

Final Recommendations:
Considerations for PSNGP Development

Introduction:

The Puget Sound Nutrient General Permit (PSNGP) Advisory Committee (AC) has completed an eight-month process to develop a set of recommendations to Ecology that will frame conceptual approaches to the first PSNGP. The AC makes these recommendations for the purpose of achieving meaningful progress towards long-term reductions in nutrient loads from the wide variety of plants in Puget Sound. The following combination of approaches comprise the AC's recommendations for how to best achieve Ecology's goal to prevent nutrient-related water quality problems in Puget Sound from continuing to worsen during the first permit term, while also allowing contracted plant capacity to be utilized to support smart growth and comply with Growth Management Act (GMA) requirements.

Interest groups represented on the PSNGP AC:

Utility Caucus members: Rebecca Singer (King County, and the AC chair), Jeff Clarke (Washington Association of Sewer & Water Districts), Joe Grogan (Town of Coupeville), Patrick Kongslie (Pierce County), Mark Sadler (City of Everett), Wendy Steffensen (LOTT Clean Water Alliance), Pete Tjemsland (City of Sequim), Dan Thompson (City of Tacoma)

Utility Caucus alternates: Katherine Brooks (Pierce County), Judi Gladstone (Washington Association of Sewer & Water Districts), John Rabenow (City of Everett), Terri Prather (LOTT Clean Water Alliance)

Tribal treatment plant representative: Chip Anderson (Lummi Tribe)

Environmental group representatives: Mindy Roberts (Washington Environmental Council), Bruce Wishart (Puget Soundkeeper Alliance)

State agencies representatives: Eleanor Ott (Dept. of Ecology), Valerie Smith (Dept. of Commerce)

State agencies alternate: Abby Barnes (Dept. of Natural Resources)

Federal agencies representative: Jennifer Wu (U.S. Environmental Protection Agency)

Federal agencies alternate: Kai Shum (U.S. Environmental Protection Agency)

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I. Overall considerations for the first PSNGP

1. The AC generally agrees that first permit term targets or actions beyond monitoring (section III) and optimization (section V) are not expected for plants that are already operating under 10 mg/L total inorganic nitrogen (TIN).

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- a. These plants may participate in the regional study (see section II) and do appropriate planning and budgeting.
 - b. Otherwise, the use of the terms “each plant” and “all plants” in the following recommendations does not include these plants.
2. The AC agrees that Ecology needs to be sufficiently staffed, through NPDES fees, to implement the PSNGP and individual permits, oversee and interpret increased monitoring, and review optimization reports and facility design and planning documents.
 3. The AC agrees that requirements in the first PSNGP should work with comprehensive land use planning timelines and that jurisdictions should update their GMA checklists as needed to prepare for design, financing, and construction of future plant upgrades to reduce nutrients.
 - a. The AC agrees that jurisdictions should be required to include advanced treatment needs and growth patterns should be considered and addressed in their 2024-25 or 2032-33 Comprehensive Plan updates and financial plans. For specific capital projects identified, comprehensive plans can be amended as needed.
 - i. Utilities prefer the longer timeline to conduct planning and evaluate design options after WQBELs are established; many plants cannot achieve nitrogen reductions in less than ten-plus years.
 - ii. Environmental groups identified that jurisdictions can amend financial plans at any time and must see more tangible progress made during this first permit term toward eventual plant upgrades, including earlier GMA-related updates with high-level planning costs, timeline for water quality based effluent limits (WQBELs), and an adaptive management plan.
 - b. The AC does not agree on the timelines for achieving the final WQBELs.
 - i. Most utilities believe more monitoring, science, and modeling are needed and that the effort to evaluate “bookends” would be wasted; WQBELs must be established first.
 - ii. Environmental groups believe the time frame should be ten years, and that the ultimate target effluent concentrations must be sufficient to meet water quality standards and Clean Water Act requirements.
 - c. The AC does not agree on the utility of planning to reduce nitrogen by using alternate TIN concentrations of 8-10 mg/L and 3-4 mg/L.
 - d. The AC does not agree as to whether or under what circumstances increases in nutrient loadings from plants should be allowed during the first term to accommodate growth.
 - i. The majority of the utilities will not accept a permit that does not allow plants to utilize their full approved capacity and/or requires them to deny new connections.

- ii. Some state agencies generally accept that modest short-term increases are unavoidable in order to accommodate growth and allow the smoothest possible path to long term reductions. Some state agencies remain concerned about negative impacts of unrestricted growth on water quality in Puget Sound.
 - iii. Environmental groups and Tribes insist that any discharge increases to accommodate new connections must be offset by load reductions via optimization or other measures to the maximum extent feasible during the first permit term because the capacity of Puget Sound to absorb wastewater nutrient has already been surpassed, leading to violations of the water quality standards.
4. The AC agrees that Ecology should require each jurisdiction to come up with a comprehensive set of solutions that works for their plant and community and give plants credit for achieving reductions through such projects. Ecology should incentivize plant to achieve the greatest possible reductions in nitrogen, the soonest.

II. Conduct a regional study to support optimization and long-term planning

5. The AC generally agrees that a Sound-wide study should be initiated as soon as possible (in advance of permit issuance, if possible) and to be completed no later than the end of year 4 of the first permit. Ecology must oversee the study.
- a. This study does not substitute for Ecology issued guidance on optimization.
 - a. The AC has not discussed or agreed as to how to coordinate or fund the study but notes the suggestion that utilities could initiate coordination and work together with Ecology and the Association of Washington Cities to fund and conduct the study.
 - i. Environmental groups insist that any failure to conduct a regional study must not interfere with plant' implementation of permit requirements.
 - b. The first deliverable of the study should be a synthesis of reports on optimization efforts elsewhere and underway by plants in Puget Sound. The study would share findings with plants about what has worked best for plants elsewhere, to assist categories of plant sizes and types in identifying optimization opportunities. This should not delay optimization efforts at any plants.
 - c. The permit should require each plant to either participate in the regional study or choose to conduct an independent nutrient reduction evaluation by the end of year 2.
 - i. Utilities believe that two years is not sufficient time for a plant to conduct monitoring and complete an independent nutrient reduction evaluation.
 - d. The study will have a single entity coordinate a consistent evaluation of all of the plants (including those already <10 mg/L TIN) to produce a regional nutrient

evaluation report that identifies what can be collectively accomplished toward nutrient reduction goals and, for each plant:

- i. An assessment of current plant equipment and short-term capacities to reduce nutrients; and
- ii. An assessment of medium-term strategies such as side stream treatment; plant footprint re-purposing; and “outside fence opportunities” including projects or approaches such as satellite plants, alternatives to marine discharge locations (i.e., recycled or reclaimed water), pretreatment programs, source control, expanded maintenance and line replacements and other I/I reduction efforts, requiring separate plumbing and/or other building scale solutions.; and evaluation of septage handling practices.
- iii. Recommendations for advanced treatment technologies and other options for long-term nutrient reductions; and
- iv. Risk for not meeting demand for capacity; land area for expansion; and time requirements to design and build upgrades or a complete rebuild.
- v. Examples of rate structures that utilities can consider to address funding shortages and ensure environmental justice in plant upgrades.

III. Collect the high quality data needed for multiple purposes

6. AC members agree that a larger, more representative quantity of data, collected using consistent protocols is needed across plants during the first PSNGP for both influent and effluent to inform and evaluate process changes and optimization, improve loading estimates, measure progress, and be used in future runs of the Salish Sea Model (SSM).
 - a. Utilities prefer that each plant provide a thorough Sampling and Analysis Plan (SAP) that will ensure standard methods and comparable data by:
 - i. Following general guidelines developed by Ecology.
 - ii. Consulting with experienced plant operators and laboratory personnel and with process engineers and design consultants as needed.
 - iii. Including parameters; locations; instrumentation; frequency/sampling intervals; and protocols/methods of sampling.
 - iv. Identifying and addressing internal and external factors that might influence variation and skew data for particular plant operations.
 - b. State agencies prefer building the SAP into permit compliance monitoring requirements that describe the sampling goals in a way that each facility must provide a representative sample.
7. AC members agree that large plants (>10 MGD rated capacity) will sample 3-4 times each week; medium plants (3-10 MGD) will at least sample weekly; and small plants (<3 MGD) will

sample at least monthly. Plants of any size may need to sample more frequently for the first 1-2 years to characterize their discharges.

- a. Allow reduced sampling frequency once loading variability is adequately documented and the plant's request is approved by Ecology (Plants would still need to maintain the monitoring needed to support plant operations, refine processes, continue to calculate loads, and demonstrate compliance).
 - b. Allow a moderate decrease of sampling in winter after baseline data are collected and Inflow/Infiltration (I/I) influence is well understood.
 - c. Plants should collect additional samples during and following adverse events (plant upsets, high hydraulic loading, combined sewer overflows) to evaluate how these events influent nutrient loadings.
8. AC members agree that the primary purpose of influent testing is to inform plant operations, to track changing load levels, and to calculate removal rates that inform adaptive management of plant operations to reduce nutrients. These influent data are needed:
- a. Frequent ammonia and carbonaceous biochemical oxygen demand (CBOD), and monthly total Kjeldahl nitrogen (TKN) influent data are needed.
 - i. Utilities request that if CBOD is required that it replace BOD sampling. If both are required, Ecology should provide justification.
 - ii. Alternative lab analyses may avoid TKN toxic waste and worker safety issues.
9. AC members agree that these effluent data are needed: TIN (ammonia plus nitrite plus nitrate), TKN, total organic carbon (TOC), and CBOD.
- a. Plants should periodically change the timing of sample collection to ensure representative data.
 - b. It will be important to determine during the first permit term whether, if water quality standards are not met by TIN reductions, carbon reduction may be needed.
10. Federal and state agencies and environmental groups agree that the monitoring will trigger required actions when target loads are exceeded (see section IV). Some AC members agree that the focus should be on a plant's overall pattern, not a single day, for assessing whether the target load is exceeded.
- a. Ecology should be clear about the length of time that an exceedance is considered to trigger additional required actions.
 - b. Utilities want more certainty about what the required actions will be.

IV. A target load for each plant will trigger additional management actions if exceeded

11. Federal and state agencies and environmental groups generally agrees that Ecology should establish an interim target load for TIN to provide a benchmark for measuring progress and as part of a framework during the first permit term where exceeding the target will not result in

a permit violation but will instead trigger implementation of actions that make progress toward preventing further increases in nutrients (see section VI).

- a. Ecology’s permit writer has explained that the target load will drive the adaptive management response for each plant; AC members seek to further understand this proposed permitting construct. AC members agree that the second permit will include numeric WQBELs for all plants.
 - b. The AC agrees that both seasonal and annual reductions will eventually be needed but members do not agree as to whether both seasonal and annual target loads should be established for the first permit term and whether sufficient data are available.
 - i. The federal caucus believes annual reductions should be included in the Salish Sea Model to address year-wide impairments.
 - c. Utilities are concerned that insufficient representative data exist to calculate meaningful interim target loads or provide a baseline by which to measure progress at many plants. Utilities are concerned about using bootstrapping method.
 - d. The state agency caucus lead believes that plants should be given reasonable accommodation for loading due to growth in this first permit term and a moderate increase above plants’ current loading should be allowed without triggering actions.
 - e. Federal agencies believe increases in flow can be offset by decreases in concentration to maintain current loading at most plants. If a “moderate increase” is allowed it should be clearly defined in the permit and the Fact Sheet should describe why this is allowable.
 - f. Environmental groups and tribes urge Ecology to set the interim target load at each plant’s current loading using the best available data to prevent. Environmental groups believe increases in flow can be offset by decreases in concentration to maintain current loading at most plants.
 - g. The AC does not agree as to whether bubble permits (allowing trading amongst plant operated by a single entity) should be allowed in the first permit.
 - h. The AC generally agrees that Ecology should continue the same loading parameter (TIN) into the second PSNGP to support trading.
 - i. Utilities want to support a WQBEL that will support a water quality trading program that is yet to be determined.
12. The AC members are not in agreement as to how the target load should be calculated. Utilities do not believe there is enough data to adequately characterize the nitrogen loading from each facility to calculate a target load.
- a. State and federal agencies and environmental groups generally agree that Ecology should use the same (non-parametric) approach for all plants using a minimum of 1 year data to calculate a 12-month average.

- b. Utility caucus believes the first permit should require monitoring under a QAPP to establish an adequate data set first. The amount of data collected (e.g., frequency and duration) should be driven by the variability in the data set.
- c. The AC agrees that Ecology should consider allowing an individual plant to use a different method to calculate loads if a compelling reason to do it differently is provided.
- d. The AC agrees that a representative load is most accurately determined using the flow for the day of the composite sample collection.
 - i. Utilities agree with this statement on the basis that additional data is gathered under a QAPP. More sampling days are needed.
- e. The AC generally agrees that plants with rated capacity <1 MGD and having the least amount of data should not have a target load set until data is gathered early in the first permit to set a target load for the remainder of the permit term.
 - i. Utilities believe all plants should collect adequate data before target loads are set.

V. Require optimization at all plants

- 13. The AC agrees that all plants should identify short-term actions (low cost controls and process changes focused on using existing equipment) and implement them as soon as possible, beginning in the first year of the permit. This is important for addressing short-term growth issues.
 - a. The AC agrees that Ecology should provide a menu of nutrient reduction optimization techniques that plants will evaluate and rank in order of effectiveness and feasibility within tiers established by Ecology. Each facility should have flexibility to do the best and most efficient optimization in this interim period before numeric WQBELs are established.
 - i. Utilities can generally agree with this statement, but optimization and capital improvement boundaries need to be better defined.
 - b. The AC agrees that Ecology should provide a detailed guidance document, published with the permit to develop their optimization plans; this could alternatively be developed through the regional study (see section II) but must be reviewed and approved by Ecology.
 - c. The AC agrees that Ecology should require individual optimization plans for medium (3-10 MGD) and large (>10 MGD) plants; the regional study could support these plans but must not delay the development of the optimization plans or the implementation of actions that can be implemented immediately.
 - i. Utilities cannot agree to this statement without a better definition of optimization.

14. The AC generally agrees that plants should be required to make demonstrable progress in trying strategies identified in their optimization plans and conduct adequate monitoring to evaluate effectiveness.
 - a. Utilities caution that this implies a consequence of penalty and “demonstrable” is not defined. Utilities would agree to plants making attempts (including engineering evaluation) to implement strategies, recognizing they may not deliver what is desired.
 - b. The AC agrees that plants should follow established protocols for all optimization approaches, document their implementation (what was tried, what was learned, what is planned) and quantify results, and provide annual reports to Ecology on the degree of success the plant has achieved through optimization efforts.
 - i. Utilities generally agree with this statement. As noted in Recommendation #1, plants that maintain a seasonal limit of <10 mg/L TIN should be excluded from this requirement (until WQBELs can be established).
15. The AC agrees that Ecology should encourage pilot trials and that Ecology should exercise enforcement discretion related to intermittent exceedances of regulated conventional parameters such as BOD, TSS or pH that occur during limited time experiments or pilot trial activities that are directly related to the optimization plan.
 - a. Utilities agree with this statement and want more certainty that plants would be exempt from individual permit penalties, and the exceedance limits and durations need to be well defined.
 - b. The AC agrees that data from monitoring conducted during these trials should not be considered representative of the plant’s overall nutrient loadings.
16. The AC generally agrees that the permit should clearly define what is a sufficiently detailed, compliant annual optimization report and allow streamlined reporting for the smallest plants (<3 MGD) in locations that are not expected to have near-field effects as identified in Ecology’s 2018 Bounding Scenarios Report, Publication 19-03-001.
 - a. Utilities believe this should be a separate guidance document and that streamlining applies to all plants, not just the smallest.
17. Federal and state agencies and environmental groups agree that the largest plants with the largest loads should make additional progress toward nutrient reductions during this term, but they have not agreed what that might mean.
 - a. Utilities disagree with this statement.

VI. Require additional actions if the trigger is reached

18. Federal caucus and state caucus and environmental groups generally agree that the permit should use an approach similar to the Industrial Stormwater General Permit to require plants to implement tiered sets of additional actions if they exceed their interim target loads in the first permit. Plants that implement the actions in the required timeframe would not be in

violation of the permit. The utility caucus is concerned about setting target loads until adequate data is available. The utility caucus would like to see additional detail in regard to the tiered approach in the industrial stormwater general permit.

- a. The AC agrees that Ecology needs to clearly define the tiers of actions, how they are triggered, and how plants comply.
 - i. The AC would like to see this detail in the preliminary draft permit language and discuss it during the informal comment period; utilities would prefer to have an additional meeting prior to releasing the draft.
 - ii. The AC generally agrees (see 18.b) that the phosphorus plan example (https://www.ezview.wa.gov/Portals/_1962/Documents/nutrients/Phos_Mgmt_Plan_Example.pdf) is a good starting point. All plants would begin optimization immediately with the simplest activities, and if loading targets are exceeded, then more difficult and costly actions will be required: higher cost controls/process changes, additional equipment purchases, minor retrofits, and other significant changes.
 - (1) Allow plants to select from actions within each tier but require them to explain why other techniques are not viable at the plant.
 - (2) Evaluate financial considerations and introduce innovative approaches in their optimization plans.
 - (3) Understand that plants will seek to avoid stranding assets by making investments that might not work with long-term improvements.
 - iii. Ecology should describe how each of the actions within each tier of action will be defensible and enforceable for various categories of plants.
 - iv. Ecology should also identify what incentives can be provided, and what access plants will have to technical support.
 - b. Utilities are concerned that if “more difficult and costly actions” (20.a.ii above) are required without knowing WQBELs, then there is still the potential for bad investments. Optimization is about making best efforts now, if possible, because many plants were not designed for nitrogen removal.
19. Federal and state agencies and environmental groups agree that any plant that cannot accomplish nutrient reduction by optimization and is not staying below its target load must conduct an evaluation of side stream treatment opportunities to add nutrient reduction capacity and implement if considered technically and economically feasible.
- a. Most utilities do not want to be subjected to this automatic requirement before WQBELs are established.

- b. Utilities expressed concern that there might be a shortage of technical consultants and contractors qualified to do this and other work that will be needed during this permit term.
 - c. Technical and economic feasibility needs to be defined.
20. Federal and state agencies and environmental groups agree that plants that cannot meet their target loads by optimization and side stream treatment then the plants must still be kept accountable to make more progress toward nutrient reductions, but the AC does not agree what that might look like.
- a. These plants could be required to conduct a detailed evaluation of technologies available to achieve TIN concentrations <10 mg/L, down to 3-4 mg/L. This high level evaluation would inform future (early in the second permit term) engineering designs and GMA-required cost estimates and funding plans. Plants with the greatest challenges accommodating growth and meeting target limits could do a feasibility study followed by an engineering report. The intent is for plants to be taking steps toward making necessary improvements in future permit terms in phases and pave the way for these plants to be upgraded with advanced treatment as soon as possible.
 - i. Utilities do not agree to 20 or 20a. Optimization should be separated from reaching targets. Optimize as much as possible. Ecology evaluate optimization plans and actions based on criteria such as did they consider all on the list, which are economically feasible, etc. Any targets need to be based on WQBELs.
 - ii. Utilities believe that, even knowing the “bookends” of 10 and 3 mg/L, this effort is not worthwhile until numeric WQBELs are established and plants can begin engineering design work to meet those specific standards.

VII. Pursue these actions in parallel with PSNGP issuance and implementation

- 21. The Environmental and Federal caucuses urge Ecology and plants to conduct and increase outreach to communities near the outfall locations, including but not limited to those identified as at greater risk from the Washington Environmental Health Disparities Map, the fishing community, and recreational users. Government-to-government consultation with Tribes is also needed.
- 22. The AC agrees that Ecology should support utilities’ efforts to initiate efforts to expand the pool of skilled plant operators.
- 23. The AC agrees that Ecology should apply the Salish Sea Model to understand relative benefits of alternative nutrient load reduction scenarios, including impacts to the near-field and far-field waters of Puget Sound and the seasonality of loading.
 - a. Utilities further suggest that Ecology should use the latest Salish Sea Model that PNNL has developed and work with PSI and UW to complete a sensitivity analysis of the

model prior to moving forward with scenarios. Additional data from Utilities would be beneficial.

24. The AC generally agrees that Ecology should establish numeric WQBELs during the next 2-3 years and then provide a compliance schedule for each plant to plan and build the infrastructure needed to accommodate future growth and meet WQBELs.
 - a. Environmental groups suggest that Ecology develop a compliance schedule in the first permit term mapping out the plan through the second permit term to build the infrastructure needed to accommodate future growth and meet numeric WQBELs by the end of the second permit term, possibly by amending the permit during the first term.
 - b. Utilities suggest that compliance schedules be included in individual permits, not the general permit. Building the infrastructure will most likely occur during the 3rd permit.
25. The AC agrees that Ecology should improve the schedule and priorities for updating individual permits that are overdue for reissuance and have all permits up to date by the end of the first permit term.
 - a. The Environmental and Federal caucuses agree that these updates should include a focus on monitoring, optimization, planning requirements, and additional action triggered by monitoring results.
26. The AC agrees that a bigger picture for point source trading should be developed before the end of the first permit term, in consultation with Tribes early in the process, and learning from examples elsewhere in the country. Use a mass loading (not percent removal) and determine equivalency factors to be used in future trading; the “currency” needs to be place-specific, because near-field and far-field pounds per day are not the same.
 - a. The AC agrees that trading frameworks cannot lead to degradation or sacrifice areas in Puget Sound.
 - b. Tribes (via 7/23/20 NWIFC Letter to Gov. Inslee): Any implementation of water quality trading should not result in shifting unaddressed impairments to treaty resources.
 - c. Environmental groups: Any trading program will be implemented pursuant to Final Guidance by Ecology on Water Quality Trading.
 - d. Utilities and Federal agencies: Consider setting a regional limit, creating incentives for source reductions, allowing arrangements for public and private trades, and allowing some utilities to pay into a fund.
 - e. State agencies: Consider more focus on fixing the root cause of problem.
27. The AC agrees that Ecology should implement a Sound-wide comprehensive nutrient reduction plan to address both point and non-point sources.
 - a. Environmental groups note that the plan must also include statutory authorities to carry out the work, along with clearly defined roles, responsibilities, measures of

success, and further actions needed in the event nonpoint source reduction is not succeeding.

- b. Tribes (in 7/23/20 NWIFC letter to Gov. Inslee) note that the state should recognize and apply its advancements in riparian buffer protection to agricultural and urbanizing areas, as complimentary and an important part of addressing watershed nutrient, temperature, and other pollutant loading.
28. The AC agrees that financial and technical assistance will be needed for monitoring, optimization, and planning.
 29. The AC agrees that a broader state and federal financial strategy is important to accomplish advanced treatment throughout the region. The Governor should request grants to help plants with equipment, consulting help, and planning during the first PSNGP, and ask for federal funding for this critical infrastructure to lessen the burden on individual utilities and their ratepayers, and to ensure environmental justice and tribal treaty rights in plant upgrades. The utility and environmental caucus agree they will work together to advocate for funds to support implementation.
 - a. Utilities believe that the existing funding options will not be sufficient to achieve advanced treatment at all plants.
 30. The AC agrees in a regional approach to coordinating septage intakes: determine how to manage septage hauling and disposal to minimize nutrient impacts on Puget Sound.