



Scientific, Technical Assessment and Reporting (STAR)
Theme: Working Meeting on Indicators for
Outcomes with Qualitative Language

Thursday, May 26, 2022
10:00 AM – 12:00 PM

Meeting Materials: [Link](#)

This meeting was recorded for internal use to assure the accuracy of meeting notes.

ACTIONS

- ✓ The Status and Trends Workgroup (STWG) will continue this discussion with the Local Leadership Outcome for development of an indicator.
- ✓ Future STAR meetings will feature discussions on developing indicators for other outcomes with non-quantitative indicators that would like to participate in a joint STAR/STWG meeting. Each meeting format will be individualized based on the needs of the outcome.

MINUTES

10:00 AM **Welcome, Introductions & Announcements – Bill Dennison (UMCES) and Scott Phillips (USGS)-STAR co-chairs, Breck Sullivan (USGS) STAR Coordinator, Peter Tango (USGS) CBP Monitoring Coordinator**

Announcements

Communications Update

Marisa Baldine did not give the communications announcement because she was at the Choose Clean Water Conference. Alexander Gunnerson provided the updates instead. The Chesapeake Bay Awareness Week is from June 4th-12th, and the theme is “Restoration Brings Results”. STAR should consider taking advantage of the social media tool kit, which is a [Google Drive folder](#) full of resources for use like logos and images for social media platforms during Chesapeake Awareness Week. They’re still working on this, and edits are welcome. They’re also trying to amplify other messages from various organizations. To use these, just add some of those images into your social media post and use the hashtag. If you have questions, contact Marisa Baldine at mbaldine@chesapeakebay.net.

Scott Phillips said the Chesapeake Bay Program (CBP) with Chesapeake Conservancy and USGS released high resolution land change information. They had the cover data but now they can look at two periods of time and see how much has been lost or gained. Additionally, UMCES and USGS just put together a video on the Chesapeake Bay Science Strategy and will be sending that out. Kristin Saunders (UMCES) asked Scott when some analysis will be conducted to find out what the data is saying, and who is working on that analysis. Scott responded that Peter Claggett (USGS) is the best contact for potential analysis of land-change information. Caroline

Donovan (UMCES) commented that there are also several indicators that are waiting on the land change data, and those indicators should help tell the story of what the data is saying. Katheryn Barnhart (EPA) added that Katie Walker is also a good contact for the communication aspect, as she, Peter, and Rachel Felver have been working to coordinate what is communicated from what party/at what time. The CBP intends to update the Land Use Methods and Metrics outcome using the land use data, so that will have its own communications release that accompanies an update to ChesapeakeProgress.

Upcoming Conferences, Meetings, Workshops and Webinars

- [Chesapeake Community Research Symposium](#) - June 6-8, 2022, Annapolis, MD. (Hybrid: virtual and in-person. [Subscribe here for updates.](#))
- [World Seagrass Conference and International Seagrass Biology Workshop](#) - August 7-12, 2022, Annapolis, MD.
- [Global HAB symposium on automated in situ observations of plankton](#) - August 22-26, 2022. Kristineberg, Sweden.
- Chesapeake Watershed Forum - November 4-6, 2022. Shepherdstown, WV. [Session proposals due June 3, 2022.](#)
- [A Community on Ecosystem Services](#) - December 12-15, 2022. Washington, D.C. Metropolitan Area.

Bill Dennison announced the [Chesapeake Studies Conference](#) is in Salisbury on June 1st-3rd. Jerry Schubel is the speaker and will showcase a new book he wrote about the Chesapeake Bay. Bill highlighted Chesapeake Bay Program people including Brooke Landry are working on the World Seagrass Conference in Annapolis. He also mentioned some people from Denmark are coming to the Chesapeake Community Research Symposium. Bill announced that the Chesapeake Bay and Watershed Report Card that UMCES produces annually went to the printers yesterday and will be launched in the afternoon of June 6th in Baltimore at the [Institute of Marine and Environmental Technology](#) (IMET). The report card will feature the new economic indicators as well as the social and ecological indicators. Bill mentioned that UMCES will be bringing to the Chesapeake four global sustainability scholars funded by the Belmont forum, a transnational project bringing the Chesapeake Bay report card approach to Manila Bay in the Philippines, Tokyo Bay in Japan, and the Goa Coast in India. The students will be based in the Annapolis office and will be interviewing people to get an idea of the Potomac region. UMCES will also be hosting a Norwegian system dynamics modeler named Paul Davidson from the University of Bergen in June, and he'll be around for 3-4 months.

Another conference is [Species on the Move 2023](#) in the Everglades on May 15-19, 2023.

10:10 AM Update on the Monitoring Report and Feedback from the PSC

Peter Tango and Breck Sullivan will give a brief update on the monitoring report to the PSC and the feedback from the May 17 PSC meeting. They are reviewing what they heard at the May 17 PSC meeting and will provide initial insights on

the funding and implementing of recommendations.

Breck thanked the team and went over the timeline in responding to the PSC request to understand how to improve networks in the CBP. The Science and Technical Advisory Committee (STAC) and STAR did a review of the monitoring networks; the core networks are tidal, nontidal, benthic, submerged aquatic vegetation (SAV), citizen monitoring and land use. The review was expanded to include all the outcomes. The monitoring review team produced a draft report and received comments from jurisdictions, federal and state agencies. and STAR. The team is hoping to have the report finalized in June and distributed in July. Commentors asked for better identification of the priorities. Breck clarified everything that in the review was already the highest priorities. Commentors also asked for more details on activities aligned with monitoring such as data analysis, implementation, and how to pay for monitoring. The team narrowed it down to near-term and extended priorities. The near-term priorities are to maintain existing networks and address regulatory requirements, then to monitor for outcomes that are behind schedule. Extended priorities are support for outcomes that don't have monitoring design plans. Data management, analysis and reporting wasn't within the scope of the review. However, it is coming up in discussions and being implemented. Some of the analysis and data management is woven into line items such as for the 4D interpolator.

Peter Tango showed the menu of line items that had associated costs related to priorities that were expressed through the monitoring review. Program maintenance was included everywhere, and network development expressed in many places. At the May 17th, 2022 PSC meeting, Lee McDonnell announced the EPA would invest \$1.5 million towards monitoring maintenance, network development and enhancements. The details of the exact distribution are not yet developed. In addition, EPA Region 3 Water Division announced \$150,000 for research and monitoring of plastics pollutions. They're coordinating with the Plastic Pollution Action Team. EPA dollars are an important investment. However, this report highlighted over \$5M of need, so EPA alone doesn't have the capacity to address everything. Some programs may see a gain in support, and some may stay at the same level of support from the EPA budget side. A multi-partner approach to investments is necessary. Partners are already identifying which items they want to support and several partnerships already forming. For example, the hypoxia network is a collaborative with EPA and NOAA. Another example of partnerships is satellite based SAV assessment with NASA and the SAV workgroup. Another example is PA DEP and USGS collaborating on continuous monitoring (Con-Mon) at the Conowingo pool.

Peter thanked everyone for ongoing support and said some final agency and communications team review will be needed for the report before it is finalized. Scott added the next step is a kickoff meeting where they're inviting program managers to get together and talk about what they can bring to the initial investment of \$5 million. Bill said that this was welcome news as he couldn't remember the last time there was more funding for monitoring.

10:30 AM Developing Quantitative Indicators for Outcomes with Qualitative Language – Bill Dennison (UMCES), Vanessa Vargas-Nguyen (UMCES), Caroline Donovan (Formerly UMCES), Katheryn Barnhart (EPA), Breck Sullivan (USGS), and Scott Phillips (USGS)

Bill Dennison and Vanessa Vargas-Nguyen will lead the first of multiple working meetings focused on the development of quantitative metrics and indicators for outcomes that have not yet developed indicators. Related outcomes have been grouped based on the subject matter and challenges they are facing. The grouping is as follows:

- Group 1
 - Local Leadership
- Group 2
 - Toxic Contaminants Research
 - Fish Habitat
 - Forage
- Group 3
 - Climate Adaptation
- Group 4
 - Land Use Options and Evaluation
 - Citizen Stewardship
 - Diversity

This first meeting in the series will focus on Group 1, and there will be a more in depth follow up at the June 13 Status and Trends Workgroup meeting.

10:30 Plenary Session

- Introduction to this series - Breck Sullivan and Scott Phillips

Bill introduced the concept of the exercise, which is in collaboration with the Status and Trends Workgroup (STWG). STWG will take this and continue working on it. This is an attempt to tackle outcomes in the Watershed Agreement that don't have quantitative indicators.

Breck said Local Leadership is the first outcome for this exercise and others will be tackled at future STAR meetings. This may not be at the next meeting, but it will be fitting into the schedule depending on the readiness of outcome groups. The meeting will focus on brainstorming, coming up with how to make measures, and track progress for these outcomes that have qualitative language. The meeting will help the Local Leadership Outcome with developing their indicator, and connect metrics discussed with the Local Leadership survey the Local Leadership Outcome just sent out.

Scott said as much as these qualitative indicators can have measurable aspects, they'll become more relevant and urgent. The Management Board (MB) is going through the process this summer of saying which of the 31 indicators have to be tackled immediately (urgent) and which

are still important but not as urgent. Indicators will help show progress and the urgency to take actions to meet deadlines between now and 2025. People will look at the whole menu and say how each outcome is doing against the whole Watershed Agreement, and the timing now is important.

- [Indicator 101](#) - Katheryn Barnhart

Katheryn Barnhart introduced herself as the indicators coordinator with the EPA at the Chesapeake Bay Program Office (CBPO) and the coordinator of the Status and Trends group under STAR. Katheryn presented an indicators overview and introduction to indicators already developed through the process at the Chesapeake Bay Program. Indicators are designed for use in adaptive management to inform decision making. Metrics are used to measure progress towards outcomes in 3 ways: metrics that act as influencing factors of the work, those that measure outputs, usually management outputs, and performance measures, those that directly inform our progress towards the outcome goal.

Indicators are important for communicating to management and decision makers the current status, what is urgent, and where it is necessary to adjust actions to make more progress towards achieving outcomes. Good indicator qualities include being simple and easy to understand, scientifically well founded, reference or threshold value of significance (usually present in the outcomes, but not all have established threshold goals in outcome language), responsive to changes in environment, show trends over time, feasible to measure and support (take into consideration monitoring support over time), updated regularly, be useable by community, policy relevant, and adequately documented. Katheryn gave an overview of how the CBP develops an indicator. The metric is identified by a Goal Implementation Team (GIT) coordinator, and they alert the indicators coordinator (Katheryn) to identify potential indicators they're interested in exploring. The indicators require GIT approval and STWG approval. Then it is moved on to indicator update process and documents related to metric are updated.

Katheryn gave an overview of a couple of current indicators. The oysters' indicator includes metrics that track progress towards that outcome: states report which tributaries they are monitoring and develop a restoration plan and report each year how many acres they've completed in reseeded for oysters. That's included for each tributary, and each tributary has its own target. There is a chart that tracks progress at different stages of oyster restoration, from tributary restoration plan to reef construction and seeding, to monitoring and evaluation to see progress towards restoring the desired acreage of oysters in our tributaries.

For the sustainable schools' outcome indicator, they modified it in 2017 to report from each individual state since each state has their own classification for what a sustainable school is and their own recognition programs. The outcome with the STWG developed their own metrics for how they incorporate the self-reported data into sustainable schools, and track this every two years.

Katheryn introduced the Local Leadership outcome, the focus of the meeting. The outcome is to continually increase the knowledge and capacity of local officials on issues related to water resources and in the implementation of economic and policy incentives that will support local conservation actions. ChesapeakeProgress has reported recent progress that is currently being informed by the coordinator. This is how they're able to currently track progress. It would help to have a metric that can help inform progress towards this outcome, so they can more strategically communicate with the MB and decision makers what is needed to fully achieve this outcome.

Bruce Vogt commented in the chat that he was not clear as to why forage and fish habitat are listed, as they have a very clear indicator development [plan](#) for forage. They have actions in place to evaluate fish habitat. For each outcome, they are not trying to measure progress toward outcome attainment but rather evaluate status and trends and important ecosystem changes driving current status. Bruce elaborated on his comment wanting to clarify the approach for those two outcomes: they have a very specific plan for them so they shouldn't be listed as needing more discussion when their workgroups have plans in place. They have drafted indicators for forage and presented on both of those at the last STWG meeting. They are taking more of an ecosystem approach to those, more about measuring change in the system than about quantifying progress towards the outcome. They are planning to bring those to the indicator team for feedback. Katheryn responded that the plan for those two outcomes is going to be very different to the current approach to local leadership. The plan as discussed at last STWG meeting is the outcomes will present at the forage fish meeting in June, and STWG will follow up after that presentation on next steps after getting that feedback from action team. Katheryn clarified that each approach is individualized for the needs of each outcome.

Greg Allen (EPA) commented in the chat that Local leadership shares the measurement challenge facing Toxic Contaminants Research which is measuring knowledge gain. If they're increasing knowledge, capacity, or greater understanding do they have to ask the learners "Are we/you learning more?" Kristin Saunders responded that she was thinking the same thing and wondering if a measure could look for better decisions being made as a result of the learning, because that is ultimately the goal with the increased knowledge.

11:00 Local Leadership Outcome

- **11:00** Values and Threats - Bill Dennison and Vanessa Vargas-Nguyen
 - Participants will use mentimeter to identify values in relation to this outcome and threats to those values.

Mentimeter Results:

Why is local leadership important to you?



Image Description: Image of a word cloud with the results to the question “Why is local leadership important to you”? There is a little person in the bottom right corner with the number 23 indicating there were 23 total responses. Word cloud responses are in blue, pink, purple and yellow. The biggest words, meaning they were mentioned the most frequently, are implementation, local action, and local impact. Other words/phrases are where the rubber meets the road, restoration support, personal connection, local engagement, impact, accountability, local benefits, local actions, have authorities, action takers, partnerships, ownership, stakeholders, big impact, on the ground, civic engagement, restoration, engagement, implementers, conservation, where the action is, help achieving outcomes, community connection, resource allocation, informative, closer to stakeholders, locally led implementation, environmental justice, passionate local buy in, key audience, clean water, influential, actors, community, funding, shared vision, key, land policies, crisis manager, progress, community impact, teamwork, direction and structure.

What are the challenges to establishing local leadership?



Image Description: Image of a word cloud with the results to the question “What are the challenges to establishing local leadership”? There is a little person in the bottom right corner with the number 25 indicating there were 25 total responses. Word cloud responses are in blue, pink, purple and yellow. The biggest words, meaning they were mentioned the most frequently, are funding, capacity, competing priorities, other priorities, time, education, and turnover. Other words/phrases are creates political capital, lack of funding, environment vs development, environmental literacy, local interest, staff turnover, diverse priorities, lack of technical expertise, not a local priority, natural disasters, knowledge transfer, staff capacity, diversity, opposition, resistance, election cycle, common goal, apathy, politics, money, knowledge, competing interests and concerns, people in position change, environmental justice, capacity building, political will, effective messaging, multiple priorities, every locality different, competition, competing priorities, understand local issues, agendas, funding priorities, balancing priorities, partisanship, development pressures and preconceived notions.

Laura Cattell Noll emphasized that funding and capacity are huge. There is a lot of staff turnover which is a big challenge. Bill said this causes loss of institutional memory. That occurs at NGO as well as government levels. Vanessa Vargas-Nguyen highlighted the responses of competing priorities and other priorities. Breck agreed and said in the local leadership survey they’re trying to help balance the priorities with what they are trying to track progress with such as thinking about economic development, public health, and how to connect that with what the goals are at the Chesapeake Bay Program. Bill said implementation is restricted by

funding. Vanessa said one of the things missed is stakeholders and audience. That ties into priorities as well, depending on audience and how engaged stakeholders are.

Amy Handen (EPA) asked if Laura could speak to the survey and the intention of the survey to inform the indicator. Laura responded wondering if there is an index possibility similar to the Stewardship outcome. She said she wasn't sure if that is the right way, but they do see questions in the survey that could go into metrics. Allison Ng (EPA) asked, how many times has the survey been distributed in the past? Laura said just once, this spring. It was sent in April. It was designed by a contractor. So far, they have had over 140 responses.

- **11:15** Responding to Outcome Language - Bill Dennison and Vanessa Vargas Nguyen
 - Participants will be assigned to breakout rooms and utilize Jamboard to break down outcome language into components and if applicable, identify metrics for those components.
- **11:30** Report Outs
 - One participant from each breakout room will share the key points and suggestions their group discussed.
- **11:45** Linking the questions and results from the Local Leadership
- Survey to measurable indicators
 - Based on the report out information, participants will identify connections between what was discussed and the Local Leadership Survey to identify potential indicators for the outcome.

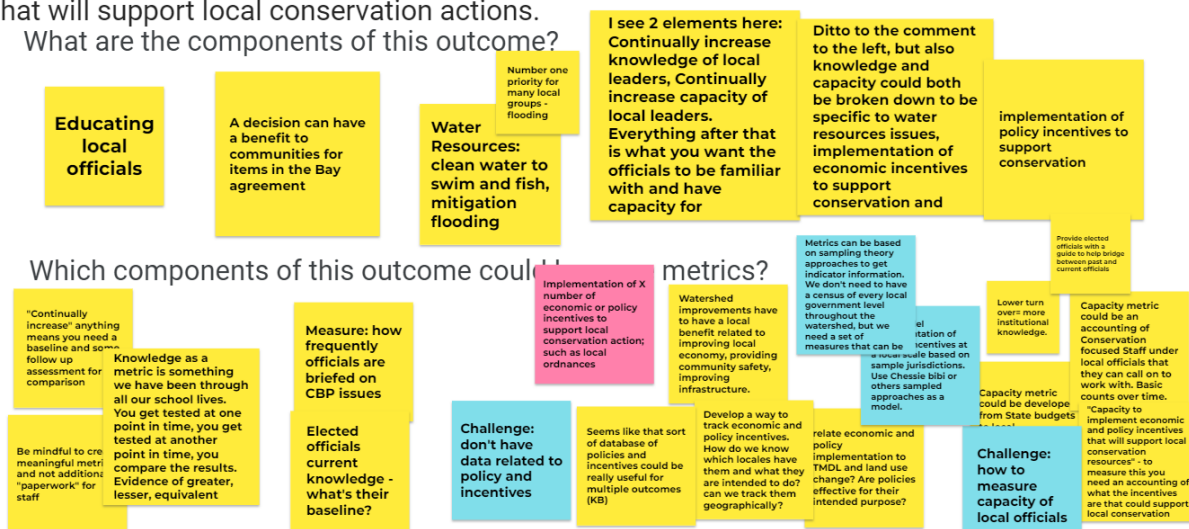
[Jamboard link](#)

Jamboard Images:

Group 1

Local Leadership Outcome: Continually increase the knowledge and capacity of local officials on issues related to water resources and in the implementation of economic and policy incentives that will support local conservation actions.

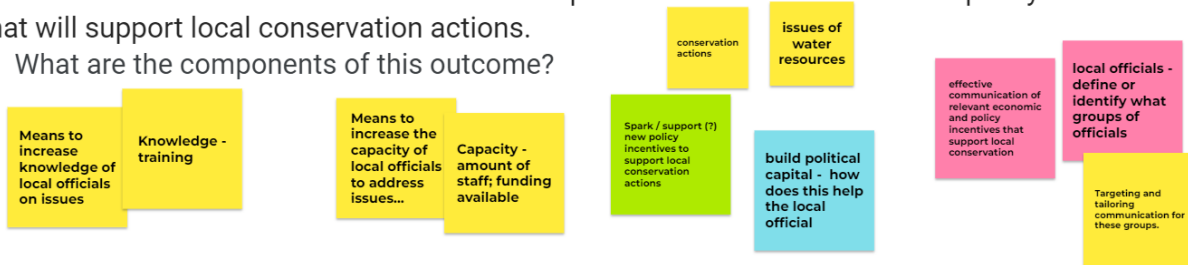
What are the components of this outcome?



Group 2

Local Leadership Outcome: Continually increase the knowledge and capacity of local officials on issues related to water resources and in the implementation of economic and policy incentives that will support local conservation actions.

What are the components of this outcome?



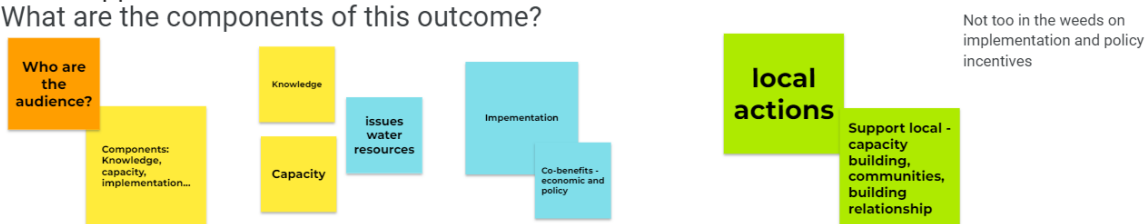
Which components of this outcome could become metrics?



Group 3

Local Leadership Outcome: Continually increase the knowledge and capacity of local officials on issues related to water resources and in the implementation of economic and policy incentives that will support local conservation actions.

What are the components of this outcome?



Which components of this outcome could become metrics?



Group 4

Local Leadership Outcome: Continually increase the knowledge and capacity of local officials on issues related to water resources and in the implementation of economic and policy incentives that will support local conservation actions.

What are the components of this outcome?



Which components of this outcome could become metrics?

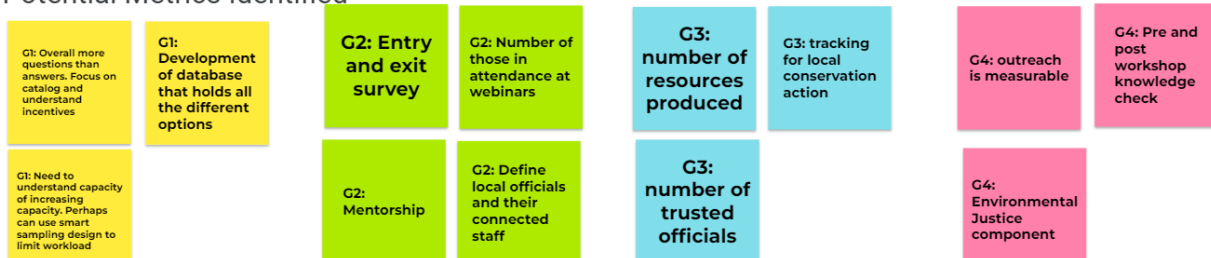


Report Out

Components



Potential Metrics Identified



Group one had a more extended discussion on the outcomes and metrics side. They said the key items to characterize are what are the incentives and understanding knowledge and capacity. Bill asked how would you measure how frequently officials are briefed on Bay program issues, and what constitutes a briefing? Peter clarified they hadn't gotten to a specific metric. Bill and Laura discussed how there are 1800 municipalities total including counties and municipalities, and it isn't practical to survey all of them. Peter said you don't have to sample all – it's possible to develop insights from a statistical subsample and still get a good answer even with limited resources.

Group two had similar input as group one. Greg Allen (EPA) commented on the initial approach of putting the Local Leadership Outcome language together. Greg said that it's talking about two big components: issues related to water resources and implementation of these incentives to support conservation. The group talked about how to measure whether they're increasing knowledge and reflected on when the Outcome was designed, they were excited about the findings from analyses they've done that showed them they need to talk to local officials about what's important to them. How do you move people from being knowledgeable to knowledgeable and active? Or from not knowledgeable to knowledgeable? The goal is to move them through the continuum no matter where they were. On that second part, it is about increasing their knowledge and incentivizing their desire to become active because when they do they gain political capital and it's important to their communities. This group suggested approaching local leaders with not how it matters about the Bay but with how can they support healthy, safe, resilient communities.

The metrics they proposed focused on incentives and implementation:

- Track proposals rather than successes; count how many projects and policy incentives were proposed, not just how many projects were funded and policy incentives passed.
- With the stewardship survey, it's possible to track individual stewardship actions. What if local leaders were using the behavior change website and added a link to their incentive programs? For example, on the stewardship survey, it shows something on rain gardens and a lot of people are doing them - maybe a local leader can provide an incentive for that action.
- On increasing knowledge, from the values and threats, turnover was mentioned - how can you measure knowledge with high staff turnover?
 - Enter and exist survey to see what they learned through their process.
 - Mentorship is another way to build knowledge and capacity. How many systems within that program have mentors to help build institutional knowledge and capacity?
 - Track how many people attend webinars and trainings.

Caroline Donovan said she had suggested defining local officials because originally the definition was limited to elected officials, but they know how important planners are for local decisions. It's important to define the audience before doing the measure. Many groups confirmed they had similar conversations on what are local officials. Vanessa added that local grassroots people also have a big role as local leaders. Laura Cattell Noll responded that historically, the Local Leadership Workgroup has defined local officials as elected officials, appointed officials, and senior staff.

Group three talked about not going into the weeds of initiatives and policy incentives, and the importance of measuring implementation and resources. This outcome is focused on

knowledge and capacity, but implementation and resources should also be considered. Turnover is a persistent issue and maybe that's a measure of capacity. Katie Brownson commented in the chat that it might be worthwhile to consider measuring knowledge and capacity both at the individual level and the collective level (given the turnover of individuals). Group three discussed measuring the number of resources produced as well as staff. Knowledge is not just stuck or gone once the official or staff is gone. There are many ways to track implementation and not just related to economic and policy incentives, such as resources spent on local planning or tracking local conservation action. The goal is to support local officials, so they'll support local conservation actions.

Katheryn added something she was considering, building on Greg Allen's background information, is towards this second part of outcome and how increasing ability to implement incentives towards local conservation actions get broken into the management action and the result in that one statement. Generally, when we go through the Strategy Review System (SRS) process, outcomes present metrics that back up where they are in their progress. Katheryn wondered if there is a measurement of local conservation actions and if that can be used as a metric to bring to the MB or other places to provide incentives. That would be its own metric for informing progress.

Renee Thompson (USGS) added that a sub-outcome related to this is Land Use Options and Evaluations, and it also relates to the rate of land conservation. Currently there isn't a way to track how land conservation actions are being implemented at the local level other than looking at the rate of land conservation change, which is tracked through Land Use Land Cover data and land conservation rate through the Land Use Methods and Metrics outcome. It would be interesting to develop a database or understanding of things like MD forest act or agricultural forestry conservation programs. Have jurisdictions that have those policies in place been more successful? Getting that information of where those policies have been implemented across the watershed is a big task, however.

Group 4 discussed how the Outcome says continually increase knowledge and capacity but doesn't say increase implementation, just increase the enabling condition. If they get too deep into implementation, they're on uncertain ground around at what point are they advocating for policies, and that's not appropriate for them to do. They want to make sure they're supporting officials to make decisions that are right for their communities. Components that could become metrics include outreach because it is measurable. Pre or post knowledge around a workshop is also measurable. The group also talked about how pieces of this outcome are about behavior change, but it doesn't mention behavior change. Maybe there is something in that space to learn from as they think about tracking their progress. Similar to group 2, the group discussed framing the outreach to local leaders as what's in it for them. Water resources might not be important, for elected officials, but planted trees might be helpful for the heat island effect. Whether or not they actually want to help the Chesapeake Bay doesn't necessarily matter as much as that they're helping their community because they want to get re-elected.

Bill brought up the need to be leery that environmental and conservation dollars have tended to make the more wealthy communities greener and the less wealthy communities less green.

Amy Handen commented that this exercise has elevated how there are so many different ways to interpret this Outcome. She asked, what is the value of this indicator, and what will we do differently with the information when we have it?

Bill commented it might be helpful to advertise actions as community friendly instead of Bay friendly since some don't think of themselves as part of the Bay community first.

Peter commented in the chat, referring to the Outcome's language, that "Continually increase" means there is a baseline to evaluate change from. The measures need a baseline in order to speak about progress. Is it known that more knowledge and capacity actually produce more conservation? Or is that an assumption? It may be necessary to test basic assumptions. Laura confirmed that those are assumptions and advocated for including more behavior change science into the work to address that concern.

Breck wrapped up the meeting by thanking everyone for their time and trying out this new format, and welcomed any feedback on this format.

12:00 PM Adjourn

The next STAR meeting will be on June 23, 2022.

Participant list: Alex Gunnerson (CRC), Breck Sullivan (USGS), Tom Parham (MD DNR), Caroline Donovan (UMCES), Amy Goldfischer (CRC), Kristin Saunders (UMCES), Jamileh Soueidan (CRC), Ken Hyer (USGS), Katheryn Barnhart (EPA), Chris Guy (USFWS), Caroline Johnson (CRC), Jackson Martingayle (LSU), Bill Dennison (UMCES), Scott Phillips (USGS), Vanessa Vargas-Nguyen (UMCES), John Wolf (USGS), Katie Brownson (USFS), Kristin Saunders (UMCES), Amy Handen (EPA), Ola-Imani Davis (Alliance for the Chesapeake Bay), Greg Allen (EPA), Renee Thompson (USGS), Sophie Waterman (CRC), Jennifer Starr (Alliance for the Chesapeake Bay), Katlyn Fuentes (CRC), Peter Tango (USGS), Garrett Stewart (CRC), Britt Slattery (NPS), Greg Barranco (EPA), Bruce Vogt (NOAA), Aurelia Gracia (NPS), Meg Cole (CRC/STAC), Allison Ng (EPA), Julie Reichert-Nguyen (NOAA), Gina Hunt (MD DNR), Randy Kenyatta Rowel (CRC), Doreen Vetter (EPA), Laura Cattell Noll (Alliance for the Chesapeake Bay), Ken Hyer (USGS)