Introduction

In October 2022 the Chesapeake Bay Program Executive Council (EC) issued a clear and comprehensive charge to the Principal Staff Committee, recognizing that the 2025 deadlines established for some goals and outcomes under the 2014 Watershed Agreement likely would not be met, while also recognizing that data collection and analysis, science and changing environmental and ecological conditions must be re-evaluated and included in a critical path for the Partnership's work beyond 2025. The EC Charge organized nine strategic subjects, listed below, for review and consideration within three overarching topics of Science, Restoration and Partnership with the expectation that at the 2024 annual EC meeting, the PSC will present recommendations addressing how the Partnership will continue to address new advances in science and restoration, along with a focus on partnership priorities moving beyond 2025.

Chesapeake Bay Program, Executive Council Directive, October 2022 (Abbreviated)

Science

- Identify new and emerging scientific data and studies which could modify our progress reporting and adaptive management approach, as well as the goals and outcomes under the Watershed Agreement.
- Enhance our monitoring and reporting capabilities to improve our understanding of existing conditions and trends.
- Define the existing and emerging challenges (e.g., climate change conditions, increasing growth, diversity, equity, inclusion and justice considerations) to accomplishing the partnership's work under the Watershed Agreement, and how addressing those challenges might alter our collective restoration priorities, including the possibility of extending the target date for completing restoration of water quality beyond 2025.
- Identify opportunities to leverage action across multiple goals and outcomes of the Watershed Agreement.

Restoration

- Develop and begin to implement a communication strategy that identifies key partnership successes, associated ecosystem improvements and areas where more effort is needed.
- Provide snapshots of outcome attainability under the Agreement (e.g., which outcomes are likely to be met by the date(s) set by the partnership, which won't, and why) and options for communicating these snapshots to demonstrate progress in achieving our outcomes and the remaining work to be done, including gaps to be addressed.

Partnership

- Focus on moving beyond 2025 by seeking ways in which restoration can be relevant to all communities within the watershed.
- Assess the overall partnership to determine whether we are effectively hearing from and listening to all stakeholders and have systems of evaluation and decision-making to enable meaningful action and allocation of partnership resources.
- Based on this assessment, develop recommendations for potential improvement.

In response to extensive dialogue and direction at the PSC level and with the Management Board's input, a Beyond 2025 Steering Committee (Steering Committee) was established, comprised of representatives from the Chesapeake Bay Program signatories, Management Board, Advisory Committees and active, engaged stakeholders from around the Chesapeake Bay watershed. As the Steering Committee commenced its work in 2023, it was cognized that additional challenges and emerging issues continued to arise since the 2022 EC Charge was issued and should also be included and addressed in the response to the EC Charge. Together the Steering Committee members identified and prioritized their initial work around five topic areas, rooted in a focus on Science, Restoration and

Partnership, in order to capture (a) the scope of the original EC Charge and (b) the breadth of new advancements in science, restoration and structure of the partnership. The five Beyond 2025 Small Groups were established around: Clean Water, Climate, Healthy Watersheds, People, and Shallow Water Habitats. Extensive feedback, public input, analysis and synthesis of ideas, data, trends, best practices, and lessons learned contributed to and resulted in five Findings from each small group (25 total Findings), provided as Source Material to this report, and ultimately further synthesized by the Steering Committee to guide immediate next steps.

During this timeframe, the EPA Chesapeake Bay Program Office funded an independent consultant, the Eastern Research Group (ERG), to perform a program evaluation for the Steering Committee's consideration. ERG was tasked with answering three evaluation questions centered on program structure and effectiveness, stakeholder understanding and support, and outcome attainment. ERG reviewed a set of key documents identified by the Steering Committee, held a series of groups discussions across the Program's organizational structure, and performed an outcome structure assessment. The observations and conclusions outlined by the ERG Report, provided as Source Material, further informed the Steering Committee's considerations and synthesis of the Small Groups' findings, as demonstrated throughout this document.

This document seeks to succinctly capture the common through-lines and themes emerging throughout the small group topics, the ERG evaluation, and which are reiterated and emphasized in the EC Charge's three recommendation subjects (Science, Restoration, Partnership) with a goal of identifying the most relevant, pressing and impactful recommendations that will maximize benefits and results across the work of the Partnership, while improving the way the Partnership accomplishes its work.

This report seeks to highlight the following:

- Learning from and building on successes,
- Recognizing that efficiencies in structure, process and effective communication, both internal and external, are critical to future CBP success, and
- How important it is to foster a strong and engaged Partnership, with increased active involvement from more and different stakeholders.

The results of these findings aim to support and amplify investments in projects that can achieve water quality improvements not just as a priority goal, but as a co-benefit to myriad practices that accelerate improvements in living resources (shallow water habitat and species, local, engaging and relatable projects in streams and rivers providing more tangible connections to the Chesapeake Bay for the 18 million residents within the watershed.

The critical path for the Chesapeake Bay Program Partnership beyond 2025 is bright and well-resourced, with the tools we need in terms of data collection and analysis and expertise from Advisory Committee members, dedicated staff at the local, state, federal levels and with our non-governmental partners and beyond – much work has already been conducted to evaluate where we have been, where we are today, and what must be prioritized and implemented in order to continue to restore and protect the Chesapeake Bay, not just after 2025, but forever.

Science

Rigorous science is the backbone of the Chesapeake Bay Program's restoration and conservation efforts. This scientific foundation informs policy decisions and strives to ensure resources are targeted in areas with the biggest impact. The Program faces a number of existing and emerging challenges that require integration of new findings, fostering collaboration among researchers across the watershed and in different disciplines, and prioritizing areas where knowledge gaps exist. By remaining grounded in science, the Chesapeake Bay Program can ensure its future efforts are based on the most up-to-date knowledge.

1. Prioritize research that addresses knowledge gaps in existing and emerging challenges. The Steering Committee (SC) explored a number of existing and emerging challenges to address the EC Charge on how to accomplish the partnership's work, and **the SC recommends prioritizing climate science to enhance understanding of anticipated changes and restoration/conservation practices that can adjust to those changes** (EC Charge)**.** Climate change is rapidly and significantly altering the Chesapeake Bay and its watershed. This requires a holistic biophysical and social science approach to better understand the interaction of climate change with other issues such as toxics, land use/land change, and its impact to people. This includes considering the impacts of rising temperatures on ecosystem health (STAC), improving the design of nature-based solutions/green infrastructure and improving the understanding of its role in climate mitigation (C3, C4; Climate Directive; HW2), understanding the impacts of a changing climate on restoration practices (CW2; SW1), and conducting vulnerability assessments for living resources, habitats and communities (C2; SW3).

The SC also recommends a greater focus on conducting social science research and applying its findings to ensure restoration and conservation efforts align with the well-being of people (ERG F8, C7)**.** Social science must be applied where it can have the greatest overall impact and applied strategically rather than opportunistically (P5). Prioritizing the understanding of people's values and motivations can help drive sustainable natural resource use, management, and decision-making as well as ensure equitable inclusion of all communities in restoration and conservation efforts (CW1).

2. *Integrate existing and new science findings in decision making, resource allocation, and communication strategies***.** Emerging scientific data and studies have been identified through various ongoing efforts in the partnership (EC Charge). The SC reviewed recent influential studies and reports and **recommends the need to better adapt to these findings and communicate how they are integrated into decision making, resource allocation, and management strategies** (ERG F2, ERG C5). New insights can help modify our reporting progress such as the recommendation on incentivizing outcomes over counting practices (CW1; EC Charge). Other insights require reallocation of resources and adaptation to management. The current partnership approach is to focus water quality implementation practices in places that will improve waters in the deepest portion of the Bay, but CESR finds water quality standards attainment can be accelerated in the shallow and open waters, which are important to living resources and people.

The **SC also recommends increased efforts to integrating traditional indigenous knowledge and co-producing science with Native nations** (ERG C10). For the collaboration to be effective, the Program must be truly invested in the opinion of the Native nations and account for the historical and cultural

importance of the Chesapeake Bay to Indigenous Peoples. Engaging with these Native nations will help support Chesapeake Bay Program goals and their own goals.

The Chesapeake Bay Program not only conducts cutting-edge research but also translates those findings into reports. Research should inform communication strategies that connect the health of the Bay to the well-being of people (P2)**.** Strengthening the connection between the value of the ecosystem and the motivation of people can inspire broader engagement and action. The Program could more effectively link this value to the tangible benefits for people around topics such as soil health, ecosystem services, and shallow water habitats (C5, C4; SW4).

3. *Optimize monitoring, modeling, and analysis***.** To address the EC charge on how to enhance monitoring, a recent effort evaluated the Program's core monitoring networks and provided recommendations to fill gaps for all outcomes (Monitoring Review). Investments in those recommendations moved the Program in the right direction for improving capabilities to better understand current conditions at various scales and track progress. To maintain these critical enhancements in monitoring, **the SC recommends a partnership approach to establish a sustainable, long-term funding plan** (Monitoring Review)**.** This same effort found monitoring is insufficient for many outcomes and a majority of outcomes' language is not defined sufficiently to be measured in a meaningful way (ERG F11, Monitoring Review). **The SC recommends amendments to outcomes require a clear target and development of a monitoring plan because these factors are essential for assessing progress toward a healthy Bay and watershed.**

The Program will continue to use and improve the Bay Program's primary water quality modeling and planning tool, CAST, but the **SC recommends incorporating multiple lines of evidence in the process to evaluate progress towards multiple goals** (CW1). This could include using tools such as the Chesapeake Healthy Watersheds Assessment to provide a more holistic approach of watershed health and incorporating data on shallow water habitats (HW5; SW2). **The SC also recommends that all modeling efforts should integrate climate change projections to better understand changes across multiple indicators and inform strategic planning at the local and state level** (C1, C2, C3, C4; HW1; SW2).

To optimize analysis, **the SC recommends focusing on local scales** (HW1) **and analyzing stressor metrics (e.g., toxics, climate change, bacteria) alongside data on the response to the stressor** (C4; CW3; SW2)**.** By characterizing watershed health at sub-basin levels, the Program can better inform implementation efforts and provide a more holistic understanding of the watershed and Bay condition. Additionally, there is a wealth of local and participatory monitoring data that may be used for learning, status and trends analyses, and model validation (CW3).

4. Build Chesapeake Bay Program knowledge and capacity to apply scientific findings. The Chesapeake Bay Program has a wealth of scientific data and findings. However, the partnership needs to do a better job of leveraging limited resources to connect the benefits of water quality, habitats, living resources, and people together (EC Charge). The **SC recommends strengthening its capacity to apply these findings effectively.**

New tools are in development to make these connections and target investments, but **the SC recommends establishing better access and collaboration** (ERG F12, ERG C6; CW3; HW1). This includes creating an accessible data repository and fostering better coordination among monitoring programs at all levels. *ChesapeakeData* could support this need by serving as a central point of access to data

resources and decision-support tools to promote collaboration and data sharing across multiple agencies and organizations.

One key constraint is the limited personnel and funding for program components, especially the GITs (ERG F5). For the GITs to respond to the emerging needs of climate change and social science, **the SC recommends expanding its climate science support team and social science staff and dedicate funding for the strategic application of these topics.** Additional capacity to facilitate research and implementation will help advance goal achievement through integrating climate science into BMPs, incorporating social information and data into products, targeting vulnerable communities for resources, developing education materials and more (ERG C7, ERG C11; C1, C4; P5). By investing in these areas, the Chesapeake Bay Program can bridge the gap between knowledge and action.

Restoration and Conservation

Since its inception, the Chesapeake Bay Program has worked to restore the Bay and its living resources by addressing water quality concerns. However, a changing climate and a growing human population in the watershed have challenged the Program's progress. The Bay of the future will be different from the Bay of the past and these changing conditions will make it more difficult to reach our goals (CESR). A holistic restoration approach continues to be necessary and is increasingly important in the context of emerging challenges. Working strategically to improve the Program's holistic approach to restoration will help ensure our collective restoration efforts are resilient and have the intended benefits for the Bay and the watershed's ecosystems and communities.

1. Review and refresh existing goals, outcomes and management strategies to more effectively guide the partnership's restoration efforts beyond 2025. The partnership should identify the ongoing and emerging challenges impacting our success and consider if goals and outcomes need to be modified to better account for emerging challenges. **The Steering Committee recommends adapting some outcomes to be more compatible with and realistic in the face of anticipated future landscape conditions, accounting for climate and projected land use change** (C1; SW1, SW2). In some cases, new or refined management strategies could be developed for existing goals and outcomes to address emerging challenges such as climate mitigation and adaptation, nutrient mass imbalance, and soil health (C3, C4, C5).

The Steering Committee recommends streamlining the Agreement structure to reduce complexity and improve integration and efficiency of restoration efforts. This could be done by reducing the number of medium- or long-term outcomes to better focus efforts across the Program's goals (ERG C2) or by modifying and consolidating interconnected goals and outcomes to reduce silos and achieve greater integration and efficiency (ERG C4; HW1, HW2, HW5). For goals and outcomes maintained in an amended agreement, time horizons and targets should be modified for off-track and unmet goals outcomes, including the targets of the TMDL (CW2). Some foundational off-track outcomes, including forest buffers, tree canopy, and wetlands will also require new management strategies and continued prioritization of efforts to accelerate progress. For outcomes that have been achieved, new goals should be identified where appropriate, and any amendments should ensure the restoration priorities defined in the Agreement reflect the needs of the public (P2).

2. Support System-Scale Conservation and Restoration Planning for Vital Habitats. Taking a more holistic, systems approach also requires broadening our vision of restoration to incorporate land management, stewardship and conservation to ensure resiliency and improve ecosystem function (C4, HW4). Given the land use pressures associated with a growing population, **the Steering Committee recommends that conservation should be elevated as a key guiding pillar for the Bay Program, alongside Science, Restoration and Partnership** (HW 4). Protection and planning are much cheaper than restoration and can help ensure the durability of investments in water quality and habitat restoration. Land conservation and stewardship can also support watershed health, enhance publicly accessible natural lands and ensure the resilience of ecosystems that provide clean water, act as carbon sinks, and provide numerous other ecosystem service benefits to local communities (C3, HW4).

The Steering Committee recommend prioritizing the restoration of habitats along our tributary rivers and streams, as well as the Bay's nearshore waters– some of the most important places for the people of the watershed and the most productive habitats for our living resources (CESR, SW1). These shallow

water habitats are also particularly valuable for local communities, so increased focus in these areas would support a more people-focused approach (P2). Emphasizing the social, economic and ecological benefits of restored, resilient and connected shallow water habitat would strengthen the connection between people and habitats and promote proactive approaches to climate adaptation (C4; SW1, SW4). However, it is essential to understand and plan for the changes these habitats will undergo due to climate change, including rising temperatures and water levels, to develop strategies to address vulnerabilities and sustain ecosystem function (C1, C4).

3. Improve the Program's holistic approach to planning, prioritization, progress-tracking and accountability. Adopting a more holistic restoration approach to address emerging challenges requires a strategic approach both before and after restoration practices are implemented on the ground. For planning and prioritization, a more holistic approach could optimize the impact of our restoration investments and enable leveraging new funding sources. **The Steering Committee recommends developing and adopting approaches to better incentivize practices that deliver multiple benefits.** Many water quality BMPs can also deliver benefits for climate mitigation, ecosystem adaptation, community resilience, regenerative food systems, environmental justice and more, but only if their implementation is prioritized and targeted to effectively address local environmental and community concerns (C2, C3, C4, C5; CW5; SW 1, SW2, SW3, SW5). At the same time, a more holistic approach can facilitate evaluating tradeoffs between multiple objectives when needed (Climate 3, Shallow Water 2).

The Steering Committee recommends enhancing the local benefits of Chesapeake restoration by improving alignment with state and local plans and priorities (CW2, CW5). Improving collaboration with networks of local partners and planners would facilitate both the development of restoration approaches that align with local priorities and where appropriate, the incorporation of watershed actions into local planning processes (HW2, SW3). Better local engagement would further increase outcome achievement by shaping restoration approaches that are co-designed with communities and reflect the local context (P5, SW3).

The Steering Committee recommends improving progress-tracking and accountability to further support efforts to adaptively manage and better target or prioritize resources and technical assistance. This could include developing a tiered or phased implementation approach for meeting tidal water quality standards, assisting with data-driven decision-making, and targeting critical or vulnerable habitats (CW2 CW4; HW1; SW1, SW3). The Water Quality Accountability Framework could also be revised to increase emphasis on measured outcomes and to incentivize innovative approaches to targeting nonpoint sources of pollution (CW1)**.** Shifting to an outcomes-based approach could also facilitate a more transparent, multi-objective accountability system that better tracks a wider range of projects and outcomes supporting partnership goals (CW4, HW5, SW2, SW5) and enables improved outcomes under conditions of uncertainty (C1).

4. Build capacity to deliver technical assistance and community engagement through improved coordination and collaboration. Developing a more holistic, locally-engaged approach to restoration will require additional capacity across the broader partnership. **The Steering Committee recommends building collective capacity for restoration through improved coordination and collaboration between existing programs, across multiple levels of government, and with new partners.** Improved coordination and collaboration will facilitate leveraging resources and expertise to address emerging challenges and maximize impact (CW3, CW4, CW5; HW1, HW3, HW4; SW3, SW5). The partnership

should also consider additional investments to support building capacity through local liaison programs, trainings, and supporting existing partner organizations and networks (HW3, HW4, P4, SW4).

PARTNERSHIP

The Chesapeake Bay Program is a long-standing regional partnership between states, federal agencies and other partners that guides the restoration and protection of the nation's largest estuary. The Partnership is focused on moving beyond 2025 by adaptively managing how we work together and by seeking new ways in which restoration can be relevant to more communities within the watershed. In order to meet these ambitious goals and produce lasting results, the Partnership needs to adopt a systems approach to governance, utilize a network of networks strategy for capacity building, broaden the scope of involved communities and improve communications and transparency.

1. Adopt a systems approach to streamline governance and structure: **The Steering Committee recommends that the partnership review and revise the Chesapeake Bay Program's governance and structure to reduce complexity and improve adaptive management and decision-making.** Create a logic model that works backward from the Goals and Outcomes to their corresponding actions, incorporating a theory of change to inform linkages between actions and Goals and Outcomes (ERG C1). A reevaluation should also adequately balance product and process, ensuring that both are equitable. A systems approach to governance should include crosscutting strategies that provide social, economic, and ecological co-benefits while improving community and ecosystem resilience and connectivity under changing social, land-use, and climate conditions. (P1; SW1, SW3). Seek to simplify complexity by considering cross-program coordination, cooperation, and transparency to streamline logistics, increase knowledge sharing, and eliminate silos (ERG C1, ERG C2). Focus the Program's organizational structure to reduce its complexity (ERG C3, ERG C4). To increase confidence and transparency in decision-making, engage Advisory Committees, relevant leaders and subject matter experts accountable to their jurisdiction or signatory for each Goal area, ensuring that all Outcomes have decision-makers at the table (ERG 5). Additionally, ensure internal collaboration and communication within jurisdictions to increase cross program coordination and in turn create synergies and increased innovation.

The partnership should evaluate the successes of the Strategy Review System (SRS) and strengthen its' areas of need. The SRS is the Bay Program's adaptive management framework used to track progress towards meeting each of the outcomes in the Agreement and to adjust course where needed. The partnership should strategically apply relevant expertise at the Management Board and allow for flexibility within the framework. (ERG C6, ERG C7; P1)

The SRS needs to be more adaptive, embracing its role within the Partnership's theory of change and logic model. As part of the SRS, a clear process for assessing current and future vulnerabilities and changing conditions is necessary to provide the tools for adaptive planning. (ERG C7; SW 3) In turn, the Chesapeake Bay Program's Goals and Outcomes should be developed through community engagement and should reflect the priorities of the communities who live within the watershed. The Steering Committee identified that this approach should be applied to the following areas specifically: multiscale green infrastructure planning, living resource restoration, public access, public health, and climate planning. (C1; HW2; SW5)

2. Enhance Capacity Building and Technical Assistance through Local Networks. **The Steering Committee recommends embracing the Program's role as a network of networks that connects partners with data, tools, resources and technical assistance that build capacity at the local level.** Coordinated capacity building and technical assistance through local networks promises to more comprehensively

and more efficiently drive implementation of practices that support the Programs' goal and outcomes. The Partnership could begin by supporting jurisdiction agencies and other partners in establishing and deepening collaborative relationships with strategic networks of local liaisons that can provide administrative and technical expertise to on the ground partners (CW5, HW3). Via partnerships with these networks, federal and state partners can connect local implementors and decision-makers with tools, data and other resources that drive conservation and restoration action (HW3, HW4, ERG C6). Long-term, the Partnership should identify opportunities to resource strategic networks for sustained partnerships that create durable impact (P4).

3. Strengthen Diversity, Equity, Inclusion and Justice in the partnership and activate the DEIJ Implementation Plan. **The Steering Committee recommends that the Partnership seek ways in which restoration can be relevant to all communities within the watershed by institutionalizing and actualizing the Program's Diversity, Equity, Inclusion and Justice Implementation Plan.** The diversity of its partnership should reflect the diversity of the watershed it is working to conserve and restore. The partnership should increase the number of historically excluded communities involved, create varied and meaningful pathways for participation, and increase the quality of community engagement.

The Partnership should begin by activating and implementing the existing DEIJ Implementation plan to incorporate DEIJ into the program's foundation. This will require the necessary capacity and financial resources for effective and sustained implementation of the plan (C2; P2, P3), including working alongside and through trusted sources, ensuring the necessary staffing resources are in place. As new programs, structures or activities are formed, ensure that the commitments of the DEIJ Implementation Plan are incorporated.

The Partnership should create pathways for historically underrepresented groups to influence and benefit from the partners' watershed restoration and conservation efforts at all levels of governance. Beyond 2025, the partnership should adaptively manage DEIJ implementation to addressing emerging concerns. The partnership should also ensure programming is additive for minority groups. The partnership should formally incorporate the goals and interests of the region's tribal entities in Program planning and implementation (ERG C10, 3).

4. Enhance Communications and Transparency to Foster Long-term Success. **The Steering Committee recommends prioritizing the Partnership's communications and transparency to drive momentum and ensure long-term efficacy.** Strengthen relationships between people and ecosystems by regularly communicating key partnership successes, associated ecosystem improvements and socio-economic benefits garnered from achieving Agreement goals (ERG C5, ERG C6; SW4). The Partnership should expand the use of coordinated communications across state and federal partners to amplify impact throughout the entire watershed. At all levels of the Partnership, enhance pathways for local networks, advisory committees and others to provide feedback on science and policy development to ensure that the CBP is effectively hearing from and listening to stakeholders. The Partnership should ensure internal and external transparency by relying on proven best practices in decision science and fostering a collaborative organizational culture that includes diverse voices (ERG C5, ERG C7; P5).