

PMSA Vessel Projections for 2026

1 **A. PMSA Vessel Projection for 2026.**

2
3 **Q: Did PSP provide any projections of vessel activity after 2025 for use**
4 **in a rate year?**

5 A: No. WAC 480-07-525(4)(m) requires a work paper with “[p]rojected changes
6 in vessel assignments.” PSP failed to provide this. Its testimony on vessel
7 traffic was limited, outdated, inaccurate, and did not project any changes in
8 vessel assignments beyond 2025.

9
10 **Q: Is PMSA providing a detailed analysis of projected changes in**
11 **vessel assignments in lieu of PSP’s missing work papers?**

12 A: Yes.

13
14 **Q: What is PMSA providing as the source of this analysis?**

15 A: The source data is from the Marine Exchange of Puget Sound, as provided
16 in the testimony of John Veentjer (Exhibit JV-01T). In my testimony, I
17 analyze that data to develop vessel traffic projections, supported by
18 worksheets submitted as exhibits.

19
20 **Q: What data in Exhibit JV-01T does the Marine Exchange collect**
21 **regarding vessel arrivals?**

22 A: The Marine Exchange data includes annual vessel arrivals at Puget Sound
23 ports (excluding Grays Harbor) for each calendar year from 2005 through
24 2024, plus the latest data for 2025. This data is presented in the
25 attachments to Exhibit JV-01T.

26

1 **Q: What are the key observations of the Marine Exchange data over**
2 **this 20-year period?**

3 A: The data shows vessel arrivals ranging from a low of 2,159 arrivals in 2020
4 (the COVID-19 pandemic year) to a high of 2,994 arrivals in 2006. The 20-
5 year average is approximately 2,612 arrivals per year. The most recent
6 complete year, 2024, shows 2,486 arrivals, while the Marine Exchange data
7 for 2025 indicates 2,434 arrivals.

8
9 **Q: Does the Marine Exchange data show vessel arrivals increasing or**
10 **decreasing in recent years?**

11 A: The Marine Exchange data points to 2,434 arrivals for 2025, which
12 represents a decline of 52 arrivals (-2.1%) from the 2024 level of 2,486
13 arrivals.

14
15 **Q: Is there data available showing PSP pilot assignments over the**
16 **same time period?**

17 A: Yes. PSP pilot assignment data is available from multiple sources including
18 BPC Annual Reports, PSP Monthly Activity Reports, PSP financial reports
19 submitted in prior rate cases, and testimony in prior proceedings. This data
20 is compiled in Exhibit MM-27, the AAL Worksheet.

21
22 **Q: How do vessel arrivals reported by the Marine Exchange correlate**
23 **to pilot assignments reported by PSP?**

24 A: A vessel arrival is a single event: a vessel calling at a Puget Sound port. In
25 contrast, PSP pilot assignments include multiple events: the inbound and
26

1 outbound transits, internal movements (e.g., shifting berths), second pilot
2 assignments, and cancellations.

3
4 **Q: Is there a mathematical relationship between Marine Exchange**
5 **arrivals and PSP assignments?**

6 A: Yes. Over the 20-year period from 2005 through 2025, there is a consistent
7 correlation between the number of vessel arrivals reported by the Marine
8 Exchange and the number of pilot assignments reported by PSP.

9 For the years 2005 through 2025 (excluding the 2020 pandemic
10 anomaly), the ratio of PSP pilot assignments to Marine Exchange vessel
11 arrivals ranges from a low of 2.732 in 2009 to a high of 3.138 in 2015, with
12 an average of 2.88. This correlation is detailed in Exhibit MM-23r.

13
14 **Q: What does a ratio of 2.88 mean?**

15 A: It means that, on average, for every vessel arrival recorded by the Marine
16 Exchange, PSP completes approximately 2.88 pilot assignments. This
17 accounts for both the inbound and outbound transits, plus shifts, second
18 pilot assignments and cancellations.

19
20 **Q: How stable is this correlation over the 20-year period?**

21 A: The correlation is quite stable. There is relatively low variance around the
22 average ratio of 2.88. The median ratio is 2.87, very close to the average,
23 which confirms the consistency of this relationship.

24
25 **Q: Has the correlation changed in recent years compared to the**
26 **historical average?**

1 A: The data shows a slight increase in recent years. The average ratio for the
2 pre-COVID period (2005-2019) was 2.85, while the average for the post-
3 COVID period (2021-2025) is 2.96.
4

5 **Q: Does PSP have actual pilot assignment data for 2025?**

6 A: Yes. In response to PMSA Data Request No. 98,¹³⁴ PSP provided its actual
7 pilot assignments for the trailing twelve-month period from December 2024
8 through November 2025, which totaled 7,016 assignments.
9

10 **Q: How does this actual 2025 data compare to what the Marine**
11 **Exchange correlation would predict?**

12 A: The Marine Exchange data indicates 2,434 vessel arrivals for 2025. Using
13 the 20-year average correlation ratio of 2.88, this would predict 7,001 pilot
14 assignments. PSP's actual trailing twelve-month data through November
15 shows 7,016 assignments, which is 99.789% correlated and only 15
16 assignments (00.221%) higher than the Marine Exchange methodology
17 would predict.
18

19 **Q: What is the actual correlation ratio for 2025 based on PSP's**
20 **reported data?**

21 A: Dividing PSP's actual 7,016 assignments by the Marine Exchange's 2,434
22 anticipated arrivals yields a ratio of 2.882, which is essentially the same as
23 the 20-year average of 2.88.
24
25

26 ¹³⁴ Exh. MM-05.

1 **Q: What does this tell us about the predictive accuracy of the vessel**
2 **arrival to assignment correlation methodology?**

3 A: It demonstrates that the Marine Exchange vessel arrival data, combined
4 with the historical correlation ratio, provides a highly accurate method for
5 predicting PSP pilot assignments, with less than 1% variance from actual
6 results.

7
8 **Q: What methodology does PMSA propose for projecting vessel traffic**
9 **and pilot assignments for the potential rate years 2026 and 2027?**

10 A: PMSA proposes using trend line analysis (also called “hindcasting”) based
11 on historical Marine Exchange vessel arrival data, combined with the
12 proven 20-year correlation ratio of 2.88.

13
14 **Q: What is trend line analysis or “hindcasting”?**

15 A: Trend line analysis, or hindcasting, is a standard forecasting method that
16 uses historical data to identify trends and extend them forward to make
17 projections.

18
19 **Q: Why is trend line analysis appropriate for projecting vessel traffic?**

20 A: Trend line analysis is particularly appropriate when there is sufficient
21 historical data to establish reliable patterns, when the underlying factors
22 affecting the data remain relatively consistent, and when the goal is to
23 make conservative, data-driven projections rather than speculative
24 forecasts.

25
26 **Q: What historical data period does PMSA use for this analysis?**

1 A: PMSA analyzed Marine Exchange vessel arrival data from 2005 through
2 2025, excluding calendar year 2020 as an anomaly due to the COVID-19
3 pandemic. The 2025 data represents PSP's actual trailing twelve-month
4 assignments from December 2024 through November 2025 (7,016
5 assignments), converted back to vessel arrivals using the established
6 correlation ratio.

7
8 **Q: Why is 2020 excluded from the analysis?**

9 A: Consistent with Commission precedent (Final Order 08), we exclude 2020
10 because vessel traffic was distorted by the COVID-19 pandemic. Including
11 this anomalous data (2,159 arrivals vs. 2,554 in 2019 and 2,340 in 2021)
12 would produce unreliable projections, and excluding outliers is standard
13 statistical practice.

14
15 **Q: What are the trend line forecast alternatives that you looked at?**

16 A: We analyzed three trend lines based on different historical periods: a 20-
17 year trend, a 10-year trend, and a 5-year trend (all excluding 2020). Longer
18 periods capture broad, structural changes, while shorter periods reflect
19 recent market conditions. Presenting all three allows the Commission to
20 evaluate which best projects traffic for the rate years.

21
22 **Q: Please describe the 20-year trend analysis.**

23 A: The 20-year trend analysis uses Marine Exchange data from 2005 through
24 2025 (excluding 2020), providing 20 data points. The 2025 data point
25 represents PSP's actual trailing twelve-month assignments (7,016)
26 converted to vessel arrivals. This analysis is presented in Exhibit MM-24.

1 **Q: What does the 20-year vessel arrival trend show?**

2 A: The 20-year trend shows a declining pattern of vessel arrivals, with an
3 average decline of approximately 30 arrivals per year. The 20-year trend
4 projects 2,315 vessel arrivals in 2026 and 2,285 arrivals in 2027. Using the
5 established correlation ratio of ~~2.8761~~ 2.8764:

- 6 • 2026: 2,315 arrivals $\times$ ~~2.8761~~ 2.8764 = ~~6,658~~ 6,659 pilot assignments
- 7 • 2027: 2,285 arrivals $\times$ ~~2.8761~~ 2.8764 = 6,573 pilot assignments

8
9 **Q: Please describe the 10-year trend analysis.**

10 A: The 10-year trend analysis uses Marine Exchange data from 2015 through
11 2025 (excluding 2020), providing 10 data points. This analysis is presented
12 in Exhibit MM-25r.

13
14 **Q: What does the 10-year vessel arrival trend show?**

15 A: The 10-year trend shows a more modest declining pattern, with an average
16 decline of approximately 10 arrivals per year. The 10-year trend projects
17 ~~2,421~~ 2,424 vessel arrivals in 2026 and ~~2,410~~ 2,414 arrivals in 2027.

18 Applying the correlation ratio of 2.8761:

- 19 • 2026: ~~2,421~~ 2,424 arrivals $\times$ 2.8761 = ~~6,962~~ 6,972 pilot assignments
- 20 • 2027: ~~2,410~~ 2,414 arrivals $\times$ 2.8761 = ~~6,932~~ 6,944 pilot assignments

21
22 **Q: Please describe the 5-year vessel arrival trend analysis.**

23 A: The 5-year trend analysis uses Marine Exchange vessel arrival data from
24 2019 and 2021 through 2025 (excluding 2020), providing 6 data points. This
25 analysis is presented in Exhibit MM-26r.

1 **Q: What does the 5-year trend show?**

2 A: The 5-year trend shows a decline of approximately 11 arrivals per year. The
3 5-year trend projects ~~2,413~~ 2,423 vessel arrivals in 2026 and ~~2,402~~ 2,412
4 arrivals in 2027. Applying the correlation ratio of ~~2.8761~~ 2.8764:

- 5 • 2026: 2,413 arrivals $\times$ ~~2.8761~~ 2.8764 = ~~6,941~~ 6,970 pilot assignments
- 6 • 2027: 2,402 arrivals $\times$ ~~2.8761~~ 2.8764 = ~~6,908~~ 6,938 pilot assignments

7
8 **Q: Do all three trend analyses point in the same direction?**

9 A: Yes. All three trend analyses show declining vessel arrivals, differing only in the
10 rate of decline. The projections for 2026 assignments range from ~~6,658~~ 6,659
11 (using the 20-year vessel arrival trend) to ~~6,962~~ 6,972 (using the 10-year vessel
12 arrival trend), a span of only ~~304~~ 313 assignments or approximately ~~4.6~~ 4.7%.

13
14 **Q: How do these projections compare to current actual data?**

15 A: PSP's actual trailing twelve-month data (December 2024 through November
16 2025) shows 7,016 assignments, which is included as the 2025 data point in
17 all three trend analyses. All three trend projections show continued decline
18 from this level:

- 19 • 20-year trend: ~~6,658~~ 6,659 for 2026 (5.1% below 2025 actual)
- 20 • 10-year trend: ~~6,962~~ 6,972 for 2026 (0.8 0.6% below 2025 actual)
- 21 • 5-year trend: ~~6,941~~ 6,970 for 2026 (1.1 0.7% below 2025 actual)

22
23 **Q: What are the arguments in favor of and against using the 20-year**
24 **vessel arrival trend?**

25 A: The 20-year trend has several strengths. It captures long-term structural
26 changes in the maritime industry, including shifts in global trade patterns,

1 changes in vessel sizes, and evolution of supply chains. It also provides the
2 most conservative projection, which is appropriate for rate-making purposes
3 where the goal is to avoid over-recovery. Finally, it encompasses complete
4 business cycles, including the 2008-2009 financial crisis and recovery,
5 providing a more complete picture of market dynamics. And, with 20 data
6 points including actual 2025 data, it has the most robust statistical
7 foundation.

8 The main question is whether conditions from 2005-~~2010~~ 2015 remain
9 relevant to current and future vessel traffic patterns. Maritime trade has
10 evolved significantly over this period, and it is my opinion that the more recent
11 data better reflects current market realities with respect to vessel arrivals.

12
13 **Q: What are the arguments in favor of and against using the 10-year**
14 **vessel arrival trend?**

15 A: The 10-year trend balances historical perspective with current relevance. It
16 reflects the post-Great Recession “new normal” and the market conditions
17 which have been in place through at least one typical business cycle
18 between the Great Recession and the COVID pandemic. Its more moderate
19 declining trend may also better represent current realities, including the
20 rise in cruise ship calls that masks steeper declines in cargo traffic. With 10
21 data points, it has a solid statistical foundation.

22
23 **Q: What are the arguments in favor of and against using the 5-year**
24 **trend?**

25 A: The 5-year trend’s strength is its focus on the most recent market
26 conditions, including the post-pandemic recovery and current trade

1 dynamics. However, its primary limitation is the small dataset, which
2 makes the projection more susceptible to short-term fluctuations and less
3 statistically reliable.

4
5 **Q: Of the three trend analyses presented here, which does PMSA**
6 **recommend the Commission use for projecting vessel traffic and**
7 **pilot assignments for rate years 2026 and 2027?**

8 A: PMSA recommends the Commission use the 10-year trend analysis at
9 Exhibit MM-25r, which projects ~~6,962~~ 6,972 pilot assignments for 2026 and
10 ~~6,932~~ 6,944 assignments for 2027.

11
12 **Q: Why does PMSA recommend the 10-year vessel arrival trend over**
13 **the 20-year or 5-year alternatives?**

14 A: The 10-year vessel traffic trend provides the optimal balance of statistical
15 reliability and relevance to current market conditions. It uses a robust 10-
16 point dataset (2015-2025) that reflects the modern post-recession maritime
17 trade environment. Most importantly, its projection is validated by actual,
18 recent data.

19 The 10-year trend projects ~~6,962~~ 6,972 assignments for 2026, which is
20 within ~~0.8~~ 0.6% of PSP's actual 2025 assignment total (7,016) and nearly
21 identical to the projection derived from the 20-year assignment-to-arrival
22 correlation (~~6,992~~ 2,434 $\times$ 2.8764 = 7,001). This tight clustering of results
23 from independent data points provides high confidence that ~~6,962~~ 6,972
24 assignments is the most reasonable and reliable projection for 2026.

1 **Q: Is the 10-year trend the “middle ground” among the three**
2 **alternatives?**

3 A: Yes, the 10-year trend occupies the middle ground because it appropriately
4 balances competing considerations. The 10-year trend projection is very
5 close to the 5-year trend’s result (a difference of only 21 assignments) but is
6 based on a much larger and more statistically reliable dataset. It is
7 therefore not just a middle ground, but the most analytically sound
8 approach available.
9

10 **Q: What vessel traffic and pilot assignment levels does PMSA**
11 **recommend the Commission use for rate-setting purposes for the**
12 **next rate year?**

13 A: PMSA recommends the Commission use the 10-year trend projections of:

- 14 • 2026: ~~6,962~~ 6,972 pilot assignments
- 15 • 2027: ~~6,932~~ 6,944 pilot assignments

16 These projections are based on objective vessel arrival data, proven 20-year
17 correlation methodology with ~~99.65~~ 99.8% accuracy (7,001/7,016), standard
18 statistical techniques, and actual 2025 trailing twelve-month experience.
19 We provide both 2026 and 2027 as the proposed rate year is likely to
20 straddle both.
21

22 **Q: Would it be in ratepayers’ short-term financial interest for the**
23 **Commission to accept PSP’s higher projection of 7,446 assignments?**

24 A: Yes, actually it would. In a revenue requirement proceeding, once the
25 Commission determines the total dollar amount of revenue PSP is entitled
26 to collect, that amount is divided by the projected number of assignments to

1 calculate the tariff rates per vessel tonnage or per bridge hour. A higher
2 number of assignments in the denominator results in a lower rate per
3 customer. So, if the Commission were to accept PSP's projection of 7,446
4 assignments, the rate per vessel would be lower than if the Commission
5 adopts PMSA's projection of ~~6,962~~ 6,972 assignments.

6
7 **Q: Given that accepting PSP's higher projection would result in lower**
8 **rates for PMSA's members, why is PMSA advocating for a lower**
9 **assignment projection?**

10 A: Because PMSA is committed to providing the Commission with the most
11 accurate, evidence-based projections possible. While inflated projections
12 might lower per-vessel rates in the short term, they undermine the integrity
13 of the regulatory process. Rates should be based on the best available
14 evidence, not unsupported guess-timates. Accurate projections ensure stable
15 rates for ratepayers, appropriate workloads for pilots, and sound decisions
16 by the Commission.

17 PMSA's projections are based on objective data from the Marine
18 Exchange-an independent, non-profit organization with no stake in this
19 proceeding whose data is widely used and trusted for operational and safety
20 analysis in Puget Sound.

21 As demonstrated, our vessel-to-assignment correlation has ~~99.65~~ 99.8%
22 accuracy against two decades of PSP's own data, and our recommended
23 projection (~~6,962~~ 6,972 assignments) converges with the results of that
24 correlation analysis (~~6,992~~ 7,001 assignments). This convergence of
25 independent methods provides a reliable, evidence-based foundation for
26 ratemaking.

End of Vessel Projection Section of
Testimony