August 15, 2025

Pew

Washington Department of Ecology
Shoreline Management Act Rulemaking Team
300 Desmond Drive SE
Lacey, WA 98504-7600

Re: Shoreline Management Act Rulemaking Comments

Dear Ms. Blair, Ms. Rothwell, and the Shoreline Management Act Rulemaking Team:

The Pew Charitable Trusts (Pew) appreciates the opportunity to comment on the preliminary draft rules (draft rules) intended to implement some of the requirements of HB 1181, codified in RCW 90.58.630, related to Washington's Shoreline Management Act (SMA). Pew's U.S. Conservation project advances commonsense solutions that address the impacts of a changing environment on nature and communities, in collaboration with policymakers, Tribes, and stakeholders.[1] We have worked in Washington on a number of issues including Outstanding Resource Water designations, public lands protection and aquatic barrier removals.

The draft rules are a positive step forward, and we strongly support the Department of Ecology's (Ecology) efforts in preparing them. Our comments are intended to strengthen the proposal and more completely effectuate the intent and substance of HB 1181.

Pew is working to address the challenge that a rapidly changing climate poses to communities and ecosystems. Based on Pew's review of the relevant literature and experience from working with experts and communities across the country, we developed five "climate-ready management principles." These principles are intended to assist governments at every level to develop land use and natural resource management plans that are responsive to and adequately address the effects of climate change. While ecosystems and communities have always changed with time, the rate and magnitude of change we are currently experiencing is unprecedented, and it is critically important that management plans adapt and change as needed to keep up with the impacts of climate change, in this case, on marine environments, other shorelines, and adjacent communities.

We urge Ecology to consider and rely on the following "Climate Ready Management Principles" as it prepares the next version of the draft rules. These principles help ensure the resilience of coastal areas and communities in the face of a changing climate.

I. Climate Impact Evaluation

Responsiveness to climate change requires the evaluation of present and future climate impacts on

[1] The Pew Charitable Trusts. (2025). *U.S. Conservation: The lands and waters of the United States are national and global treasures.* https://www.pew.org/en/projects/us-conservation.

communities and natural resources, as well as an understanding of the underlying vulnerabilities of those communities and ecosystems. Climate impact evaluation helps local governments and communities plan for multiple outcomes through a suite of approaches, including climate scenario planning, predictive modeling, vulnerability assessments, Indigenous knowledge, and identification and prioritization of management assets.[2]

II. Climate-Responsive Goals and Strategies

Shoreline Management Programs (SMPs) must set specific goals and strategies, and these should be linked directly to climate impact evaluations and be based on an adaptive management framework that addresses climate change impacts and related stressors (e.g., sea level rise, coastal squeeze, more frequent and severe storms, flooding, drought, and extreme heat). SMPs should include policy language that requires managers to account for uncertainty and respond to rapidly changing conditions with tools like sunset and sunrise clauses, triggers, and benchmarks. Overall, strategies should be supported by science and traditional and local knowledge and should prioritize the use of nature-based solutions that protect, conserve, and restore natural or modified systems.[3] Goals should be timebound and measurable and aim to minimize the carbon footprint of actions and projects.

III. Systematic Monitoring

Systematic monitoring of climate indicators and metrics is critical for understanding how climate change is impacting an area over time. Systematic monitoring of physical metrics, such as sea level rise, rainfall, temperature, water pollution levels, and biological indicators, including the status and distribution of key species and habitats (e.g., kelp and eelgrass), is essential for designing threshold and benchmark-based policy and processes. By standardizing monitoring methodologies, establishing regular and ecologically relevant schedules and designing protocols within the broader landscape or watershed context, planners can better track management actions, evaluate effectiveness, and determine what adjustments they should make to improve outcomes.

IV. Adaptive Management

In the face of uncertainty and change, an adaptive management framework enables planners and managers to iteratively plan and implement strategies and actions that provide benefits across a range of possible future conditions and scenarios. An adaptive management framework or process includes implementing flexible implementation pathways, managing observed trade-offs, avoiding maladaptation, and adjusting approaches based on evaluation of new information and understanding from scenario planning, systematic monitoring (e.g., research or data analysis), Indigenous or local knowledge, and other variables and

[2] National Park Service. (2021). Planning for a Changing Climate: Climate-Smart Planning and Management in the National Park Service. National Park Service. Fort Collins, CO.

[3] Reguero, B.G., Beck, M.W., Bresch, D.N., Calil, J., & Meliane, I. (2018). Comparing the cost effectiveness of nature-based and coastal adaptation: A case study from the Gulf Coast of the United States. *PLoS ONE* 13(4): e0192132. https://doi.org/10.1371/journal.pone.0192132.

observations.[4] As climate change impacts grow in pace, scale, and severity, an adaptive management approach will be critical for maintaining community and ecosystem resilience.

V. Collaborative Planning with Communities

Collaborative planning and engagement, particularly with Tribal, Indigenous, and other climate vulnerable communities, is essential to any effective climate-response plan or strategy. Gathering such input and incorporating it into management and policy design ensures that actions are place-based and serve local needs and are therefore supported. At the outset of planning, planners and managers should design and establish meaningful outreach, engagement, and notification processes for Tribes and climate vulnerable communities, as well as consent frameworks to guide and ensure a collaborative and inclusive planning process takes place. Research shows that when Indigenous peoples and local communities occupy a central role in decision making and co-management or governance, conservation and stewardship outcomes are more positive and durable.[5]

A full copy of these principles is attached to these comments in Exhibit A.

Recommendations for Proposed Amendments to the Shoreline Management Act

We used the above climate-ready management principles to evaluate the draft rules and inform our comments and recommendations. In sum, by ensuring robust modeling standards, clear and measurable adaptation goals, comprehensive monitoring requirements, and a strong adaptive management framework, the rules will ensure that shoreline management regulations can evolve with changing conditions while maintaining transparency and accountability in decision-making processes.

Ensuring adequate mitigation and meeting the "no net loss of shoreline ecological function" standard has been a significant challenge. We strongly endorse the draft rule provisions that strengthen the no net loss standard and, we believe, will greatly improve our collective ability to meet it. In particular, we strongly support subsection WAC 173-26-226(2), which adds clarity and strength to the no net loss standard and implementable language that will help local governments develop strong master program language and achieve the no net loss standard.

In addition to our detailed comments below addressing the climate related portions of the draft rules, Pew also strongly supports other parts of the draft rules. In particular, the draft rules significantly improve existing rules regarding enforcement and other administrative improvements which we address below.

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[4] Stein, B.A., P. Glick, N. Edelson, and A. Staudt (eds.). (2014). Climate-Smart Conservation: Putting Adaptation Principles into Practice. National Wildlife Federation, Washington, D.C.

[5] Dawson, N. M., Coolsaet, B., Sterling, E. J., Loveridge, R., Gross-Camp, N. D., Wongbusarakum, S., Sangha, K. K., Scherl, L. M., Phan, H. P., Zafra-Calvo, N., Lavey, W. G., Byakagaba, P., Idrobo, C. J., Chenet, A., Bennett, N. J., Mansourian, S., & Rosado-May, F. J. (2021). The role of Indigenous peoples and local communities in effective and equitable conservation. *Ecology and Society*, *26*(3), Article 19. https://doi.org/10.5751/ES-12625-260319.

Comments on Preliminary Draft Revisions to WAC 173-26

Pew appreciates the extent to which the draft rules implement the goals of HB 1181 and incorporate climate-ready management principles. Most notably, the draft rules include robust requirements that local governments perform vulnerability assessments as part of their periodic SMP updates; set wide-ranging regulatory requirements for Sea Level Rise Hazard Areas; and require a phased approach to implementation that allows for adaptive responses over time. However, to ensure that these rules are effective in addressing the impacts of sea level rise, storm severity, and other climate change impacts as HB 1181 requires, Pew recommends that the rules be further revised in the following ways.

Recommendation 1 (Applicability): Revise proposed WAC 173-26-246 to provide clarity regarding which local governments are required to plan for sea level rise.

Proposed WAC 173-26-246(2)(a) authorizes Ecology to determine which local governments are required to engage in sea level rise planning but provides no standards or criteria for this determination. Subsection 4 describes situations where local governments may not be required to engage in sea level rise planning. We suggest taking a different approach.

While there will be some variability in the magnitude of sea level rise at different locations, all local governments with tidally influenced shorelines will experience sea level rise.[6] Rather than making this a matter of Ecology determining which local governments are required to plan for sea level rise, we suggest replacing the current draft subsection WAC 173-26-246(2)(a) with the following:

> (a) All local governments with marine or tidally influenced shorelines shall engage in sea level rise planning as described in this subsection. Local governments may request an exception or modification to this requirement. Ecology may grant an exception or modification when it determines that sea level rise and/or its impacts in the requesting jurisdiction will be negligible over a long time-horizon based on a review of sea level rise projections and hazard modeling or that the area subject to sea level rise is very limited and other planning tools are in place that address the risk posed by sea level rise. The decision to grant an exception or modification is in Ecology's discretion.

With this change, subsection (4) would be removed from the draft rules.

Recommendation 2 (Modeling Standards): To ensure robust and science-based climate impact evaluations, specify minimum technical standards and validation requirements for sea level rise projections and hazard modeling.

[6] Miller, I.M., Morgan, H., Mauger, G., Newton, T., Weldon, R., Schmidt, D., Welch, M., Grossman, E. (2018). Projected Sea Level Rise for Washington State – A 2018 Assessment. A collaboration of Washington Sea Grant, University of Washington Climate Impacts Group, University of Oregon, University of Washington, and US Geological Survey. Prepared for the Washington Coastal Resilience Project. Updated 07/2019.

Currently, the draft rules only require sea level rise projections and hazard modeling to be "current, accurate, and complete" and to comply with the general process principles in subsection WAC 173-26-201(2)(a).[7] More specific modeling standards are particularly important because modeling is the basis for both determining the boundaries of Sea Level Rise Hazard Areas and determining whether a local government is excepted altogether from SLR planning requirements.[8]

The rules should require that all models undergo independent technical review and meet minimum standards for spatial resolution, temporal accuracy, and validation against historical observations. The Department should also maintain a list of pre-approved modeling approaches and require justification when alternative methods are used. This would help ensure consistency across jurisdictions while allowing variation for local conditions.

We recommend the following language be added to draft subsection WAC 173-26-246(6)(b)(iii):

> (G) Meet the minimum technical standards in WAC 173-26-246(10)(e) and (f).

We recommend the following language be added to draft subsection WAC 173-26-246(10):

> (e) The department shall maintain and regularly update a set of pre-approved sea level rise projection and hazard modeling approaches that meet the technical standards in subsection (10)(f). Local governments may use alternative modeling approaches if they demonstrate that such approaches meet or exceed the accuracy and validation requirements of the pre-approved methods. The department shall provide technical guidance on modeling standards and may require peer review of alternative approaches before approval.
>
> (f) The following minimum technical standards apply whenever sea level rise projections or hazard modeling is required under this section:
>
> (i) Spatial resolution sufficient to identify hazard boundaries at the parcel level;
> (ii) Temporal resolution that accounts for seasonal and tidal variations, with projections based on at least 30 years of historical calibration data where available;
> (iii) Validation against observed historical water levels, storm events, and erosion rates for the study area or comparable nearby locations; and
> (iv) Documentation of model limitations, uncertainty ranges, and confidence intervals; and
> (v) Independent technical review by qualified professionals with expertise in coastal processes, sea level rise modeling, or related fields.

[7] WAC 173-26-246(6)(b)(iii), (10).
[8] WAC 173-26-246(4).

Recommendation 3 (Measurable Goals): To ensure accountability and effective implementation of sea level rise strategies, require specific, measurable, and time-bound climate adaptation goals with clear performance standards.

While the draft rules address adaptation strategies, they lack requirements for specific, measurable goals that can be tracked over time and evaluated for effectiveness. [9] Without measurable goals and performance standards, local governments and the public cannot assess whether adaptation efforts are succeeding or determine when strategy adjustments are needed.

Accordingly, we recommend that Ecology revise WAC 173-26-246(7) to include the following subsection, which references an additional subsection proposed in Recommendation 5, adaptive management.

> (e) Measurable adaptation goals. Master programs must include specific, measurable, time-bound adaptation goals that address key vulnerabilities identified in sea level rise vulnerability assessments and link to adaptive management frameworks required under subsection (14).
>
> > (i) Goal requirements. Adaptation goals must address ecological function protection, public access maintenance, infrastructure resilience, and community resilience; include baseline conditions, specific numerical performance targets, and target timeframes aligned with sea level rise scenarios; specify performance indicators measurable through monitoring programs required under subsection (13); and include interim benchmarks to track progress toward long-term targets.
> >
> > (ii) Performance evaluation. Adaptation goals must include protocols for regular evaluation that link to systematic monitoring and adaptive management cycles, specify corrective actions when targets are not met, and enable goal modification when conditions change.

In addition, we recommend adding the following to WAC 173-26-246(6)(c)(iii):

> (F) Include measurable performance targets and success criteria that align with the adaptation goals required under subsection (7)(e).

Recommendation 4 (Monitoring): To support effective adaptive management and ensure that climate adaptation strategies remain responsive to changing conditions, establish comprehensive systematic monitoring requirements.

The draft rules acknowledge the need for up-to-date information for an effective adaptive management system but lack specific requirements for ongoing monitoring of climate indicators and biological metrics. [10] Without systematic monitoring, local governments cannot effectively evaluate whether adaptation strategies are working, when conditions have changed sufficiently to warrant strategy adjustments, and

[9] E.g., WAC 173-26-246(6)(c), (7).
[10] WAC 173-26-246(6)(e)(vi), (10).

whether ecological functions are being maintained. This gap significantly weakens the rules' adaptive management requirements, which are fundamental to effective climate adaptation planning.

Accordingly, we recommend that Ecology revise the last sentence of draft WAC 173-26-246(3)(d) to read: "Changes to local conditions, new climate science, ~~and~~ improved climate data, and systematic monitoring results pursuant to subsection (13) of this section shall be used to revise the sea level rise provisions during each master program periodic review."

We also recommend that Ecology add the following language as new subsection WAC173-26-246(13):

(13) Systematic monitoring requirements.

(a) Purpose. Local governments required to plan for sea level rise must establish or participate in systematic monitoring programs to track climate indicators and biological metrics necessary for adaptive management and strategy evaluation.

(b) Coordination with existing programs. Local governments shall coordinate monitoring activities with existing state and federal monitoring programs, including but not limited to NOAA tide gauge networks, Washington State Department of Fish and Wildlife habitat monitoring programs, and department water quality monitoring systems. Local governments may fulfill monitoring requirements through participation in regional monitoring collaboratives or by using data from existing monitoring programs where coverage and data quality are adequate.

(c) Required monitoring parameters. Monitoring programs must track the following parameters, either directly or through coordination with existing programs:

(i) Physical metrics: relative sea level rise, extreme precipitation events, air and water temperature trends, and water quality parameters relevant to shoreline ecological functions;

(ii) Biological indicators: status and trends of key species identified in vulnerability assessments (such as salmon, shellfish, kelp, and eelgrass) and habitat condition metrics including habitat extent, connectivity, and function.

(d) Monitoring protocols and reporting. The department shall develop standardized monitoring protocols in coordination with state agencies and regional partnerships. Local governments shall report monitoring results according to schedules aligned with periodic review cycles, with interim reporting when monitoring data indicates significant changes in baseline conditions.

(e) Regional coordination. Local governments are encouraged to participate in regional monitoring collaboratives to share costs and ensure consistent methodologies across jurisdictions. The department shall facilitate regional coordination and may require participation in collaborative efforts where feasible and cost-effective.

(f) Adaptive management integration. Monitoring results must be used to evaluate the effectiveness of adaptation strategies and trigger strategy adjustments as specified in the adaptive management frameworks required under WAC 173-26-090(2)(e) and other applicable provisions. Local governments shall document how monitoring data informs management decisions and strategy modifications.

Recommendation 5 (Adaptive Management): To ensure SMPs can effectively respond to changing conditions and new information, strengthen adaptive management requirements.

While the draft rules acknowledge the need for adaptive management and, in some cases, require it, the rules lack the detailed implementation framework necessary for effective climate adaptation.[11] The current provisions mention adaptive management as a concept but do not provide guidance on how local governments should structure and implement these processes.[12] Given the inherent uncertainty in climate projections and the long-term nature of sea level rise impacts, robust adaptive management frameworks are essential to ensure that shoreline policies remain effective as conditions change and new information becomes available.

We recommend that Ecology revise the rules to require local governments to include in their SMPs:

- Clear decision points and quantitative triggers for strategy evaluation (such as specific sea level rise thresholds, storm frequency changes, or ecological indicator benchmarks);
- Mandatory review cycles that occur at defined intervals between periodic reviews, with protocols for evaluating strategy effectiveness and incorporating new climate data;
- Structured processes for iterative planning that include stakeholder engagement, strategy adjustment procedures, and coordination with regional partners;
- Sunset clauses for temporary measures and other policy tools for managing uncertainty; and
- Documentation and reporting requirements for lessons learned, strategy modifications, and the rationale for management decisions.

To these ends, we propose the following subsection be added to WAC 173-26-246:

(14) Adaptive management frameworks.

(a) Required framework components. Master programs must include detailed adaptive management frameworks that enable iterative planning and strategy adjustments in response to changing conditions, new information, and monitoring results. Adaptive management frameworks must include all components specified in subsections (b) through (e) below.

(b) Decision points and triggers. Master programs must establish quantitative triggers and decision points for strategy evaluation and adjustment, including:

[11] WAC 173-26-090(2)(e); -231(3)(g)(v)(E), (4)(d); -246 (3)(d), (6)(c)(iii)(e).
[12] WAC 173-26-090(2)(e); -231(3)(g)(v); -246(3)(d), (6)(c), (8)(f)(iv).

(i) Specific sea level rise thresholds (e.g., 6-inch or 12-inch increments above baseline conditions);

(ii) Ecological indicator benchmarks (e.g., percentage loss of critical habitat or key species population declines);

(iii) Infrastructure performance thresholds (e.g., flood frequency or access disruption criteria);

(iv) Storm frequency or intensity changes that exceed design parameters;

(v) Sunset clauses for temporary or experimental measures.

(c) Mandatory review cycles. Master programs must establish interim review and reporting cycles that occur at least every five years between periodic reviews to evaluate strategy effectiveness and incorporate new climate data, monitoring results, and scientific information. Reviews must include protocols for:

(i) Assessing whether triggers in subsection (14)(b) have been reached;

(ii) Evaluating the performance of implemented adaptation strategies;

(iii) Incorporating new climate projections, monitoring data, and scientific information;

(iv) Determining whether strategy adjustments are needed

(v) Documenting and reporting on adaptive management activities, including any changes made in response to triggers or review cycles and the rationale for such changes.

(d) Iterative planning processes. Master programs must include structured processes for strategy adjustment that incorporate:

(i) Meaningful engagement with Tribes, overburdened communities and other stakeholders;

(ii) Coordination with neighboring jurisdictions and regional partners;

(iii) Procedures for modifying policies, regulations, or implementation approaches;

(iv) Integration with comprehensive planning and other local planning processes.

Recommendation 6 (Collaborative Planning): To ensure Tribes, vulnerable populations, and local affected communities are included and represented in the development and review of SMPs, stipulate defined and equitable processes and plans for engagement, collaboration, and participation.

The draft rules strengthen the existing requirements to identify and create opportunities for Tribal and community engagement but falls short of requiring the establishment of defined processes and plans necessary for realizing those opportunities.[13] Lack of clarity and vague language leaves the burden and risk of interpretation to local governments, instead of facilitating the meaningful collaboration and participation of Tribes, vulnerable populations, and affected communities.

Recommendation 6(a): To ensure local governments conduct meaningful engagement with Tribes, vulnerable populations, and affected communities, we recommend that Ecology add a definition for "meaningful engagement" under WAC 173-26-020 that aligns with principles and guidance for community engagement set forth by the Washington HEAL Act[14] and other vetted frameworks:

> (XX) "Meaningful engagement" means a reciprocal, respectful, and transparent process between a government entity and community members to foster collaboration, build trust, and ensure that community input informs and influences decision-making. This process requires a proactive and ongoing commitment to seeking out and listening to the perspectives of vulnerable populations and overburdened communities, providing relevant information in an inclusive and accessible manner, and demonstrating how their input shaped the final outcomes. A meaningful engagement process includes but is not limited to: early and ongoing outreach, engagement, and notification; identification and mitigation of barriers to participation, including travel restrictions, language barriers, and other challenges experienced by vulnerable populations; and accountability and feedback channels.

Recommendation 6(b): We strongly support the addition of WAC 173-26-246 (5) and the principles it introduces regarding equitable adaptation and engagement. However, to help local governments, Tribes, and communities succeed in implementing and sustaining equitable sea level rise adaptation, we recommend the following additions to incorporate greater clarity and accountability in the rules (pursuant to the new definition for "meaningful engagement" provided above).

Include the following language as a new sentence at the end of draft subsection WAC 173-26-246 (5)(a): **"**Meaningful engagement and equitable outcomes require plans and processes to be developed with transparency and through early and continual coordination and collaboration with Tribes, overburdened communities, and vulnerable populations."

Revise draft subsection WAC 173-26-246 (5)(b) to read as follows: "Local governments must seek to initiate meaningful engagement with Tribes while reviewing, conducting, and updating sea level rise vulnerability assessments, sea level rise adaptation planning, and subsequent master program amendment processes by first establishing, through co-development with Tribes, agreed-upon processes, methods, and schedules for communication and coordination ahead of such work. Local governments must, to the fullest extent possible, address Tribes' priorities for sea level rise adaptation in the sea level rise provisions in master programs and provide documentation of how they addressed those priorities."

[13] WAC 173-26-246 (5); -090 (3)(b); -100(2); -104(1)(b)(iv), (c); -110(7), (9).
[14] RCW 70A.02.50 Equitable community engagement and public participation.

Add the following language to subsection WAC 173-26-246 (5)(c): **"**Local governments shall seek meaningful engagement with overburdened communities and vulnerable populations potentially impacted by sea level rise when conducting sea level rise vulnerability assessments, sea level rise adaptation planning, and subsequent master program amendment processes, and provide documentation thereof. Meaningful engagement requires establishing a consistent process for early and ongoing outreach, engagement, notification, and mitigation of barriers to engagement for overburdened communities, vulnerable populations, and local affected communities."

Recommendation 7 (Kelp and Eelgrass Protection): To preserve the long-term health and resilience of kelp, eelgrass beds, and other shoreline vegetation and to sustain the critical benefits they provide, specify and require proactive protections that account for the full range of their ecosystem functions and the full scale of threats they face.

As the draft rules acknowledge, nearshore vegetated ecosystems – such as kelp, eelgrass, other seagrasses, tidal marshes, and forested tidal wetlands – provide multiple ecological functions that support myriad species and human communities.[15] However, the draft rules do not acknowledge or account for the carbon sequestration function and value of kelp, eelgrass, and other shoreline vegetation, despite these "blue carbon" ecosystems sequestering carbon per unit area at rates comparable to or exceeding those of terrestrial forests. Failing to account for this important ecosystem service compromises the design and implementation of policies, programs, and regulations meant to achieve no net loss of shoreline ecological functions. By omitting carbon metrics in restoration and conservation efforts, Ecology risks missing a critical dimension of ecosystem service valuation. Furthermore, while the draft rules cite the need for greater protection of these coastal habitats, the rules do not require adequate planning, coordination, or prioritization around kelp and eelgrass protection and restoration.

Recommendation 7(a): To ensure that the SMA and local governments are adequately accounting for and protecting the carbon sequestration function and value of shoreline vegetation, we recommend that Ecology add the following language as new subsection WAC 173-26-226(2)(e)(i)(J):

> (J) Providing long-term carbon sequestration and storage value. Kelp, eelgrass, salt marshes, tidal forested wetlands, and other aquatic vegetation act as carbon sinks that capture and store vast amounts of carbon dioxide for long periods of time. Conversely, if destroyed or disturbed, these biogenic habitats can release significant amounts of carbon back into the atmosphere, becoming a net carbon source.

It also follows that local governments should incorporate carbon sequestration metrics into shoreline planning and restoration prioritization; Ecology should encourage local governments to consider using the following data sources: region-specific carbon data from the Pacific Northwest Blue Carbon Working Group; Ecology's forthcoming Coastal Habitat Greenhouse Gas Inventory (expected Spring 2026); recent studies on

[15] WAC 173-26-226(1)(f)(iv).

carbon estimates in the state's kelp beds[16]; and a forthcoming "blue carbon calculator" to help agencies and practitioners understand the greenhouse gas implications of coastal wetland land use changes.

Recommendation 7(b): To ensure local governments are effectively planning and prioritizing kelp and eelgrass protection and restoration efforts, we recommend including consideration of kelp and eelgrass recovery plans alongside salmon recovery plans as cited in the draft rules, as well as explicit prioritization of kelp and eelgrass restoration:

Revise WAC 173-26-226(1)(c)(iv) to read as: "Prioritization of restoration of lost or degraded terrestrial and aquatic habitats that support priority species, including kelp and eelgrass."

Revise draft subsection WAC 173-26-226(1)(b)(iii) to read as: "In protecting and restoring critical areas within shoreline jurisdictions, integrate the full spectrum of planning and regulatory measures, including interlocal watershed plans, salmon recovery plans; kelp and eelgrass recovery plans…"

Revise draft subsection WAC 173-26-090(3)(c)(iii)(A) to read as: "Local governments must identify and compile the most current, accurate, and complete science…This should at a minimum include review of local watershed plans, salmon recovery plans, kelp and eelgrass recovery plans, Ecology-identified TMDL listings…and model language for critical area protection."

Revise draft subsection WAC 173-26-231(3)(n)(ii) to read as: "Master program provisions shall ensure that the projects address legitimate restoration or habitat enhancement needs and priorities. Local governments shall rely on local watershed restoration plans, salmon recovery plans, kelp and eelgrass recovery plans or the master program restoration plan …"

Recommendation 7(c): Timely and periodic review of restoration plans is critical to ensure investments and efforts to restore shoreline areas are being strategically prioritized, protect the full spectrum of shoreline ecological functions, and remain consistent with the best-available science and information.

Accordingly, we recommend that Ecology revise draft subsection WAC 173-26-090(3)(c)(v) to read as follows: "Local governments ~~are encouraged to~~ should update restoration plans and public access plans as part of this periodic review process. Review restoration plans to identify potential restoration projects that provide climate resilience co-benefits, such as restoring marshes and estuaries to mitigate the impacts of sea level rise and restoring vegetated coastal ecosystem areas to sequester carbon; incorporate new information from watershed plans, ~~and~~ salmon recovery plans, and kelp and eelgrass recovery plans; adjust priorities; and update project lists…"

[16] *Based on research from Canada's Pacific coast (which shares similar species, such as bull kelp, with the Salish Sea), Pacific kelp forests are estimated to hold an average of 1.2 Mg C ha-1 (megagrams of carbon per hectare) in biomass*: McHenry, J., Okamoto, D. K., Filbee-Dexter, K., Krumhansl, K. A., MacGregor, K. A., Hessing-Lewis, M., Timmer, B., Archambault, P., Attridge, C. M., Cottier, D., Costa, M., Csordas, M., Johnson, L. E., Lessard, J., Mora-Soto, A., Metaxas, A., Neufeld, C. K., Pontier, O., Reshitnyk, L., Starko, S., Yakimishyn, J., & Baum, J. K. (2025). *A blueprint for national assessments of the blue carbon capacity of kelp forests applied to Canada's coastline*. npj Ocean Sustainability. https://doi.org/10.1038/s44183-025-00125-6

We also recommend the following language addition to WAC 173-26-226(1)(f)(iv)(B): "Local governments shall protect native kelp and eelgrass beds…by applying information from the Puget Sound Vital Signs' WA State Floating Kelp Indicator, the department of natural resources' aquatic resources division, the department of fish and wildlife, the department…"

Exhibit B provides a list of example statewide kelp and eelgrass conservation and recovery plans and their recommendations for improving kelp and eelgrass conservation outcomes that Ecology and local governments should consider throughout the development of these draft rules and the SMP development process.

Comments on Preliminary Draft Revisions to WAC 173-27

The changes Ecology proposes for this chapter significantly improve the existing chapter, providing important clarifications and needed strengthening of administrative and enforcement authorities under the SMA. Pew specifically applauds the changes in subsections WAC 173-27-035(2) and (3) that clarify that exempt development and activities must be consistent with the SMA and applicable master program provisions and the procedures provided for ensuring that exempt developments and activities/uses are, in fact, reviewed for such consistency. These proposed changes address what has long been a weakness in the program.

Similarly, Pew strongly supports the provisions clarifying enforcement options and procedures. Like exempt development, enforcement has long been a weakness of the shoreline program. Shared implementation authority between Ecology and local governments has created ambiguity regarding respective enforcement roles. The proposed changes in WAC 173-27-260 to -320 will reduce that ambiguity and should result in more effective and consistent enforcement of shoreline policies.

Recommendation 8 (Sea Level Rise): Require more proactive and adaptive processes for evaluation and approval of proposed development in Sea Level Rise Hazard Areas.

Our recommendations focus on proposed WAC 173-27-185, which addresses application requirements for projects that are to be located in Sea Level Rise Hazard Areas. While the provisions of draft section WAC 173-27-185 are generally positive and needed to achieve the intent of HB 1181, the following proposed changes would strengthen their impact.

Recommendation 8(a): Encourage local governments to apply new Sea Level Rise Hazard Area application requirements to project applications that precede the next SMP update.

WAC 173-27-185(1) states that the provisions of this section only apply after the applicable SMP has been updated to achieve consistency with these proposed rules. We understand why this language is included but are concerned about projects proposed *before* SMP amendments are completed. We suggest adding a sentence to section 185(1) that reads as follows:

> (1) Applicability. The provisions in this subsection are applicable only after a master program has gone through the periodic review process to incorporate the sea level rise provisions required by WAC 173-26- 246. Local governments are encouraged to require project proponents to provide the flood hazard information required by this section for projects proposed in areas likely to be classified as Sea Level Rise Hazard Areas after the effective date of this rule but before completion of the next master program periodic review.

Recommendation 8(b): Provide specific criteria for "low risk" development determination.

The proposed WAC 173-27-185(3)(b) reads as follows:

> (b) . . . If the local government determines the proposed development is low risk, the submittal requirements in subsections (c) through (i) below do not apply.

This language provides insufficient guidance and too much discretion to local governments. We suggest adding language describing the appropriate bases for this low-risk determination, the kinds of information that should be considered, and criteria to be used to differentiate low risk from higher risk sites.

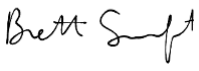
Recommendation 8(c): State that local governments should determine whether a project should be located outside a Sea Level Rise Hazard Area.

We recommend adding a new subsection (5) to this proposed WAC 173-27-185 that makes clear that local governments shall determine whether a proposed project should be located outside of a Sea Level Rise Hazard Area. If the risk is significant and the project could be located outside of the Hazard Area, it should be.

Conclusion

Thank you for the opportunity to provide comments on the draft rules. Pew appreciates the work that Ecology has done to date and looks forward to continuing collaboration. We look forward to requesting a meeting with Ecology staff to discuss our comments before proposed rules are issued in Phase CR-102.

Sincerely,



Brett Swift
Senior Manager, US Conservation
The Pew Charitable Trusts

Exhibit A:

Climate Ready Management Principles

Principles and Key Elements of Managing Natural Resources in the Face of Climate Change

The Pew Charitable Trusts, U.S. Conservation

Background:

Concepts of climate-based adaptation in natural resource management have been circulating in the literature and within state and federal agencies for at least the last decade. We aimed to coalesce published approaches, concepts, and ideas to advance climate-informed planning and actions in natural resource management. That is, to practically define and describe, what it means for natural resource management plans to be capable of dealing with the present and future impacts of climate change. Starting with a definition of climate-ready management provided by Stein et al (2014)[1] and building from elements offered in that paper, we began reviewing the current state of the issue via peer-reviewed published literature, online climate change resources and tools, and government agency policies and white papers (*see Selected Literature and Appendix*). The result is a set of five overarching principles and associated key elements. The numerical sequence of Principles is not meant to indicate any hierarchical importance. The five principles are interrelated and provide a compass for navigating the many challenges of climate change impacts on natural resource management. For example, a key element of Principle 1: Climate Impact Evaluations involves the approach of Climate Scenario Planning which is in turn informed and developed by engaging indigenous and climate vulnerable communities, Principle 5. Similarly, adaptive management (Principle 4) will not be effective at adjusting goals and actions with changing climate conditions unless key elements of Principle 3 (Systematic Monitoring) are sufficiently implemented. Thus, the most effective and holistic climate ready plans will focus on reinforcing and operationalizing connections between key elements of all five principles.

[1] Stein et al. 2014 – "The intentional and deliberate consideration of climate change in natural resource management, realized through adopting forward-looking goals and explicitly linking strategies to key climate impacts and vulnerabilities."

Principle 1: Climate Impact Evaluation

Definition: The application of *any or all* of the suite of approaches that evaluate present and future climate change impacts on communities and natural resources including threats and risks to infrastructure, species, and habitats as well as ecosystem functions and services.

Rationale: Climate impact evaluations help communities, natural resource managers, and decision makers plan for multiple uncertain future outcomes. The suite of approaches includes, among others, climate scenario planning, predictive modelling, and vulnerability assessments.

Key Elements:

1. **Climate Scenario Planning -** involves people considering different ways the climate could change (e.g., hotter, wetter, drier) and qualitatively explores how these changes would affect resources, how people interact with the area/uses, and what will change over time.

2. **Predictive Modelling -** relies on data collected for essential climate variables based on defined timescales and underlying assumptions from atmospheric, oceanic, and terrestrial realms (e.g., temperature, precipitation, humidity, wind speeds, tides, ocean currents) to build mathematical, statistical, and probabilistic equations that provide quantitative results of expected changes with variable levels of uncertainty (e.g., sea level rise, glacial melt, climate warming, drought and flood cycles, extreme weather events). Predictive modelling provides insight on specific ranges of targets, thresholds, and benchmarks against which climate responsive goals and strategies can be evaluated for success (see Appendix).

3. **Vulnerability Assessments -** examine how changes in climate will adversely affect communities, species, and habitats, often flowing from information generated from scenario planning and modeling described above. They identify the most vulnerable communities, species and habitats based on their exposure to projected changes in the environment (e.g., warming oceans, droughts, flooding), their resilience to acute stress events, and their ability to adapt over the long term. In so doing, vulnerability assessments can help identify and prioritize areas where additional action or research is needed to reduce or mitigate risks.

4. **Indigenous Knowledge -** should, given consent from and in consultation with Tribal Nations and Indigenous Peoples, be included in the evaluation process as one of the many important bodies of knowledge that contributes to the scientific, technical, social, and economic assessments that increases our collective understanding of the natural world in decision-making. Indigenous Knowledge has evolved over millennia, continues to evolve, and includes insights based on evidence acquired through direct contact with the environment and long-term experiences, as well as extensive observations, lessons, and skills passed from generation to generation.

5. **Identification and Prioritization of Management Assets -** includes evaluating trade-offs of different management strategies and their impact on ecosystem function, service, and community and cultural resources as well as to built infrastructure to organize action and manage funding and capacity constraints.

PRINCIPLE 2: Climate Responsive Goals & Strategies

Definition: Climate responsive management goals and strategies are short statements of what is to be achieved within a particular natural system, or a component of the system. They should include explicit, tangible and desired outcomes with specific actions to achieve these outcomes and include defined metrics to evaluate success. They should be designed to resist or adapt to the variety and scope of climate threats and other stressors identified through the climate impact evaluation.

Rationale: Establishing climate responsive goals and strategies that are explicitly linked to the findings of Principle 1 is important to evaluate the effectiveness of climate informed management actions and determine whether desired conservation outcomes have been achieved.

Key Elements:

1. **Link Strategies to Climate Impacts**
   - Strategies are:
     a. based on the results of Climate Impact Evaluations; designed specifically to address the impact of climate change in concert with other key stressors; (e.g., flooding, more frequent and severe storms, sea level rise, drought, extreme heat);
     b. supported by explicit scientific rationale and ground-truthed with Traditional and local knowledge; and
     c. reflect how desired outcomes may change based on the rate, magnitude, and discontinuity of climate change impacts.
   - They should prioritize the use of nature-based solutions that incorporate natural features and processes to protect, conserve, restore, sustainably use, or manage natural or modified ecosystems.
   - They may include community or conservation targets and a schedule for meeting them.

2. **Adopt Strategies that are Malleable and Robust to Uncertainty**
   - Strategies and actions should provide benefits across a range of possible future conditions to account for uncertainties in future climatic conditions, and in ecological and human responses to climate shifts.
   - Strategies are flexible in that they can be updated and revised to address new information and changing conditions through adaptive management frameworks of Principle 4.
   - Strategies may include policy language that help managers respond to rapidly changing conditions (i.e., if this happens then do x, if that happens then do y) and can include sunset/sunrise clauses, triggers, and benchmarks, among others.

3. **Embrace Forward Looking Goals**
   - Conservation goals focus on future (rather than past) climatic and ecological conditions; strategies take a long view but account for near-term conservation challenges and needed transition activities. In some cases “forward-looking goals” may mean giving up on or substantially altering existing goals if they are no longer feasible to achieve.
   - New policies or goals that facilitate resilience are included and have benchmarks or sunrise clauses based on findings of Principle 1 that can trigger their application at points in the future.

4. **Goals are Timebound and Measurable**

5. **Minimize Carbon Footprint**

   - Strategies and projects reduce and avoid greenhouse gas emissions and sustain or improve the natural ability of ecosystems to cycle, sequester, and store carbon.

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6. **Include Spatial-Explicit Management Measures**
    - Spatial policies increase ability to adapt quickly and facilitate landscape changes to maintain or migrate habitats (e.g., overlays, priority areas). They can provide a range of guidance tied to explicit geographies. For example, they can identify areas where management plans may shift under future conditions and where sunrise clauses should apply or highlight an area as a priority to protect now and in the future to sustain ecosystem function or services that will help maintain landscape resilience.

7. **Remove Maladaptive Policies:**
    - Current policies that exacerbate climate impacts are identified, removed, or phased out via sunset clauses or other management triggers.

PRINCIPLE 3: Systematic Monitoring

Definition: The protocol and methods of what to measure, when and how to do it, followed by implementation and data collection. The analyzed results should inform planning, performance evaluation, and adaptive management activities.

Rationale: Systematic Monitoring is critical for evaluating the effectiveness of management actions in producing desired outcomes, as well as for understanding how climate change is impacting a site over time. It requires regular ecologically-relevant schedules and standardized monitoring methodologies, as well as dedicated funding and staff time to carry out the monitoring protocol, develop and maintain databases, and provide research access to facilitate timely and objective science-based performance evaluation.

Key Elements:

1. **Include Climate Indicators & Metrics** – physical metrics (e.g., rainfall, temperature, sea level rise, water pollution levels) as well as biological indicators (e.g., status and distribution of key species and habitats) that are measured at a sufficient spatial and temporal resolution such that, together, they can serve as bellwethers of overall ecosystem health and provider of services. As such, biological indicators and physical metrics should:
   - Be standardized and repeatable over spatial and temporal scales.
   - Be sensitive and responsive to changes with relatively low measurement error.
   - Distinguish natural variation from management actions.
   - Have identifiable and/or predictable responses to defined climate thresholds.
   - Track management actions to evaluate how indicators respond to those actions.

2. **Consider Broader Landscape/Watershed Context**
   - Monitoring actions and protocols are designed within the context of broader geographic scales to capture and measure likely shifts in species distributions and migration, to sustain ecological processes, and to promote collaboration.

3. **Create Schedule and Allocate Necessary Capacity/Resources to Conduct Systematic Monitoring**
   - Includes planning and integrating limited resources towards most efficient and practical monitoring methods.
   - Prioritizes investing limited resources into indicators and metrics with greatest ROI for meeting climate responsive goals and strategies.

PRINCIPLE 4: Adaptive Management

Definition: A process and/or framework of iteratively planning, implementing, evaluating, and modifying strategies for managing natural resources in the face of uncertainty and change.

Rationale: Adaptive management reflects the need to adjust approaches if, as determined by resulting feedback effects new information from systematic monitoring (e.g., research/data analysis) local knowledge, and other variables, achieving the original climate responsive goal is no longer feasible.

Key Elements:

1. Adaptive Management Framework and Tools

- Utilize frameworks and tools to organize and schedule actions in response to changes in the managed area and/or community; to process new information and feedback; and to prioritize or de-prioritize adaptation actions (e.g., Resist, Accept, Direct or "RAD" framework; see Appendix).

2. Manage Observed Trade-offs

- Track and address ecosystem function, ecosystem services, and community and cultural resource trade-offs with different climate responsive management strategies and objectives (e.g., acquiring land for restoring saltmarsh may limit or decrease freshwater wetlands). Trade-offs for the same action may differ greatly when considered at different scales.

3. Manage to avoid Maladaptation and Related Policies

- Ensure that any new actions taken to address climate change impacts on human communities or natural systems do not exacerbate other climate-related vulnerabilities or undermine other conservation goals that would reduce overall broader ecosystem sustainability.

4. Flexible Implementation Pathways

- To anticipate variable environmental changes from climate impact evaluations, adaptive management planning includes developing multiple implementation alternatives to address a range of impacts from minimal to extreme.

5. Schedule or Process to Incorporate New Information and Evaluate Responses

- Adopt a timeframe and process for evaluating effects of actions (or inactions) and incorporating new information, such as emerging research, data analysis, or local knowledge/observation on the entire plan or on specific actions.

PRINCIPLE 5: Collaborative Planning with Indigenous and Other Climate Vulnerable Communities

Definition: The planning process should engage, and potentially share decision-making, with sovereign Indigenous nations and climate vulnerable communities, as well as other local communities, and consider Traditional Knowledge[2] as well as lived experience and expertise.

Rationale: The planning process should use this lens to address the need to prepare communities to anticipate, adapt, withstand, and recover from disruptions and altering conditions over time due to climate change. Engagement with all local communities includes considering the context, culture, knowledge, agency and preferences of communities as well as the physical and psychological health of the population, social and economic equity, effective communication and the integration of local organizations. Collaboration with Indigenous and climate vulnerable communities should be considered an ingrained characteristic of climate ready planning.

Key Elements:

1. **Start Tribal Nation Consultation Early and Consider Consent Frameworks**
   - While federal and state governments have responsibilities to consult with sovereign nations, all managers should endeavor to reach Tribes early in the process to establish how consultation requirements will be managed and addressed during planning efforts to create an inclusive and collaborative process. Additionally, consider occasions to incorporate Free, Prior, and Informed Consent (FPIC), as defined in the United Nations Declaration on the Rights of Indigenous Peoples, into planning and active management.

2. **Identify Shared Values to Create Equity-Centered Goals**
   - Goals reflect shared values identified by a collaborative process that incorporates input and engagement from key interested parties and the intentional inclusion of underrecognized, underrepresented and underserved communities.
   - Trade-offs identified in the planning process should be discussed and acknowledged with impacted communities to co-create solutions like policy change, program establishment, and land management changes to minimize negative consequences, or even remove them, while achieving goals. Considering trade-offs is a complicated endeavor and working to make individuals and communities whole if negatively impacted creates durable outcomes.

3. **Safeguard People and Nature**
   - Strategies and actions enhance the capacity of ecosystems to protect human communities from climate change impacts in ways that also sustain and benefit fish, wildlife, and plants.

4. **Establish a Process for Early and Ongoing Outreach, Engagement, and Notification**
   - Process for engagement and collaborative planning is consistent and predictable for interested parties.
   - Process identifies capacity needs and barriers to engagement that need resolution such as distance to in-person meetings, travel restrictions, work-related barriers, language barriers, and other challenges often experienced by vulnerable communities.
   - Regular updates to affected groups are scheduled and they are provided with an opportunity for feedback.
   - Plan for ongoing engagement can readily leverage community and Tribal Nation-led monitoring data and knowledge.

[2] Traditional Knowledge is the understandings, skills and philosophies developed by Indigenous societies with long histories of interaction with their natural surroundings.

Selected Literature

Denit, K. 2018. NOAA Fisheries Ecosystem-Based Fisheries Management Road Map. https://www.fisheries.noaa.gov/national/laws-and-policies/policy-directive-system.

Environmental Protection Agency. (2016). Planning Framework for a Climate-Resilient Economy.

Federal Emergency Management Agency. (2023). The Economic Case for Coastal Resilience.

Glick, P., B.A. Stein, and K.R. Hall. 2021. Toward a Shared Understanding of Climate-Smart Restoration on America's National Forests: A Science Review and Synthesis. Washington, DC: National Wildlife Federation.

Gregg, R.M., A. Score, D. Pietri, and L. Hansen. 2016. The State of Climate Adaptation in U.S. Marine Fisheries Management. EcoAdapt, Bainbridge Island, WA.

Kauffman, J. B., Giovanonni, L., Kelly, J., Dunstan, N., Borde, A., Diefenderfer, H., Cornu, C., Janousek, C., Apple, J., & Brophy, L. (2020). Total ecosystem carbon stocks at the marine-terrestrial interface: Blue carbon of the Pacific Northwest Coast, United States. *Global Change Biology*, 26(10), 5679–5692. https://doi.org/10.1111/gcb.15248

Link, J.S., Griffis,R., Busch, S. (Editors). 2015. NOAA Fisheries Climate Science Strategy. U.S. Dept. of Commerce, NOAA Technical Memorandum NMFS-F/SPO-155, 70p.

Lynch, A.J. et al. 2021. RAD Adaptive Management for Transforming Ecosystems. BioScience 72: 45–56. Published by Oxford University Press on behalf of the American Institute of Biological Sciences. https://doi.org/10.1093/biosci/biab091.

National Park Service (NPS). 2021. Planning for a Changing Climate: Climate-Smart Planning and Management in the National Park Service. NPS Climate Change Response Program, Fort Collins, CO.

National Oceanic and Atmospheric Administration (NOAA). 2010. Adapting to Climate Change: A Planning Guide for State Coastal Managers. NOAA Office of Ocean and Coastal Resource Management. http://coastalmanagement.noaa.gov/climate/adaptation.html

Peterson, D. L. et al.. 2011. Responding to climate change in national forests: a guidebook for developing adaptation options. Gen. Tech. Rep. PNW-GTR-855. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 109 p

Reguero, B.G., Beck, M.W., Bresch, D.N., Calil, J., and Meliane, I. (2018). Comparing the cost effectiveness of nature-based and coastal adaptation: A case study from the Gulf Coast of the United States. *PLoS ONE* 13(4): e0192132. https://doi.org/10.1371/journal.pone.0192132.

Schuurman, G. W., C. Hawkins Hoffman, D. N. Cole, D. J. Lawrence, J. M. Morton, D. R. Magness, A. E. Cravens, S. Covington, R. O'Malley, and N. A. Fisichelli. 2020. Resist-accept-direct (RAD)— a framework for the 21st-century natural resource manager. Natural Resource Report NPS/NRSS/CCRP/NRR—2020/ 2213. National Park Service, Fort Collins, Colorado. https://doi.org/10.36967/nrr-2283597.

Sheaves, M., Sporne, I., Dichmont, C. M., Bustamante, R., Dale, P., Deng, R., Dutra, L. X. C., Van Putten, I., Savina-Rollan, M., & Swinbourne, A. (2016). Principles for operationalizing climate change adaptation

strategies to support the resilience of estuarine and coastal ecosystems: An Australian perspective. *Marine Policy,* 68, 229–240. https://doi.org/10.1016/j.marpol.2016.03.014

Stein, B.A., P. Glick, N. Edelson, and A. Staudt (eds.). 2014. Climate-Smart Conservation: Putting Adaptation Principles into Practice. National Wildlife Federation, Washington, D.C.

Stein, B. A., D. M. Lawson, P. Glick, C. M. Wolf, and C. Enquist. 2019. Climate Adaptation for DoD Natural Resource Managers: A Guide to Incorporating Climate Considerations into Integrated Natural Resource Management Plans. Washington, D.C.: National Wildlife Federation.

United States Department of Agriculture. 2016. Forest Adaptation Resources: Climate Change Tools and Approaches for Land Managers, 2nd edition Forest Service Northern Research Station General Technical Report NRS-87-2.

White House Council on Environmental Quality, White House Office of Science and Technology Policy, & White House Domestic Climate Policy Office. (2022). Opportunities to Accelerate Nature-Based Solutions: A Roadmap for Climate Progress, Thriving Nature, Equity, & Prosperity. Report to the National Climate Task Force.

Williams, B.K., and E. D. Brown. 2012. Adaptive Management: The U.S. Department of the Interior Applications Guide. Adaptive Management Working Group, U.S. Department of the Interior, Washington, DC.

Yocum, H. M., Metivier Sassorossi, D., & Ray, A. J. (2022). Assessing the use of climate change information in State Wildlife Action Plans. *Conservation Science and Practice,* 4(3), e608. https://doi.org/10.1111/csp2.608

Appendix 1: Select Web Resources and Toolkits

1. IPCC WGI Interactive Atlas **(Principle 1)**
2. U.S. Climate Resilience Toolkit **(Principles 1 – 5)**
3. NERRS Science Collaborative **(Principles 1 & 3)**
4. Climate Mapping for Resilience and Adaptation(CMRA) **(Principle 1&2)**
5. NOAA Digital Coast
6. DOD Climate Assessment Tool **(Principle 1)**
7. Guidance and Responsibilities for Effective Tribal Consultation, Communication, and Engagement, **West Coast Ocean Alliance Tribal Caucus (Principle 5)**
8. Resist-Accept-Direct (RAD) Framework

Exhibit B:

Statewide Kelp and Eelgrass Recovery Plans and Resources

- 2023 Statewide Kelp Forest and Eelgrass Meadow Health and Conservation Plan

In response to steep declines in kelp and eelgrass in Washington, the State Legislature passed Senate Bill 5619, directing the Washington Department of Natural Resources (DNR) to create the Statewide Kelp Forest and Eelgrass Meadow Health and Conservation Plan (Statewide Plan) and accompanying monitoring plan, which aim to conserve and restore at least 10,000 acres of kelp and eelgrass by 2040. In the plan, DNR pledges to identify high value areas and site-specific plans for kelp and eelgrass protection and restoration through collaboration with Tribal Nations and other regional partners at the sub-basin scale. Local governments should collaborate with WA DNR, Tribes, and other partners to align their kelp and eelgrass protection and restoration efforts with actions and priority areas identified through the Statewide Plan.

- 2024 Biennial Report to the Legislature on the Statewide Kelp Forest and Eelgrass Meadow Health and Conservation Plan

The first of regular reports required by Senate Bill 5619, the DNR's 2024 Biennial Report on the Statewide Kelp Forest and Eelgrass Meadow Health and Conservation Plan (Plan Update) emphasizes several new strategic approaches and recommendations to achieve the goal of conserving and restoring at least 10,000 acres of these vital habitats by 2040, including identifying the first 5,500 acres of kelp and eelgrass target priority areas for stewardship planning. The Plan Update emphasizes the development and implementation of targeted plans to guide conservation efforts and foster collaboration, including the key tenets of its co-stewardship partnership agreement with the Squaxin Island Tribe. Local governments should emulate the Statewide Plan's collaboration and co-development approach to developing SMPs through meaningful engagement with Tribes and local communities.

- Puget Sound Kelp Conservation and Recovery Plan (May 2020)

Prepared in collaboration by multiple state agencies, Tribes, and other organizations, the Puget Sound Kelp Conservation and Recovery Plan (Kelp Plan) presents an ambitious and holistic research and management framework for protecting and restoring kelp forests in Puget Sound. The plan outlines six strategic goals: understanding and reducing stressors (e.g., human impacts on water quality, climate change, etc.), deepening understanding of kelp's value, describing kelp distribution and trends, designating protected areas, restoring kelp forests, and promoting public awareness and engagement. Under each goal, the plan highlights a series of actions to aid kelp conservation and recovery centered on interagency coordination, policy enforcement, climate adaptation, monitoring, and developing restoration techniques.

In its assessment of the landscape of stakeholders who share responsibility of kelp conservation and recovery in Washington, the plan specifically mentions Ecology, the SMA, and local SMPs, further underlining the critical role of the SMA and the SMP guidelines in the broader context of statewide kelp protection and restoration efforts. Ecology and local governments must use this rule update and SMP development processes as an opportunity to embed the goals and actions put forth in the Kelp Plan.

- Puget Sound Kelp Conservation and Recovery Plan: Status Update (October 2023)

This status update reports on progress on implementation of goals for conservation of kelp and eelgrass established by the 2020 Kelp Plan. The plan highlights the integration of surface monitoring data into the Washington State Floating Kelp Indicator and the ongoing need to strengthen the link between evolving kelp research and policy development. Other key recommendations from the update highlight the need for explicit reference to kelp in regulations that currently stipulate only general protections for aquatic vegetation. While the preliminary draft rules of the current SMA update increase reference to and recognition of kelp's importance, further clarification of and emphasis on kelp and eelgrass conservation will improve efficacy and enforcement of existing protections.

- Floating Kelp Monitoring in Washington State: Statewide Summary Report (May 2023)

The Washington State Department of Natural Resources (DNR) "Statewide Summary Report" (Statewide Summary) provides the first statewide assessment of floating kelp, synthesizing existing monitoring data and Indigenous scientific knowledge. Over the past century, historical studies suggest floating kelp has vanished from roughly 80% of the shorelines where it was once prevalent. The report emphasizes the need to fill data gaps through expanded monitoring programs and integrating historical datasets; incorporating multiple ways of knowing, including Indigenous scientific knowledge; improving monitoring methodologies with new technologies; and exploring environmental linkages to better interpret trends. As aligned with multiple climate-ready management principles, the SMA must require SMPs to include systematic monitoring and Tribal and Indigenous knowledge, to enable adaptive management and better inform the identification and prioritization of critical areas for protection, restoration, or increased monitoring.

- Puget Sound Partnership's 2022-2026 Action Agenda Strategy 16: Submerged Aquatic Vegetation (SAV)

The Puget Sound Partnership's Action Agenda Strategy 16 focuses on protecting and restoring submerged aquatic vegetation (SAV), including kelp and eelgrass, through public outreach, voluntary programs, regulatory protection, and restoration projects. The strategy highlights key actions for 2022-2026, including integrating climate change considerations and enforcing SAV protections through existing regulations, such as the SMPs, accelerating recolonization and expansion efforts, targeting public outreach to foster stewardship, and implementing research to understand localized changes. The strategy also integrates human wellbeing and climate change responses, emphasizing carbon sequestration and shoreline stability. Timebound and targeted, Strategy 16 captures the urgency and necessity of implementing key actions to protect and restore SAV like kelp and eelgrass through integration of climate change considerations – including the carbon sequestration role of these marine vegetation species – into existing regulatory programs like the SMA and SMPs.

- Kelp Policy Recommendations: Recommendations to Advance Effectiveness of Kelp Policy in Washington (November 2023)

Building on goals established by the 2020 Kelp Plan, The Kelp Policy Advisory Group was convened and developed 11 action recommendations to improve kelp recovery and protection in Puget Sound. The 11 actions were categorized across guidance documents, training programs, science and research gaps, and processes. High-priority recommendations include developing guidance around methods and triggers for kelp surveys and mitigation best practices. As Ecology continues to develop and provide guidance and technical assistance to local governments for SMP process, the agency should consider developing specific guidance regarding kelp surveys and mitigation best practices.

- Washington DNR Plan for Climate Resilience 3-Year Update (April 2023)

The Washington State Department of Natural Resources (DNR) "Plan for Climate Resilience: 3-Year Update" details the agency's efforts and progress in addressing climate change impacts across the state. The document highlights the establishment of the first Kelp and Eelgrass Protection Zone and how the agency is making progress on the goal to conserve and restore at least 10,000 acres of kelp forests and eelgrass meadows by 2040. The SMP guidelines should integrate this target by requiring local governments to include specific policies, regulations, and restoration planning in their SMPs to contribute to this statewide goal. DNR is also developing tools and models to assess climate risks, including updates to the Geologic Information Portal with sea-level projections and new geotechnical data. The SMA update can leverage these resources by directing local governments to use this data to inform their shoreline planning, particularly for areas vulnerable to sea-level rise, landslides, and coastal flooding.

- Washington State Floating Kelp Indicator

The product of broad-based scientific collaboration and co-creation, the Washington State Floating Kelp Indicator provides a comprehensive, long-term assessment of the status and trends of canopy-forming kelp throughout Washington State. Part of the Puget Sound Vital Signs measures, the Kelp Indicator was designed to inform both management and research efforts. In keeping with the SMP guidelines to use and incorporate the "best available science" for more climate resilient and adaptive shoreline planning, local governments should use the Kelp Indicator as a tool for prioritizing conservation and restoration, long-term monitoring, and adaptive management.