



Urban Stormwater Workgroup

Tuesday, June 16th, 2026
10:00 AM – 12:00 PM

[Visit the meeting webpage for meeting materials and additional information.](#)

Purpose: This is the monthly meeting of the Urban Stormwater Workgroup. Main topics included a discussion and conditional approval of the Phase 7 E3 Scenario assumptions, an update on two developed sector loading rate ratios, an introduction on utility-scale solar forecasts for the Phase 7 model, and an update on structure, governance and management strategy development within CBP and CWGT.

Summary of Actions and Decisions

- Decision: The USWG approved the [April meeting minutes](#).
- Action: A call for nominations for one at-large member position on the USWG is now open. The call for nominations with a position description and further details is [posted here](#). Please submit all nominations to David Wood (david@chesapeakestormwater.org) and Petra Baldwin (Baldwin.Petra@epa.gov) by **COB Tuesday, July 21st**.
- Action: The [update](#) presented to the USWG for Phase 7 Loading Rate Ratios for Tree Canopy over Impervious and Compacted Pervious will be utilized, with opportunity to give feedback during the year of review.
- Action: Long term, USWG and FWG will gather more up-to-date information on leaf litter collection programs and the characteristics of those organics for a better understanding of how they contribute to the overall loads. If you have any leaf litter management programs in your jurisdiction to inform this, please reach out to USWG leadership.
- Decision: USWG members reached consensus to conditionally approve the Phase 7 E3 Scenario for the Developed Sector, contingent upon follow-up with absent members via email. An updated memo is [posted](#).
 - There was a request that USWG leadership reach out to VIMS to establish whether there were data to support defining a length of “non-eroding shoreline” to further refine the Shoreline Management E3. If a portion of non-protected shoreline were also designated as “non-eroding”, then the percentage of total shoreline covered by the Living Shoreline BMP will be reduced accordingly.
- Action: Discussion on the scenario base year will continue at the Goal Team-level, so please share any thoughts on this with your Goal Team member. USWG can provide our considerations on base year during the presentation of developed sector E3 scenario inputs at the August 24th CWGT meeting.

- Action: USWG received an introduction on the land change forecasts for the Phase 7 model. USWG is asked to review and approve the utility-scale solar forecasts. USWG will receive a follow-up presentation in August with a revised forecast and more information on validation, with approval sought at the September USWG meeting.
 - The Land Use Workgroup is holding office hours [July 15th](#) from 3-4pm for further briefing on the Land Change Forecasts if you are interested in attending.
- Action: Management Strategy development is continuing at the Goal Team-level with input from workgroups. If you are interested in being more involved in the development of the Reducing Excess Nitrogen, Phosphorus and Sediment (RENPS) Outcome part of the CWGT Management Strategy, please reach out to USWG leadership.

Minutes

I. Welcome and Announcements

Lead: Norm Goulet, USWG Chair

Norm welcomed meeting participants and gave an overview of the meeting agenda. David shared the below announcements:

- MARISA's [IDF Curve Tool](#) is updated with a decision support guidance widget.
- CSN's [Chesapeake Urban Stormwater Professionals \(CUSP\) trainings](#) are open for registration! Learn more and register [here](#). There are now two parts -
 - Summer course focused on Science and Practices - Registration ends June 28th
 - Fall course focused on Policy and Programs – Registration ends Sept 27th
- A call for nominations for one at-large member position on the USWG is coming soon.

Decisions:

1. The USWG approved the [April 2026 USWG Meeting Minutes](#).

Actions:

1. A call for nominations for one at-large member position on the USWG is now open. The call for nominations with a position description and further details is [posted here](#). Please submit all nominations to David Wood (david@chesapeakestormwater.org) and Petra Baldwin (Baldwin.Petra@epa.gov) by COB Tuesday, July 21st.

II. Updates to Tree Canopy over Impervious and Compacted Pervious Loading Rate Ratios

Lead: David Wood, USWG Coordinator

David shared an update to the developed sector land use loading ratios, driven by changes to tree canopy over impervious (TCI) and the new compacted pervious land uses. Further information was shared with USWG via email and is in the memo linked below.

Materials: [Memo](#)

Actions:

1. The [update](#) presented to the USWG for Phase 7 Loading Rate Ratios for Tree Canopy over Impervious and Compacted Pervious will be utilized, with opportunity to give feedback during the year of review.
2. Long term, USWG and FWG will gather more up-to-date information on leaf litter collection programs and the characteristics of those organics for a better understanding of

how they contribute to the overall loads. If you have any leaf litter management programs in your jurisdiction to inform this, please reach out to USWG leadership.

Discussion:

- Dave Montali, WVDEP/TetraTech commented that the compacted pervious loading rate seems too high and too close to turf. While compacted pervious can include abandoned mine lands and construction that is not mapped, in rural areas, it is mostly things like transmission lines and highway right of ways which are vegetated and not fertilized. Not sure how much this matters in the model, but wanted to note this.
 - Dave also asked what E3 is for compacted pervious. If there's nothing that we're doing on compacted pervious, then however we represent it doesn't matter unless it affects calibration.
 - Norm responded that we tried to be as structured as possible with this. Given that CalCAST is going to be calculating loading rates, we're just going to have to move forward with it and see how things come out when we start looking at the CalCAST results. We're going to have to do an in-depth exploration of some of these rates and a comparison to how we've calculated them in the past.
 - Dave noted that if the National Stormwater Quality Database has concentration data for mixed transportation and open space, it doesn't seem right to pump the volume up on that and making it pretty much equal to turf.
 - Norm added that compacted pervious is not turf and won't receive any kind of nutrients. Ideally, in the next model update we would further disaggregate some of these catch-all categories but that also requires finding actual loading rate ratio information to feed into CalCAST for each.
 - Joseph Delesantro, CBPO Contractor noted that he and Gopal Bhatt have started calibrating the Phase 7 flow model and they calibrate many of the land use classes separately. The preliminary results of that calibration support the hypothesis that there is higher runoff from compacted pervious than turf grass. Even though compacted pervious is not highly fertilized or a high input land use, it does have a higher runoff, and those two things are balancing out a bit.
- Mark Symborski, MoCo Planning noted that some turf grass is compacted, like in suburban areas, and is performing hydrologically almost like impervious. Is there any way to account for that?
 - David responded that at this time and scale, it might be difficult to account for. David noted he is putting together a steering committee and team about soil health in urban areas working on decompaction and understanding what healthy soil conditions are for a couple developed use cases (park lands, post-development, etc.) so hopefully that will help understand that better.
- Norm asked about Forestry Workgroup's (FWG) feedback on this.
 - David responded that no feedback was received. They seemed okay with the loading rate ratio for Tree Canopy over Impervious. Long term, we agreed to work together to better understand the influence of the leaf litter inputs on the loads from those land uses and hopefully try to develop better and clearer management approaches around leaf litter collection programs to try to keep lowering the TCI loading rate.
 - Norm added that leaf litter was a major point of discussion with FWG, since they don't consider it to be a loader, but we do in urban environments where trees are connected to impervious areas.
- Joseph Delesantro noted that the model will be ready by early 2027 for review with opportunity to submit comments and move through drafts to fix potential problems in the

model. Loading rate ratios are one “domino” at the beginning of the chain, so if you think this is something that might need revision in 2027, it would be best to start thinking what that would look like and what data would be needed so that if the results that come out of the model have issues, then we can move quickly on revisions to the model.

- Norm responded that we’ll definitely dive in. Understood on the importance of keeping things moving, but we need to make sure we get these first sets of numbers right.
- Auston Smith, EPA CBPO added that the partnership needs to go through an approval of the review process itself, but we’ve been talking about having approx. two months of review followed by a pause to respond to those comments and then an additional phase of review after that.

III. Phase 7 E3 Scenario

Lead: David Wood, USWG Coordinator and Norm Goulet, USWG Co-Chair

David walked through an updated draft for Phase 7 Everything, by Everyone, Everywhere (E3) Scenario BMPs treatment assumptions for the developed sector for feedback and discussion from the USWG. David highlighted a few main changes since the previous draft:

- Increase for the riparian buffer scenario – 30% of turf grass acres within the 35 ft riparian area are buffered
- Increase for tree canopy expansion and forest planting on urban scenario – 20% of turf grass acres converted for each
- Addition of shoreline management scenario – 80% of unprotected shoreline linear feet managed, which was developed through coordination with Andy Fitch, USGS and a shoreline management model from VIMS that identifies length of shoreline suitable for living shoreline.

Norm called for a vote by consensus from the workgroup to conditionally support the E3 scenario recommendations, acknowledging the ability to refine the Shoreline Management scenario if data is found to support a reduced percentage, and it was [approved](#).

USWG members also briefly discussed considerations for a Scenario Base Year, with no consensus recommendation, and acknowledgement it continue to be discussed at the CWGT. Auston Smith, EPA CBPO shared a preview of the considerations for CWGT discussion on this at their [June 22](#) meeting. CWGT will decide on a Scenario Base Year in September.

Materials: [Updated E3 Scenario Memo](#) (version date: 6.16.2026), [Post-meeting Conditionally Approved E3 Scenario](#)

Actions:

1. USWG members reached consensus to conditionally approve the Phase 7 E3 Scenario for the Developed Sector, contingent upon follow-up with absent members via email.
2. There was a request that USWG leadership reach out to VIMS to establish whether there were data to support defining a length of “non-eroding shoreline” to further refine the Shoreline Management E3. If a portion of non-protected shoreline were also designated as “non-eroding”, then the percentage of total shoreline covered by the Living Shoreline BMP will be reduced accordingly.
3. Discussion on the scenario base year will continue at the Goal Team-level, so please share any thoughts on this with your Goal Team member. USWG can provide our considerations on base year during the presentation of developed sector E3 scenario inputs at the August 24th CWGT meeting.

Discussion:

- Dave Montali, WVDEP/TetraTech asked is there is an input assumption for compacted pervious.
 - David responded that based on the [Load Source to BMP mapping](#), which USWG approved [Dec 2025](#), all stormwater management practices that apply to urban pervious lands are eligible on compacted pervious land uses. So, if any of these E3 scenario inputs map to developed land uses they would also be distributed to and affect compacted pervious.
 - Dave responded that it seems there is not a big E3 expectation on compacted pervious, then, if there's nothing you can really do other than stormwater treatment and runoff reduction.
- Cecilia Lane, DC DOEE (in chat): Sorry, did you say you mapped those shoreline areas?
 - David responded they were mapped by VIMS. The two models are linked at the bottom of the [memo](#) - [VA Shoreline Management Model version 5.1](#) and [MD Shoreline Stabilization Model](#).
 - Norm added that we backed out all of the hardened shorelines and did not include them as part of the calculation to figure out the E3.
 - David clarified the percentage is only applied to unprotected shoreline.
- Kevin Du Bois, DoW commented that the VIMS tool shows where living shorelines would be appropriate, but not necessarily where they're eroding. Not all the shoreline that were mapped where living shorelines could be appropriate are necessarily eroding. 80% seems really high.
 - David responded we don't have a good method for getting at that consideration. David added that they did adjust 80% of all shorelines to 80% of unprotected shorelines to try and get closer to something E3-appropriate.
 - Kevin shared that in his experience on tidal wetlands in the City of Norfolk, they'd see ~10 projects a year for the entire city. To expect in an E3 scenario that 80% would be protected with a living shoreline seems too high and doesn't take into account what percentage are eroding.
 - David noted that he assumes the model may have a baseline loading rate for those shorelines that is just applied evenly to all linear feet of shoreline that are not protected in the model. So, from a reality perspective it may be the case and he agrees with the logic, but for modeling it may be different.
 - Norm added that it was hard to find numbers to base this off to begin with, so the VIMS data we do have is helpful, and reminded the group that E3 is an unrealistic scenario to begin with.
 - Norm proposed that if somebody can give us some information that would help further refine this without simply pulling a number out of the air, then we can consider that, but it seems like the 80% is the best we can do for now.
 - Kevin proposed that VIMS may have more data and suggested reaching out to Pam Mason.
 - Norm noted KC Filippino, USWG Co-Chair will also talk with Molly Mitchell, VIMS.
 - Auston Smith, EPA CBPO noted that other workgroups have also had to try to find additional experts and data to help ground their E3 input assumptions. So, if additional data or input can be found before August, then that is probably the best move.
- Dave Montali asked for clarification on what the Controls on Extractive scenario entails now that we have compacted pervious, which should be the same.

- David responded that Dave is correct and the Controls on Extractive should no longer be applicable. We will make that change.
- Discussion on Scenario Base Year
 - Gillian Adkins, MDE (in chat): I did not see any mention of base year in this updated draft?
 - Norm shared that he has heard support from multiple people for 2022.
 - Dave Montali shared potential support for 2010 given the principle of jurisdictions and basins being responsible for their loads and their growth, so we should not grandfather in growth and distribute it across basins.
 - Marty Hurd, Fairfax Co. asked if the grandfathering of growth in the E3 scenario is considered as something that's controllable.
 - Auston responded that the scenario base year is the year where both the E3 and the No Action scenarios are based upon. So, when those assumptions for those two scenarios are ironed out, if 2022 were to be chosen, that growth would be incorporated into the understanding of what the controllable loads are.
 - Marty clarified he is curious about the ability to consider growth as controllable in the E3 scenario.
 - Auston responded that growth is certainly something that can be adjusted.
 - Auston (in chat): As I mentioned we have a [Clean Water Goal Team \(CWGT\) two day meeting](#) next week to discuss this topic, among several others. The Scenario Base Year presentation and breakout conversation is from 2:45-3:45pm EST on 6/22 of this CWGT meeting. Please let myself and Petra know if you have any questions on this and thanks again.

IV. 2040 Land Use Forecast

Lead: Peter Claggett, USGS

The CBP Land Data Team is developing a 2040 land use forecast for the Phase 7 model. USWG has been asked to review the “business as usual” (BAU) utility-scale solar forecasts for 2040. Peter provided an introduction at this meeting, with follow-up to seek approval at the September USWG meeting. Peter outlined the role of the land use forecast, how the Chesapeake Bay Land Change Model is developed, and a preview of preliminary model results. The model is parameterized with high-resolution data, housing and job growth from 2010-2020 and development change from 2013-2022. Peter highlighted a few counties with higher and lower simulated growth and comparisons of observed vs. simulated growth. He suggested using county-level projections produced by each state for extrapolating housing change. Next steps include further model validation and refinement of solar data.

Materials: [Presentation](#)

Actions:

1. USWG received an introduction on the land change forecasts for the Phase 7 model. USWG is asked to review and approve the utility-scale solar forecasts. USWG will receive a follow-up presentation in August with a revised forecast and more information on validation, with approval sought at the September USWG meeting.
2. The Land Use Workgroup is holding office hours [July 15th](#) from 3-4pm for further briefing on the Land Change Forecasts if you are interested in attending.

Discussion:

- Peter Clagget, USGS posed that a baseline decision by USWG is whether solar should be included in the BAU simulation for the model at all.
 - Norm Goulet, NVRC responded that he thinks it should absolutely be included. The USWG can formally recommend that later.
- Norm noted the comparisons of annual growth rates for observed vs. simulated have some states very reasonable and others like NY and PA seem very different.
 - Peter responded they are looking into that. Lancaster is especially concerning. The northern PA counties have a lot of natural gas pads and roads leading to those, so their growth is potentially not very linked to population and job growth. In VA, solar field development also makes a big impact not necessarily tied to population and job growth.
 - Norm responded solar will definitely have to be included in development. The NY and northern PA growth will need to be analyzed and explained.
 - Peter responded that a separate model for natural gas exploration, data centers and warehouses would be ideal, but we don't have that capability and time to do so for this phase.
 - Kevin Du Bois, DoW asked (in chat): Is there a way to estimate emigration from NY?
- KC Filippino, HRPDC asked if they have an analysis of how well the Phase 6 predictions were to observed growth.
 - Peter responded they did an analysis as part of a [published paper](#), but that was just for Maryland. Peter noted the complexity of validating and comparing, given the models are different in other ways as well, and noted the unexpected impact on housing development after 2008.
 - Norm responded that something simple would be helpful. For example, just a table with what the Phase 6 model predicted for 2022 compared to observed for 2022. That would help determine what adjustments may need to be brought into the new model.
 - KC agreed something simpler works. This is important to have because if the same assumptions were carried over from the previous model, then we should see what needs to be tweaked. Also need to consider what can't be predicted like policy influence. KC suggested talking to VADEQ for more insight on permitting for solar in VA.
- Peter noted for this first decision, we need to determine a BAU scenario. Alternative scenarios for WIP planning and other purposes could be considered later on with more time to gather information on that. For solar, given the numbers are quite high, one possibility is to take the low end of the forecasts instead of the mid-range that was presented here.
 - Norm suggested for solar BAU to use a linear progression of what has been approved in the last five years. The Dominion numbers could then be used as part of a different scenario.
 - Peter responded they are working with Chesapeake Conservancy who has a solar time series they are updating, which could give more information.
- Ginny Snead, AMT asked (in chat): Can you provide a little more background on the solar number projection for Virginia? I know there are a lot of County approved sites that aren't close to development and may not be developed.
 - Peter responded the numbers are gigawatt-based. They relied heavily on a recent VCU report and conversations with the Piedmont Environmental Council.
- KC Filippino confirmed that Peter is presenting this to LUWG tomorrow and the following process and timing for making this decision.

- Peter responded that the urgency of the timing for getting this done by September is for having it ahead of the year of review for the Phase 7 model. As part of that review, the partnership has expressed interest in looking at how the Phase 6 WIPs will perform in the Phase 7 model against the 2040 condition so we need a 2040 land use for that.
- KC confirmed that it is being used for scenario planning, then.
- Peter noted that if it's like Phase 6 then there will be some ability for model updates with a frequency still to be determined. During the year of review, there will also be opportunities for feedback and adjustments if there are major issues.
- Jackie Pickford, USGS (in chat): The Land Use Workgroup (LUWG) will be discussing the urban forecasts in more depth on [July 22](#) from 1-3pm if anyone from USWG is interested in attending. We will have an intro meeting tomorrow from 1 - 3, but July will be a deeper dive into some of the results.
- Dave Montali, WVDEP/TetraTech asked about the information available on growth of data centers and the ability to gauge if it is as big as the solar fields.
 - Peter responded that it will definitely be much smaller acreage, but it's also connected to solar fields given many are trying to run on renewables. There is data out there.
 - Dave asked whether the forecast will include a component of growth associated with data centers.
 - Peter responded that data centers are considered part of the commercial footprint, so it will be a part of that and will be extrapolated. Right now, we don't have a way to simulate independent of population and job projections.
 - Norm added that he thinks we should be cautious about linear extrapolation on data centers given the level of pushback and uncertainty to their continued rate of development.
- Peter noted he will plan to revisit the USWG in August with a revised forecast and new information on validation. Peter asked for USWG's help with policy considerations and will mention that to the LUWG too.

V. Structure, Governance and Management Strategy Updates

Lead: Petra Baldwin, USWG Staffer

The Management Board met for their final meeting on [June 11th](#) and approved the Governance and Management Framework, which will go to the Policy Steering Committee for final approval [June 30th](#). The CWGT approved the structure of workgroups in the Goal Team, with one remaining decision on FFWG. Management Strategy development is continuing at the Goal Team-level and USWG leadership was asked to provide initial considerations via a worksheet for the Reducing Excess Nitrogen, Phosphorus and Sediment (RENPS) Outcome section. Later on, a workplan with more detailed tasks will need to be developed. CWGT is holding a two-day meeting [June 22-23](#) with multiple discussions on these topics.

Materials: [CWGT Org Chart](#) (version date: 06.15.26)

Actions:

1. Management Strategy development is continuing at the Goal Team-level with input from workgroups. If you are interested in being more involved in the development of the Reducing Excess Nitrogen, Phosphorus and Sediment (RENPS) Outcome part of the CWGT Management Strategy, please reach out to USWG leadership.

VI. Wrap-Up

Lead: Petra Baldwin, USWG Staffer

VII. Adjourn

Next Meeting: Tuesday, August 18th, 10 am – 12pm

Attendees:

Norm Goulet, NVRC (USWG Chair)
KC Filippino, HRPDC (USWG Vice-Chair)
David Wood, CSN (USWG Coordinator)
Petra Baldwin, CRC (USWG Staffer)
Peter Claggett, USGS
Elaine Webb, DNREC
Bonnie Arvay, DNREC
Cecilia Lane, DC DOEE
Sophia Grossweiler, MDE
Gillian Adkins, MDE
Jamie Eberl, PADEP
Owen Dingman, VADEQ
Dave Montali, WVDEP
Scott Settle, WVDEP
Auston Smith, EPA CBPO
Rebecca Winer-Skonovd, Biohabitats
Jeff Colella, WVSA
Ginny Snead, AMT Engineering
Camille Liebnitzky, City of Alexandria
Joseph Delesantro, CBPO Contractor
Michele Berry, CSN
Jackie Pickford, USGS
Rebecca Ransom, USGS

Sydney Hall, DNREC
Rachel Owrutsky, DNREC
Shannon McKenrick, MDE
Devon Kosisky, MDE
Alison Santoro, MD DNR
Bruce Naylor, PADEP
Scott Settle, WVDEP
Joe Parfitt, VDOT
Scott Crafton, VDOT
Brock Reggi, VADEQ
Justin Lindemeyer, VADCR
Kevin DuBois, DoW
Martin Hurd, Fairfax Co., VA
Sushanth Gupta, MWCOG
Allie Wagner, NVRC
Mark Symborski, MoCo Planning
Kyndal Gehlbach, MoCo Parks
Krista Romita Grocholski, RAND
Eugenia Hart, TetraTech
Helen Smith, Devereux Consulting
Aaron Fisher, Ernest Meier Inc.
Charles Hegberg, RES
Ashleigh Thur
Brenda Morgan