launched. States may continue refining reports, adding functionality, and responding to changing reporting requirements over time. As a result, long-term maintenance, enhancement planning, and successful transition from contractor support to agency ownership should be considered alongside initial development activities.

Risk	Potential impact	Mitigation strategy
Contractor solution does not fully meet expectations	Dashboard functionality falls short of stakeholder needs	Establish detailed requirements, user testing, and staged review processes
Costs grow during implementation	Budget pressure and delayed delivery are likely	Define scope early and maintain strong project governance
Knowledge remains with contractor	CDE has difficulty maintaining, enhancing, or troubleshooting the platform after deployment	Require comprehensive documentation, structured knowledge transfer, staff training, and transition planning throughout the project lifecycle
Custom platform becomes difficult to maintain	Long-term support burden increases	Establish maintainability standards and documentation requirements during development
Procurement delays occur	Implementation timeline is extended	Initiate procurement planning early and define requirements before solicitation

Option D. Develop and Maintain a Custom Dashboard In-House

Stakeholder responsiveness	Cost	Organizational capacity	Technical fit	Timeline
■■■■■	■■■□□	■■□□□	■■□□□	■■□□□

Under this option, CDE would develop, implement, and maintain a new custom statewide accountability dashboard using internal staff and agency-directed resources rather than relying on an external contractor to lead development. This approach would allow CDE to apply its existing knowledge of the state's accountability framework, reporting processes, data structures, and stakeholder priorities throughout the design and implementation. It also would allow CDE to maintain direct control over design decisions, enhancement priorities, and the platform's long-term evolution while avoiding the large contractor expenditures associated with Option C. Interview participants from other states noted that internally managed systems can make it easier to retain institutional knowledge because dashboard requirements, calculations, and business rules remain with agency staff rather than external vendors. However, successful implementation would require sustained access to specialized expertise in application development, user experience design, accessibility, data integration, testing, and ongoing platform support.

This option received a high rating for stakeholder responsiveness because it would allow CDE to develop a purpose-built solution capable of addressing all stakeholder-informed recommendations. However, it received lower ratings for organizational capacity, implementation timeline, and technical fit. Interviews with CDE staff, combined with AIR's

assessment of the technical scope required for this option, suggest that meeting the staffing requirements would likely require substantial new hiring or contracted support. In addition, like Option C, developing a new platform would require substantial new integrations and infrastructure. These staffing, implementation, and technical demands represent the primary tradeoffs associated with this option. Option D may be most appropriate if CDE prioritizes long-term ownership and internal control and is prepared to accept a slower implementation timeline and substantial organizational-capacity demands.

How This Option Responds to Stakeholder Priorities

Like Option C, Option D could support all stakeholder recommendations if implemented successfully. Because the dashboard would be developed specifically around Colorado's accountability framework, reporting requirements, and stakeholder priorities, it could support a unified statewide entry point, consolidation of existing reporting tools, role-based pathways, expanded trend and comparison capabilities, enhanced user supports, and more accessible reporting experiences. The platform also could incorporate disaggregated data, locally relevant indicators, contextual information, and other reporting features that help users understand performance in relation to community priorities and improvement efforts. These ratings reflect the potential capabilities of an internally developed solution rather than guaranteed implementation outcomes. Achieving those benefits would depend on CDE's ability to recruit, develop, and retain the specialized staff needed to design, build, and maintain the platform over time, as well as its capacity to develop the new integrations and infrastructure required to support a new reporting environment.

Stakeholder recommendation	Extent addressed
Unified statewide entry point	Yes
Role-based pathways	Yes
Dashboard consolidation	Yes
Overview-to-detail reporting structure	Yes
Embedded guidance and user support resources	Yes
Enhanced trend and comparison capabilities	Yes
Plain-language definitions and explanations	Yes
User guides and training resources	Yes
Multilingual redesign	Yes
Mobile optimization	Yes
Disaggregated and context-rich reporting	Yes

What Would It Take to Implement?

Build Approach and Staffing Implications

This option requires CDE to provide substantial internal capacity across multiple technical and operational disciplines, including project management, product ownership, business analysis, user experience design, application development, data engineering, quality assurance, accessibility review, and ongoing system support. In addition to developing the dashboard, CDE staff would be responsible for managing integrations, conducting testing, maintaining technical documentation, implementing enhancements, and supporting the platform over time. Interview participants from other states emphasized the particular importance of personnel who understand both accountability policy and technical development needs and can translate requirements between program and technology teams.

Because CDE would retain responsibility for both development and long-term operation of the platform, organizational capacity is a central consideration in the feasibility of this option. As noted previously, supporting this approach would likely require expertise that extends beyond CDE's current staffing model, whether through new hires, contracted support, or a combination of both.

Timeline and Dependencies

Implementation would likely require 3 to 5 years, depending on available staffing, competing priorities, and the pace of development. Progress would depend largely on CDE's ability to dedicate internal resources to the project on a sustained basis, unlike contractor-supported approaches.

Major dependencies include staffing decisions, development capacity, technical architecture choices, data integration planning, and establishment of governance structures to support long-term maintenance and enhancement of the platform.

Estimated Costs

Implementation Cost. Option D requires a substantial investment because CDE personnel would be responsible for designing, developing, and deploying a new statewide dashboard. Implementation costs are estimated at $1.01 million to $1.61 million over a 3-year development period, requiring approximately 12,040 to 18,050 labor hours for CDE staff. Major activities include user-experience design, platform development, integration, testing, documentation, and deployment. Although implementation costs are lower than those associated with Option C, most costs would be borne through internal staffing commitments rather than contractor expenditures.

Incremental Annual Operating Costs. Because Options C and D assume custom-developed dashboards with similar functionality, technical complexity, and support requirements, their incremental annual operating costs are expected to be comparable—approximately $202,000 to $320,000 in 2026-equivalent dollars, or about 15% to 24% above current estimates. Ongoing activities, including maintenance, user support, enhancements, monitoring, hosting, and operational management, would likely require roughly 2,120 to 3,180 hours, an increase of 13% to 19% from current estimates. These estimates represent incremental costs associated with Option D rather than the total cost of operating Colorado's accountability reporting environment.

Key Risks and Mitigation Strategies

Because CDE would assume responsibility for both development and long-term operations, the primary risks associated with this option involve organizational capacity and technical execution. Successful implementation would depend on sustained staffing and organizational commitment, the ability to balance dashboard development and maintenance with competing priorities, and CDE's capacity to design and maintain the integrations and infrastructure required for a new platform.

Risk	Potential impact	Mitigation strategy
Insufficient staff capacity	Delays or incomplete implementation	Establish a dedicated cross-functional dashboard team
Competing organizational priorities	Inconsistent attention to dashboard work	Create executive sponsorship and protected staffing allocations
Staff turnover	Loss of institutional knowledge and technical expertise	Develop documentation, cross-training, and succession plans
Skills gaps in specialized areas	Reduced quality or slower delivery	Use targeted hiring, professional development, or limited contractor support
Extended implementation timeline	Delayed realization of dashboard benefits	Phase development and prioritize high-value capabilities first

Option E. Acquire and Configure a Commercial Off-the-Shelf Dashboard Platform

Stakeholder responsiveness	Cost	Organizational capacity	Technical fit	Timeline
				

Under Option E, CDE would procure and implement a commercially available education reporting platform that includes built-in reporting, visualization, accessibility, and content-management capabilities. Rather than building a dashboard from the ground up, CDE would apply those

capabilities to support Colorado's accountability reporting needs, load accountability data, establish governance processes, and deploy vendor-supported functionality.

Many commercial dashboard platforms already include features aligned with Colorado's reporting needs, such as search functionality, responsive design, accessibility features, interactive visualizations, and content management tools. Because these capabilities are built into the platform, implementation would focus primarily on configuration and deployment rather than building custom software.

This option could provide a relatively rapid path to modernization while reducing many of the software-development risks associated with a custom-built platform. It also has the potential to address many stakeholder priorities, although responsiveness would depend on how closely the selected platform's capabilities align with Colorado's specific needs. Features requiring unique workflows, highly customized reporting structures, or Colorado-specific user experiences may be more difficult or costly to implement. The central tradeoff is therefore reduced development burden in exchange for ongoing licensing costs, vendor dependence, and less control over platform functionality than a fully custom solution would provide.

How This Option Responds to Stakeholder Priorities

Option E leverages a commercially available platform that can be configured to support Colorado's reporting needs, giving it the potential to address many stakeholder priorities. Under this approach, Colorado could create a unified statewide entry point, present accountability information through a more cohesive reporting experience, expand trend and comparison capabilities, improve access through multilingual content, and consolidate reporting data and functionality within a single platform environment.

However, the extent to which some recommendations can be fully implemented depends largely on the capabilities of the selected platform and the degree of flexibility it provides. In particular, role-based pathways, embedded guidance and plain-

Stakeholder recommendation	Extent addressed
Unified statewide entry point	Yes
Role-based pathways	Partial
Dashboard consolidation	Yes
Overview-to-detail reporting structure	Yes
Embedded guidance and user support resources	Partial
Enhanced trend and comparison capabilities	Yes
Plain-language definitions and explanations	Partial
User guides and training resources	Yes
Multilingual redesign	Yes
Mobile optimization	Yes, but dependent on platform
Disaggregated and context-rich reporting	Partial (highly dependent on customization limitations)

language supports, mobile optimization, and more advanced reporting features may be constrained by available platform features. Similarly, the ability to provide highly customized disaggregated, contextual, and locally relevant reporting will depend on how extensively the platform can be configured and extended. Consequently, this option has the potential to address most stakeholder priorities, but its success would depend heavily on selecting a platform whose capabilities align closely with Colorado's reporting requirements and long-term goals.

What Would It Take to Implement?

Implementation Approach and Organizational Implications

Configuration activities would include importing and integrating CDE data, designing user pathways, configuring page layouts and navigation, implementing accessibility features, and incorporating plain-language explanations and other user-support resources. Although the selected platform would provide the core functionality, CDE would still need to make significant design, configuration, and governance decisions to ensure that the dashboard reflects Colorado's accountability framework and stakeholder priorities.

Compared with custom-development approaches, this option reduces the amount of software development required. However, successful implementation still depends on selecting a platform that can support Colorado's reporting needs and configuring it effectively to meet stakeholder expectations. Interview participants from other states cautioned that commercially available platforms do not always eliminate the need for customization. In some cases, states found that accountability reporting requirements necessitated substantial modifications to vendor-provided tools.

Timeline and Dependencies

Implementation would likely require 1 to 2 years, depending on procurement timelines, platform selection, integration requirements, and the degree of customization needed. Because core functionality already exists within the selected platform, implementation activities would focus primarily on configuration, integration, testing, content development, and stakeholder validation rather than software development.

Major dependencies include platform selection, contract negotiation, integration with existing data systems, and confirmation that the selected solution can support Colorado's reporting requirements.

Estimated Costs

Implementation Cost. Commercial off-the-shelf dashboard costs vary substantially across vendors because of differences in pricing structures, platform capabilities, licensing models, negotiated terms, and partnership agreements. As a result, it is not possible to develop a reliable estimate of total implementation costs for this option. Regardless of the vendor selected, however, successful implementation would require significant CDE effort to adapt existing data systems, processes, and infrastructure to the chosen platform. CDE's implementation activities are estimated to cost between $287,000 and $456,000, representing approximately 3,080 to 4,630 labor hours for vendor evaluation and procurement, data integration, hosting, testing, and deployment support. Vendor licensing and implementation fees would be additional.

Although vendor variation limits the ability to estimate total costs, several key factors are likely to influence pricing. These factors include the vendor's licensing model, the scale of development, expected user volume, data storage requirements, selected platform modules, and any negotiated enterprise agreements. Costs also may vary on the basis of the degree of configuration or customization permitted within the platform, including reporting capabilities, custom visualizations, branding requirements, advanced analytics tools, or other functionality beyond the vendor's standard offering. Although total vendor costs cannot be estimated reliably, implementation of a statewide commercial platform would likely require investment substantially above current spending levels through a combination of licensing fees, implementation services, and ongoing vendor support.

Incremental Annual Operating Costs. Because commercial dashboard platforms are typically licensed through annual agreements, ongoing operational costs depend heavily on the selected vendor. However, much of the underlying infrastructure and platform maintenance would be managed by the vendor, limiting CDE's direct operational responsibilities. Excluding vendor licensing, subscription, and support fees, incremental annual operating costs are estimated at about $64,000 to $90,000 in 2026-equivalent dollars. These estimates include approximately 570 to 714 hours of CDE labor for vendor oversight, data integration, monitoring, training refreshers, and related operational support activities. They represent the incremental costs associated with Option E rather than the total cost of operating Colorado's accountability reporting environment.

Interview participants from other states emphasized that the total cost of a commercial platform may extend well beyond initial procurement and implementation. One participant described moving away from a vendor-supported solution after maintenance and licensing costs increased substantially over time, highlighting the importance of evaluating long-term subscription, support, upgrade, and enhancement costs during procurement.

Key Risks and Mitigation Strategies

This option's primary risks relate to platform fit, vendor dependence, and limitations on customization. Successful implementation depends on selecting a platform that aligns with Colorado's reporting requirements and can support future reporting needs. Interview participants from other states noted that commercial platforms also may require more customization than initially anticipated.

Risk	Potential impact	Mitigation strategy
Platform does not fully support Colorado's reporting requirements	Key stakeholder needs require costly workarounds or customization	Conduct detailed requirements analysis and platform evaluation before procurement
Vendor roadmap changes over time	Future functionality may not align with CDE needs	Evaluate vendor stability and contractual protections
Vendor costs increase over time	Long-term operating costs exceed initial expectations	Evaluate licensing, support, upgrade, and maintenance costs as part of procurement and contract negotiations
Platform customization is limited	Flexibility is reduced compared with custom solutions	Prioritize requirements and evaluate customization capabilities during selection
Data integration challenges occur	Delays in implementation are likely	Conduct technical compatibility reviews during procurement

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Appendix A. Summary of CDE Accountability Reporting Tools

Colorado's accountability reporting environment includes a collection of dashboards, reports, and data tools that have been developed over time to meet different reporting requirements and stakeholder needs. During this study, the American Institutes for Research® (AIR®) reviewed the state's primary accountability reporting tools to better understand their purposes, functionality, and intended audiences.

Exhibit A–1 summarizes each tool's purpose, key features, and intended users on the basis of AIR's review of tool functionality and available documentation and on conversations with Colorado Department of Education (CDE) staff. The information reflects the reporting environment at the time of the review and provides important context for the recommendations presented in this report.

Exhibit A–1. Overview of CDE accountability reporting tools

Reporting tool	Purpose	Intended users	Key features
SchoolView	Serves as a public-facing entry point to Colorado's accountability information, providing searchable school and district profiles, summarized key performance data, and links to other accountability resources	Families, community members, and other users seeking accessible, high-level information about specific schools and districts	• Searchable school and district profiles with accessible summary data (enrollment, ratings, test scores, staff data) • School-authored "message from the school" field providing local context (use varies across profiles) • Embedded explanatory and methodology information on metric pages • Automated translation of a broad range of page content via Google Translate • Links to most other accountability resources, although coverage is not comprehensive
District and School Dashboard	Provides comprehensive, disaggregated district- and school-level data across multiple domains to support data exploration and improvement planning	Districts and schools engaged in Unified Improvement Planning, along with other users comfortable working with detailed, disaggregated data	• Data organized across multiple domains, including demographics, achievement, growth, and readiness • Extensive filtering and disaggregation by student group and year • Built-in translation options for several languages, with some data elements and explanatory text available only in English • Embedded definitions and explanatory text for select terms and measures

Reporting tool	Purpose	Intended users	Key features
Performance Snapshot Dashboard	Provides a concise summary of official accountability ratings and framework results for schools and districts	Users seeking a high-level summary of accountability results	• Concise summary of performance ratings and Unified Improvement Plan (UIP)-related information • Extensive embedded, point-of-use guidance, including hover-based explanations of ratings, indicators, and UIP processes • Links to related accountability reports and resources
Unified Improvement Plan Dashboard	Visualizes trends and patterns in UIP content, including priorities, root causes, and improvement strategies, to support improvement planning and monitoring	Improvement planners and other users working with UIP-related data across varying levels of data literacy	• Trend visualizations for UIP priorities, root causes, and improvement strategies • Filterable charts and summaries
State Accountability Data Explorer	Provides detailed accountability data and visualization tools to support in-depth analysis by researchers and analysts	Advanced users, including analysts and researchers seeking granular data, visualization tools, and download capabilities	• Detailed achievement, growth, participation, and accountability data • Advanced visualization and download functionality • Limited embedded explanatory content relative to other accountability tools

Appendix B. Methods

This study was conducted to inform decisions about the future of Colorado's accountability reporting system by examining how accountability information is accessed, used, and interpreted by key stakeholder groups. Commissioned by the Colorado Department of Education (CDE), the study explored stakeholder experiences with existing accountability reporting tools; identified challenges and opportunities related to usability, accessibility, transparency, and coherence; and evaluated potential approaches for strengthening the state's reporting environment.

A mixed-methods approach was used to develop a comprehensive understanding of stakeholder needs, reporting requirements, and implementation considerations associated with Colorado's accountability reporting system. The study included stakeholder engagement sessions with families, educators, district and school leaders, policymakers, and other stakeholders; a review of accountability reporting practices in other states through publicly available materials and interviews with staff from four SEAs; an analysis of Colorado's existing accountability reporting tools; and a cost and feasibility assessment of potential dashboard implementation options. Together, these activities informed the findings, recommendations, and implementation options presented in this report.

Stakeholder Engagement

The American Institutes for Research® (AIR®) conducted a series of 60- to 75-minute semistructured engagement sessions to gather perspectives on Colorado's accountability reporting tools and identify priorities for future improvements. Sessions were conducted between December 2025 and April 2026 and included participants representing state and local education agencies, educators, families, researchers, policymakers, and advisory groups. AIR engaged 108 stakeholders across the six sessions. The engagement process was designed to capture perspectives from users with different roles, responsibilities, and levels of familiarity with accountability data. Exhibit B–1 summarizes the stakeholder groups that participated in the study.

Exhibit B–1. Stakeholder groups and session details

Stakeholder group	Who	Format	Date	Number of participants
Technical Advisory Panel	District accountability and data leads, researchers	Virtual	12/16/2025	15
State Advisory Council for Parent Involvement in Education	Parents, education associations, nonprofit organizations, state agencies	Hybrid	2/10/2026	23
Accountability Work Group	District leaders, educators, policy experts	Virtual	3/20/2026	25
Colorado Department of Education staff	Information Management Services, Web Services	Virtual	3/23/2026	10
1241 Task Force	Educators, parents, students, advocates appointed by state leaders	Virtual	4/7/2026	11
Rural Council	Superintendent representatives from each of the eight regions; two rural school board members; two rural principals; one rural teacher; and representatives from CASE, BOCES Association, Rural Alliance, and CASB	Virtual	4/15/2026	24

Stakeholder sessions were facilitated by AIR staff using semistructured discussion protocols aligned with the study's research questions. Discussions explored how participants currently use accountability information, challenges they experience when accessing or interpreting data, and priorities for improving Colorado's accountability reporting environment.

Sessions incorporated discussion questions and interactive activities designed to elicit feedback on dashboard usability, accessibility, transparency, and reporting functionality. Materials were distributed in advance when appropriate to support participant preparation and discussion.

Approach to Analyzing Stakeholder Engagement Session Data

AIR analyzed stakeholder feedback using a structured qualitative synthesis process. Following each session, facilitators documented key themes, representative quotations, observations, and analytic notes using a standardized data-capture template developed for the study. Information was organized around three analytical domains derived from the study's research framework: Usability and User-Centeredness; Transparency, Accuracy, and Clarity; and Equity and Accessibility. Within each domain, AIR documented perspectives on dashboard design and accountability data use, along with supporting quotations and facilitator interpretations. Exhibit B–2 illustrates the structure used to organize the qualitative evidence.

Exhibit B–2. Structure used for session-level qualitative data capture within each analytical domain

Component	Description
Session information	Stakeholder group, date, format, facilitators, and participant count
Dashboard design	Feedback related to navigation, organization, reporting features, and user experience
Accountability data use	Feedback related to understanding, interpreting, and using accountability information
Representative quotations	De-identified quotations illustrating key themes
Analytic notes	Facilitator observations, tensions, interpretations, and synthesis notes

Research on Other States and Existing Tools

AIR conducted a review of accountability reporting systems in other states and examined Colorado's accountability reporting environment to identify implementation approaches, reporting practices, governance structures, resource requirements, and lessons learned relevant to Colorado's decision making. This work included a review of publicly available materials and interviews with SEA staff.

Cross-State Review

AIR selected six states to represent a range of accountability reporting approaches, technical architectures, governance structures, and implementation strategies. Selection emphasized states that could provide insight into dashboard functionality, implementation experiences, staffing models, governance approaches, technical infrastructure, and ongoing maintenance requirements. The review was intended to inform Colorado's implementation decisions rather than produce findings representative of all states.

AIR completed interviews and related information-gathering activities with representatives from California, Indiana, Louisiana, and New York. AIR also invited representatives from Illinois and Rhode Island to participate but was unable to secure interviews with those state representatives. Publicly available materials from all six selected states were reviewed where available.

Data Collection Procedures

AIR conducted a two-stage data collection process consisting of a review of publicly available materials followed by semistructured interviews with SEA staff.

First, AIR reviewed publicly available accountability dashboards, school report cards, technical documentation, and related resources to understand how states present accountability information and to identify topics for further exploration during interviews.

Second, AIR conducted semistructured interviews with SEA staff responsible for developing, maintaining, or overseeing accountability reporting systems. Interviews explored governance and organizational structures, accountability reporting goals, target audiences, dashboard functionality, implementation history, staffing and resource requirements, technical architecture, maintenance activities, implementation challenges, and lessons learned. To supplement interviews, AIR requested supporting documentation related to dashboard architecture, reporting approaches, implementation history, staffing, costs, procurement processes, governance structures, data sources, and technical infrastructure.

Approach to Analyzing Cross-State Interview and Document Data

AIR analyzed interview and document-review data using a structured synthesis process. Notes, transcripts, supporting documentation, and publicly available materials were organized using a standardized data-capture framework. Information was grouped into five analytical domains:

- Governance and organizational structure
- System architecture and design approach
- Development history and implementation
- Startup costs and resource requirements
- Ongoing maintenance and operating costs

Within each domain, AIR captured information on implementation approaches, organizational responsibilities, technical infrastructure, staffing models, resource requirements, challenges encountered, and lessons learned. The analysis focused on identifying patterns, tradeoffs, and implementation considerations most relevant to Colorado's accountability reporting needs.

Findings from the cross-state review were integrated with stakeholder engagement findings and cost analyses to inform the recommendations and implementation options presented in this report.

Analysis of Dashboard Options

To support decision making regarding the future of Colorado's accountability reporting system, AIR developed and evaluated five dashboard implementation options representing a range of possible implementation approaches:

- **Option A. Maintain the current system with minor modifications:** Retain the existing reporting environment and implement a limited set of targeted improvements using existing CDE resources and vendor-supported tools.

- **Option B. Significantly enhance the current system:** Expand and better integrate existing reporting tools through more substantial improvements led by CDE and implemented within the current technology environment.
- **Option C. Contract for development of a custom dashboard:** Engage an external vendor to design, build, and initially support a new statewide accountability dashboard tailored to Colorado's needs, with CDE assuming responsibility for long-term maintenance after transition.
- **Option D. Develop and maintain a custom dashboard in-house:** Build, operate, and maintain a new statewide accountability dashboard using CDE staff and internal resources.
- **Option E. Acquire and configure a commercial off-the-shelf dashboard platform:** Procure a commercial dashboard platform from a vendor and configure it to support Colorado's accountability reporting needs, with CDE overseeing implementation and operations.

AIR evaluated each option using five criteria:

- **Stakeholder responsiveness:** The extent to which the option can address the stakeholder-informed recommendations presented in this report.
- **Cost:** The estimated resources required to implement and sustain the option over time.
- **Organizational capacity:** The staffing and expertise required from CDE to implement and maintain the option.
- **Technical fit:** How well the option fits Colorado's existing technology environment, data systems, and operational requirements.
- **Implementation timeline:** The estimated time required to design, develop, and deploy the option.

Each criterion was assessed by AIR subject matter experts with experience in accountability systems and education data reporting using a standardized rubric with performance levels ranging from 1 (*very low*) to 5 (*very high*). Researchers considered stakeholder feedback, information gathered from other SEAs, analysis of Colorado's existing reporting environment, and the cost analyses described later in this appendix. Exhibit B–3 presents the rubric used to evaluate dashboard options.

After ratings were assigned, AIR applied criterion weights developed in consultation with CDE to reflect the relative importance of each evaluation criterion. Responsiveness to stakeholder needs received the greatest weight (35%) because it directly measures the extent to which an option advances the ultimate goal of strengthening Colorado's accountability reporting system. Cost (20%), organizational capacity (20%), technical fit (15%), and implementation timeline (10%) were included to ensure that practical implementation considerations also were reflected in the analysis.

Weighted scores were calculated by multiplying each criterion rating by its assigned weight and summing the resulting values. Because the criteria were weighted differently, overall scores do not correspond to the simple sum of criterion ratings. The resulting scores provided a structured basis for comparing implementation options and understanding key tradeoffs, while recognizing that policy priorities, funding availability, procurement requirements, and organizational considerations also may influence future implementation decisions.

Exhibit B–3. Dashboard option evaluation rubric

Construct	1 (*very low*)	2 (*low*)	3 (*moderate*)	4 (*high*)	5 (*very high*)
Responsiveness to stakeholder needs To what extent does this option address the needs, priorities, and concerns identified by stakeholders?	Addresses few or no stakeholder needs. Most high-priority needs would remain unmet.	Addresses some stakeholder needs but leaves many high-priority needs insufficiently addressed. Important gaps remain.	Addresses several stakeholder needs and would provide meaningful improvements, but some important needs would be only partially addressed or remain unmet.	Addresses most stakeholder needs. Limited gaps remain.	Addresses all or nearly all high-priority stakeholder needs. The option would substantially improve stakeholders' ability to access, understand, and use accountability information.
Cost What level of financial investment would be required to implement, operate, and maintain this option over time?	Requires substantial financial investment that is unlikely to be sustainable given known funding levels. Costs are highly uncertain or difficult to estimate.	Requires significant new investment beyond current spending levels. Costs appear feasible only with substantial new funding or difficult budget tradeoffs.	Requires moderate additional investment. Costs appear achievable with planning and prioritization but would require meaningful financial commitments.	Requires limited additional investment beyond current spending levels. Costs appear predictable, manageable, and sustainable.	Requires minimal additional investment and has a clear, sustainable long-term funding model. Costs are well understood and predictable.
Organizational capacity Does CDE currently have, or can CDE reasonably obtain, the staffing, expertise, and operational capacity needed to successfully implement and sustain this option?	Successful implementation would require capabilities, expertise, staffing, or organizational resources that are unlikely to be available. Major capacity gaps exist.	Significant new staffing, expertise, contractor support, or organizational changes would be required. Capacity challenges are likely to create substantial implementation difficulties.	Some additional staffing, expertise, or support would be required. Capacity needs appear achievable but would require deliberate planning and investment.	Most required staffing, expertise, governance structures, and operational supports already exist or can be reasonably obtained. Capacity needs appear manageable.	Required staffing, expertise, governance structures, and operational supports already exist. Capacity needs are minimal.

Construct	1 (*very low*)	2 (*low*)	3 (*moderate*)	4 (*high*)	5 (*very high*)
Technical fit How well does this option fit with CDE's existing and anticipated technical infrastructure?	Requires substantial modifications to existing systems, infrastructure, or data architecture. Multiple new integrations or technical components would be necessary.	Requires meaningful modifications to existing systems and several new integrations or technical components.	Requires some modifications or new integrations but is generally compatible with the existing technical environment.	Requires limited modifications or new integrations. Most necessary technologies, platforms, and infrastructure are already in place.	Requires minimal modifications or new integrations. The option can largely leverage existing technologies, platforms, and infrastructure while readily supporting future enhancements.
Implementation timeline What is the expected time frame for implementing this option and making it available for use?	Implementation would likely require more than 5 years before the solution is available for use.	Implementation would likely require 3–5 years before the solution is available for use.	Implementation would likely require 2–3 years before the solution is available for use.	Implementation would likely require 1–2 years before the solution is available for use.	Implementation would likely require less than 1 year before the solution is available for use.

Cost Estimations

Cost estimates presented in this report are intended to support comparison among alternative implementation approaches rather than provide procurement-ready budgets. For each dashboard option, costs were divided into personnel and non-personnel categories and estimated across two broad periods: initial implementation and ongoing operations. Initial implementation costs include planning, design, development, testing, deployment, training, and other activities required to establish the dashboard. Ongoing costs reflect the resources needed to operate, maintain, support, monitor, and periodically enhance the system after implementation.

Personnel estimates were developed by identifying the activities required under each scenario, assigning those activities to relevant CDE staff roles, and estimating the labor hours needed to complete the work. CDE provided monthly compensation information for the following job categories: Administrator IV, Budget & Policy Analyst IV, Data Management IV, Database Services IV, IT Business Analyst IV, IT Developer IV, IT Infrastructure IV, IT Support Services IV, Project Manager II, Training Specialist IV, and Webmaster IV. Because information on employment tenure and specific staff assignments was not available, AIR used the midpoint salary provided for each position. CDE also informed AIR that benefit rates typically range from 35% to 40% with additional allowances for rent and cell phone use. Personnel hours for each task were estimated using contextual information from state interviews and analogous projects.

Non-personnel estimates reflect technology products and services that would need to be purchased or contracted, including hosting and infrastructure, accessibility reviews, translation services, software licensing, security monitoring, search capabilities, backup and recovery services, contractor support, and commercial dashboard subscriptions where applicable. To develop accurate cost estimates for non-personnel resources, AIR conducted a comprehensive review of publicly available pricing information for relevant products, services, and vendors. These data were supplemented with information obtained through state interviews, peer-state documentation, and AIR's experience supporting similar education reporting and technology initiatives, resulting in estimates that reflect an accurate range of costs that CDE could reasonably expect to incur.

Sensitivity Analyses

Because dashboard implementation costs depend on assumptions about scope, staffing, technology choices, and operational requirements, the estimates presented in this report should be interpreted as planning-level projections rather than precise cost projections. To assess the potential effects of uncertainty in cost drivers, AIR conducted a sensitivity analysis to generate the upper- and lower-bound cost estimates presented in this report. The analysis varied in three

assumptions that are commonly subject to uncertainty during project planning. First, personnel benefit rates were adjusted to align with the range provided by CDE, using 35% for the lower-bound scenario and 40% for the upper-bound scenario. Both scenarios included fixed allocations for rent ($3,500) and cell phones ($750). Second, labor-hour estimates were adjusted by ±20% to reflect plausible variation in staff experience, onboarding requirements, productivity, and project complexity. Third, estimated non-personnel costs were adjusted by ±20% to reflect potential variation in technology, licensing, contractor, hosting, and other resource costs. The ±20% adjustment was selected as a planning assumption intended to represent a moderate but realistic range of variation in project effort and resource costs, informed by AIR's experience supporting comparable education technology and reporting initiatives.

Applying these adjustments consistently across personnel and non-personnel cost components provides a reasonable approximation of how costs may vary under different implementation conditions while preserving comparability across options. The resulting ranges should not be interpreted as statistical confidence intervals; rather, they represent planning ranges intended to illustrate the effects of moderate changes in staffing requirements and resource costs. AIR also examined the influence of individual assumptions and found that the relative ordering of dashboard options remained unchanged across reasonable variations in labor, benefits, and non-personnel cost inputs. Across all options, total costs varied within the expected range, but the comparative findings remained consistent, suggesting that the conclusions are robust to moderate variation in key assumptions.

Baseline Cost and Labor Comparisons

To help interpret the cost estimates presented throughout this report, AIR compared projected implementation and operating costs with the resources currently devoted to CDE's broader education data reporting environment. This approach provides context for understanding how each dashboard option would affect overall staffing demands and expenditures relative to current operations.

The baseline estimates were derived from interview and follow-up information provided by CDE Information Management Services staff regarding staffing and resources currently dedicated to education data reporting activities. These activities include both the ingestion and management of education data and the reporting processes required to make data available to users. Specifically, it is assumed that current ongoing activities include the full-time equivalent staffing of four Administrator IV staff for management overhead and quality assurance reviews, three Database Services IV staff for development, two IT Business Analyst IV staff for analysis, four IT Developer IV staff for data visualization and accessibility compliance, one Project Manager II for management, and two Webmaster IV staff for web development. Together, these activities account for an estimated 16,640 annual labor hours and $1.37 million in annual expenditure.

Because many of these core functions—including data collection, validation, processing, and preparation for reporting—must continue regardless of which dashboard option is selected, AIR treated them as a common baseline and calculated the incremental change associated with each option. For example, Option B is estimated to require approximately 6,240 to 9,360 labor hours and $525,400 to $774,000 in implementation costs. Relative to current operations, this represents an estimated 38% to 56% increase in labor utilization and a 37% to 59% increase in expenditures.

Inflation and Amortization

The cost estimates presented in this report are expressed in 2026-equivalent dollars and do not include explicit adjustment for future inflation. Presenting all costs in constant 2026 dollars allows for direct comparison across implementation options by holding labor rates, technology costs, software licensing fees, and vendor pricing constant. Actual expenditures may differ over time because of inflation, changes in salary schedules, procurement outcomes, or shifts in technology costs.

For options with implementation timelines longer than 1 year, the analysis also presents amortized implementation costs to account for expenditures that may be incurred over multiple years. Amortized values were calculated using a 3% annual interest rate, which was selected as a reasonable planning assumption consistent with the real rate commonly used in public-sector cost analyses and long-term budgeting exercises. Amortized costs were calculated using the standard capital recovery factor formula:

$$A = P \times \frac{r(1+r)^n}{(1+r)^n - 1}$$

where *A* is the annualized cost, *P* is the total implementation cost, *r* is the annual interest rate (3%), and *n* is the implementation period in years. The equivalent annual cost was multiplied by the number of implementation years to estimate the financing-adjusted value of implementation costs over a multiyear period. This approach accounts for the time value of money while providing a standardized basis for comparing implementation investments with different deployment timelines. Exhibit B–4 presents each option's expected implementation cost amortized over implementation periods ranging from 1 to 5 years.

The amortized values are not intended to represent annual expenditures. Rather, they represent the financing-adjusted value of the total implementation investment when spread across the expected implementation period. This approach allows options with different timelines to be compared on a more consistent basis while preserving visibility into the overall scale of investment required.

Exhibit B–4. Projected dashboard cost option amortization by years of implementation

Dashboard option	Cost category	Years of implementation				
		1	2	3	4	5
Option A	Low	$74,300	$77,700	$78,800	$80,000	$81,200
	High	$119,200	$124,600	$126,400	$128,300	$130,100
Option B	Low	$525,400	$549,200	$557,300	$565,400	$573,700
	High	$774,000	$809,000	$820,900	$832,900	$845,900
Option C	Low	$4,322,300	$4,517,800	$4,584,200	$4,651,300	$4,719,000
	High	$6,510,400	$6,804,800	$6,904,900	$7,005,900	$7,107,900
Option D	Low	$1,007,500	$1,053,100	$1,068,500	$1,084,200	$1,100,000
	High	$1,612,400	$1,685,400	$1,710,100	$1,735,200	$1,760,400
Option E [a]	Low	$287,300	$300,300	$304,700	$309,200	$313,700
	High	$456,300	$476,900	$483,900	$491,000	$498,100

Note. The values shown, except for the estimates of 1-year implementations, were calculated using a standard yearly amortization formula, assuming a 3% interest rate.

[a] The estimates listed in Option E reflect only the staffing required to implement a commercial off-the-shelf dashboard and do not include the subscription itself.

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