

# BST ASSOCIATES

Tel. (425) 486-7722

bstassoc@seanet.com

---

June 21, 2022

Mr. Doug Levy, Owner  
Outcomes By Levy, LLC  
(425)922-3999

Re: Vessel Depreciation Schedule

Dear Mr. Levy:

BST Associates analyzed vessel values to assist the Recreational Boating Association of Washington (RBAW) and Northwest Marine Trade Association (NMTA) in responding to the proposed vessel depreciation schedule issued by the Washington State Department of Revenue (DOR).

The primary concern of RBAW/NMTA is that the DOR depreciation schedule shows that vessel values decrease for 17 years, and then remain constant after 17 years. In response to the proposed DOR depreciation schedule, BST Associates produced an analysis in December, 2021, which demonstrated that vessel values continue to decrease after 17 years.

DOR responded to BST's December analysis with three concerns, based on DOR's understanding of the BST methodology. The concerns listed by DOR were:

- The information submitted exclusively relied on 2020 vessel sales data;
- The data submitted does not include any assumptions regarding the likelihood of errors and irregularities in Department of Licensing (DOL) data, and;
- The report indicated that over 139,000 records were reviewed to compile the data, which we assume were purchase and sales records. DOR questioned the database used by BST.

The following memo addresses these comments from DOR comments.

In the revised analysis presented in this memo, BST used a much larger database to estimate depreciation and confirms our findings that depreciation continues to decline after 17 years.

Sincerely,



---

## Background

The Washington State Department of Revenue (DOR) issued a draft depreciation schedule on May 12 (Rulemaking 458-20-23801) to update the Watercraft Excise Tax Depreciation Schedule. Following public comment that schedule was revised, and the revised schedule was entered into the Washington Administrative Code (WAC) as WAC 458-20-23801. (See Table 1).

Table 1: Vessel Depreciation Schedule

Year of Ownership	Sailboat	Powerboat less than 30 feet	Powerboat 30 feet or more
1	1.00	1.00	1.00
2	0.9	0.84	0.83
3	0.85	0.76	0.74
4	0.79	0.70	0.67
5	0.74	0.65	0.62
6	0.68	0.61	0.58
7	0.63	0.57	0.55
8	0.6	0.54	0.52
9	0.58	0.51	0.49
10	0.54	0.49	0.47
11	0.51	0.47	0.46
12	0.48	0.45	0.45
13	0.44	0.43	0.44
14	0.44	0.39	0.42
15	0.44	0.39	0.42
16	0.44	0.38	0.41
<b>17 or more</b>	<b>0.43</b>	<b>0.36</b>	<b>0.41</b>

Source: WAC 458-20-23801

Under this schedule, vessels depreciate in value for 17 years, after which the depreciation rate is constant. BST Associates was retained by RBAW/NMTA to analyze vessel values in Washington, and to re-evaluate the DOR depreciation schedule, focusing on depreciation in years 14 and beyond.

---

## Department of Revenue Response to RBAW

RBAW/NMTA retained BST Associates to prepare a response to the DOR draft vessel depreciation schedule. The BST response was dated December 17, 2021. DOR responded to the BST analysis on February 15, 2022, noting several concerns with the analysis and the data used in the analysis. It appears that these concerns are based on a misunderstanding of the BST work. Clarifications are provided after each of the bullet points below.

The DOR response, which is attached at the end of the memo, included the following concerns:

*Additionally, the Department reviewed the data submitted as a part of your petition. We identified the following concerns with the data and whether it could support depreciable valuation rates for vessels owned for a period of 14 or more years:*

- *The information submitted exclusively relied on 2020 vessel sales data;*

BST response: This is not correct. The analysis used the database of all vessels with valid Washington registrations in 2020. This database includes a field for Model Year, Purchase Year, and Purchase Cost, among other variables; the vessels in the 2020 database were last purchased as early as 1906 and as late as 2020.

- *The data submitted does not include any assumptions regarding the likelihood of errors and irregularities in Department of Licensing (DEPT OF LICENSING) data (due to the free-form nature of DEPT OF LICENSING's data collection for vessel purchases and sales), and;*

BST response: DOR doesn't specify what errors or irregularities may be an issue. Based on using this data extensively for nearly 30 years, we understand that the primary irregularity is in the vessel length field, and mainly applies to vessels 70 feet and longer. The majority of the errors in vessel length are related to personal watercraft, which may have an extra digit appended to the actual length (i.e., 70 feet rather than 7 feet). The revised analysis focuses on vessels between 16 feet and 59 feet, which avoids the length coding error.

In addition, BST used the median value rather than the average value, which minimizes the impact of irregularities with reported prices.

- *The report indicated that over 139,000 records were reviewed to compile the data, which we assume were purchase and sales records. However, DOL-published statistics indicate there were only 229,000 registered vessels in Washington in calendar year 2020. As a result, the report's data would suggest that over 50% of registered vessels*

*in Washington were sold during the 2020 calendar year. The 139,000 figure also does not align with quarterly vessel sales data published by a reputable third-party, the Washington Coast Economist, which indicates there were approximately 42,000 vessel sales in Washington during calendar year 2020.*

BST response: DOR is correct that the full database has 229,000 records. Of these, a total of 139,000 vessels are between 16 feet and 59 feet in length; the 139,000 figure does not refer to sales in 2020. Vessels less than 16 feet were not included, because they are not subject to the depreciation schedule. Vessels 60 feet and longer were omitted, based on the length errors noted above.

- *While the Department has concerns with the data submitted, we intend to continue working with the vessel industry during the future contemplated rulemaking process to understand the concerns raised, discuss any submitted data, and accommodate those concerns based on best available data.<sup>1</sup>*

BST used a multi-year database to estimate depreciation rates. The method is described in the next section, followed by results and conclusions of the analysis.

We appreciate DOR’s consideration for additional analysis, which relies on the best available data.

## **Method**

The BST analysis used vessel registration data obtained from the DOL. This data includes a listing of all vessels registered in Washington. The fields included in this data are listed in Table 2.

*Table 2: Data Fields in Vessel Registration Database*

Resident County	Primary Use
Make	Boat Type
Model Year	Boat Length
Purchase Cost	Expire Date
Purchase Year	City State
Registration Number	Owner City
Hull Type	Owner State
Propulsion Type	Owner ZIP
Fuel Type	

<sup>1</sup> See DOR’s letter at the end of the report.

Vessels must register annually with the DOL, and the annual registration is valid from July 1 through June 30.

BST receives a database from DOL each October. This database includes records for every vessel with registration valid through June of the following year. For example, the database received in October 2021 includes all vessels with registrations valid from July 1 2021 through June 30, 2022.

For this analysis BST used databases for every year from 2006 through 2021, with one exception. Due to a change in computer systems, data for 2019 was not available. However, this had a minimal impact on the analysis.

BST Associates created a master list of all vessels that were registered in each year, and which included:

- Data year
- Registration Number
- Propulsion Type
- Make
- Boat Length
- Model Year
- Purchase Year, and
- Purchase Price

In order to match the depreciation schedule, the Propulsion Type field was condensed into two categories, Power and Sail.

This master list of vessels was then condensed by omitting the Make field, which eliminated duplicate records.

Values were included for each vessel, for each year in which that individual vessel was sold.

Vessels were grouped into two length ranges:

- 16 feet to 29 feet
- 30 feet to 59 feet.

Vessels under 16 feet were excluded, because the depreciation schedule is not applied to those vessels.

Vessels 60 feet and over were also excluded for three reasons

1. The vessel length reported is not correct for a portion of these vessels. Most of this misreporting is related to personal watercraft, and typically involves the length having an extra digit appended. For example, a 7-foot Yamaha may be recorded as being 70 feet long. There are essentially no personal watercraft less than 6 feet long, so limiting the analysis to vessels less than 60 feet eliminates the possibility of 6-foot vessels (or longer) being recorded as 60 feet.
2. There are relatively few vessels in the master list that are reported as being 60 feet or longer. As shown in Table 3, these vessels account for less than one-half of one percent of the total vessels.

3. The range of reported lengths 60 feet and longer is too large to produce a statistically reliable analysis of value trends. These vessel lengths are reported as ranging from 60 feet to 811 feet.

Table 3 provides a summary of the total number of vessel sales records. This includes records from 1995 through 2021.

*Table 3: Vessels by Length Range*

<b>Length Range</b>	<b>Vessels</b>	<b>Share</b>
Under 16	214,623	37.8%
16 to 29	312,353	55.0%
30 to 59	38,772	6.8%
60+	2,354	0.4%
<b>Total</b>	<b>568,102</b>	<b>100.0%</b>

A subset of the database was used to identify sales from 1995 and later, and which occurred 14 or more years from the model year to the sale year, as shown in Table 4.

*Table 4: Summary of Records per Query*

<b>Type</b>	<b>16' to 29'</b>	<b>30' to 59'</b>	<b>60' +</b>
Power	48,679	4,816	356
Sail	503	385	-
<b>Total</b>	<b>49,182</b>	<b>5,201</b>	<b>356</b>

To perform the statistical analysis of vessel price changes, the master file was queried to show the sale price of each vessel, in each year that the vessel was sold. The analysis was performed on six subsets of the data:

- Power boats
  - 16 feet to 29 feet
  - 30 feet to 59 feet
- Sail boats
  - All lengths
- All vessels
  - 16 feet to 29 feet
  - 30 feet to 59 feet
  - 60 feet & longer

A query was used to limit the request to vessels that are: 1) Model Year greater than 1994, and 2) Purchase Year greater than 1994. The resulting database included vessels from 1995 to 2021; the focus of this analysis was on sales that were 14 or more years between model year and purchase year. The median values were used to estimate the depreciation.

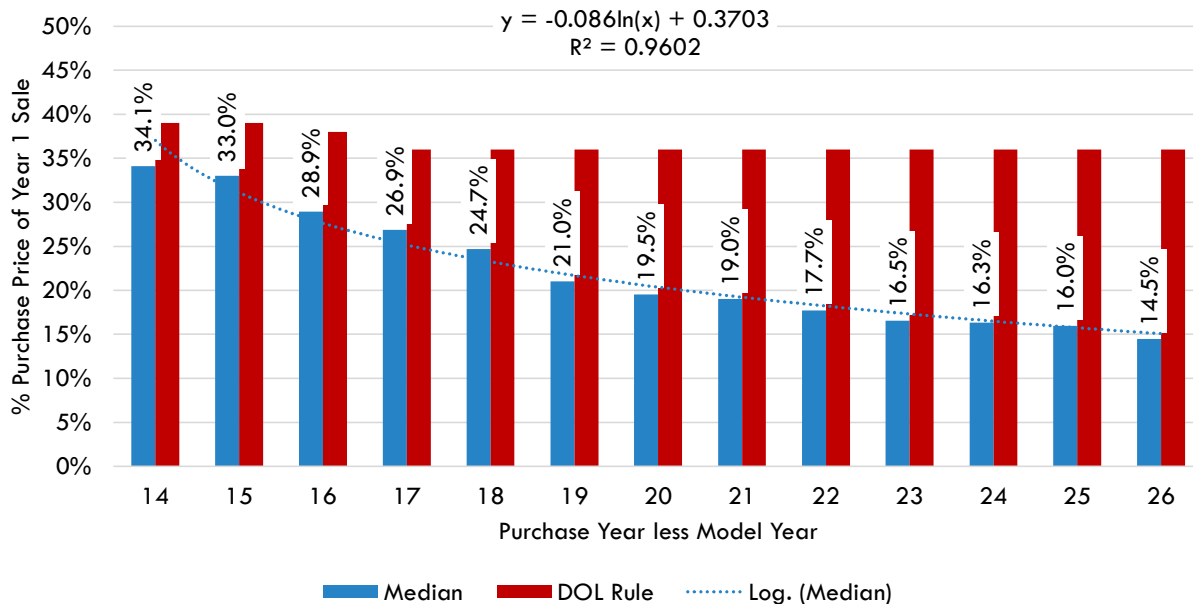
## Results

### Power Boats, 16 Feet to 29 Feet Long

For power boats from 16 feet to 29 feet long, the depreciation rate is estimated to be 34.1% at 14 years, and declines to 14.5% at 26 years. The regression estimate for this group of boats is very strong ( $r^2 = 0.96$ )<sup>2</sup>. (See Figure 1).

DOR's recommended depreciation rate is 39% at 14 and 15 years, 38% at 16 years and 36% at 17 years and beyond. These rates appear to be too high.

Figure 1: Vessel Depreciation, Power Boats, 16' to 29'



Source: BST Associates, WA Dept of Licensing data

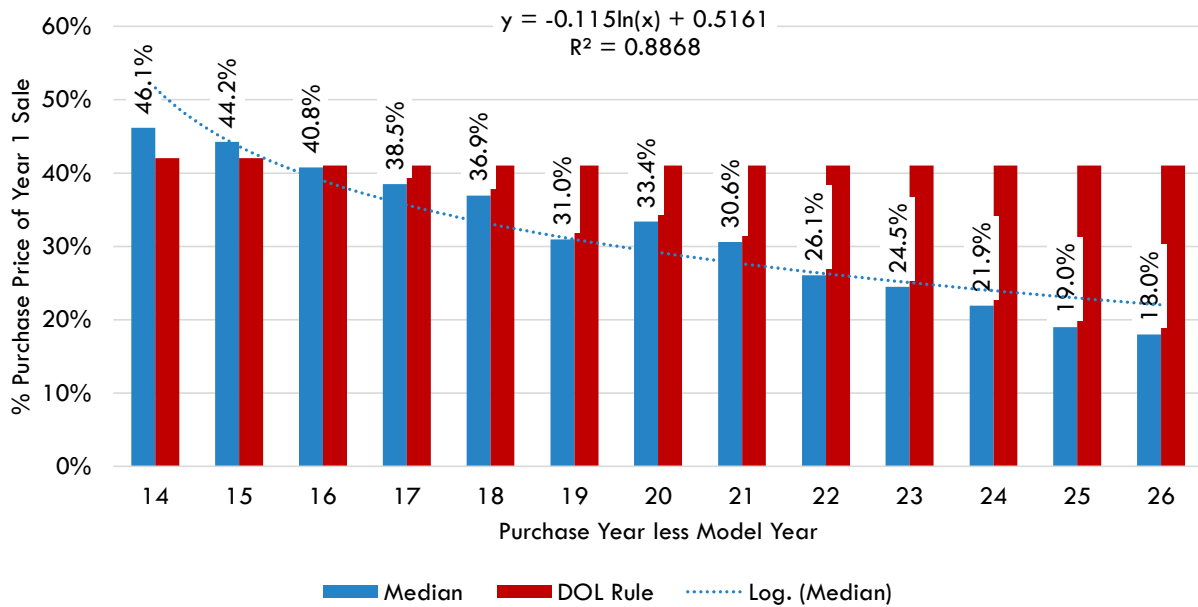
<sup>2</sup>  $r^2$  is a measure of association; it represents the percent of the variance in the values of Y that can be explained by knowing the value of X.  $r^2$  varies from a low of 0.0 (none of the variance is explained), to a high of +1.0 (all of the variance is explained).

### Power Boats, 30 Feet to 59 Feet Long

For power boats 30 feet to 59 feet long, the depreciation rate is estimated to be 46.1% at 14 years, and declines to 18.0% at 26 years. The regression estimate for this group of boats is strong ( $r^2 = 0.89$ ). (See Figure 2).

DOR's recommended depreciation rate is 42% in year 14 and 15, 41% in years 16 and beyond. The DOR rate appears to be too low for years 14 and 15 and too high for years 16 and beyond.

Figure 2: Vessel Depreciation, Power Boats, 30' to 59'



Source: BST Associates, WA Dept of Licensing data

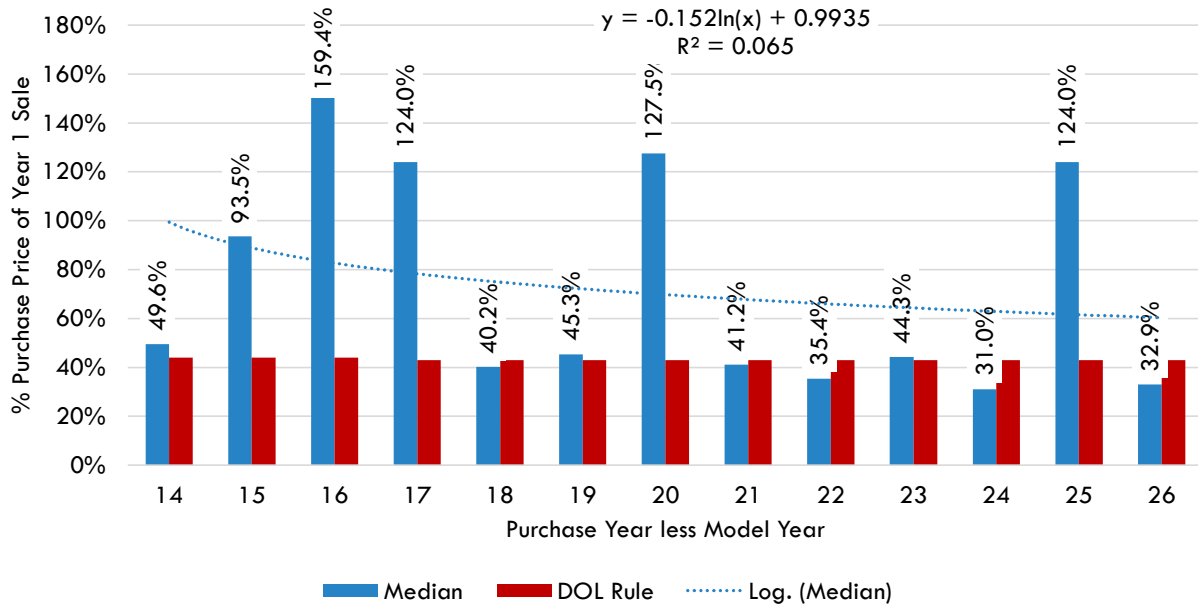


### Sail Boats, 16 Feet or Longer

For sail boats 16 feet and longer, the depreciation rate is estimated to be 49.6% at 14 years and declines slightly, to 32.9% at 26 years. However, the trend is very erratic. The regression for this estimate is very poor ( $r^2 = 0.06$ ) due to the small sample size and wide variation in sales prices. (See Figure 3).

DOR's recommended depreciation rate is 44% for year 14 through 16 and 43% for 17 years and beyond. BST recommends that, rather than calculating the depreciation rate for sail boats separately, they should instead be included with power boats by length range.

Figure 3: Vessel Depreciation, Sail Boats, All Lengths



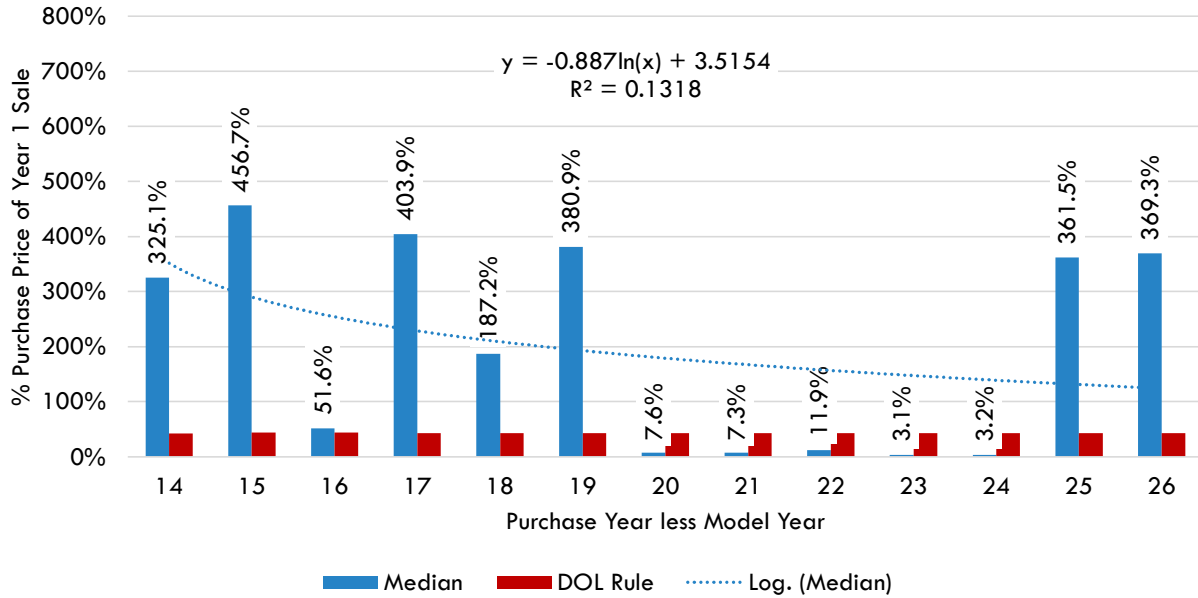
Source: BST Associates, WA Dept of Licensing data

### All Boats, 60 Feet and Longer

For all boats 60 feet and longer, there is no discernible pattern to estimate the depreciation rate. The regression for this estimate is very poor ( $r^2 = 0.13$ ) because there are too few records and wide variation in prices. (See Figure 4).

BST recommends that boats over 60 feet (both power and sail) should be depreciated at the same rate as that for boats from 30 feet to 59 feet.

Figure 4: Vessel Depreciation, ALL Boats, 60' & Longer



Source: BST Associates, WA Dept of Licensing data

## Conclusion

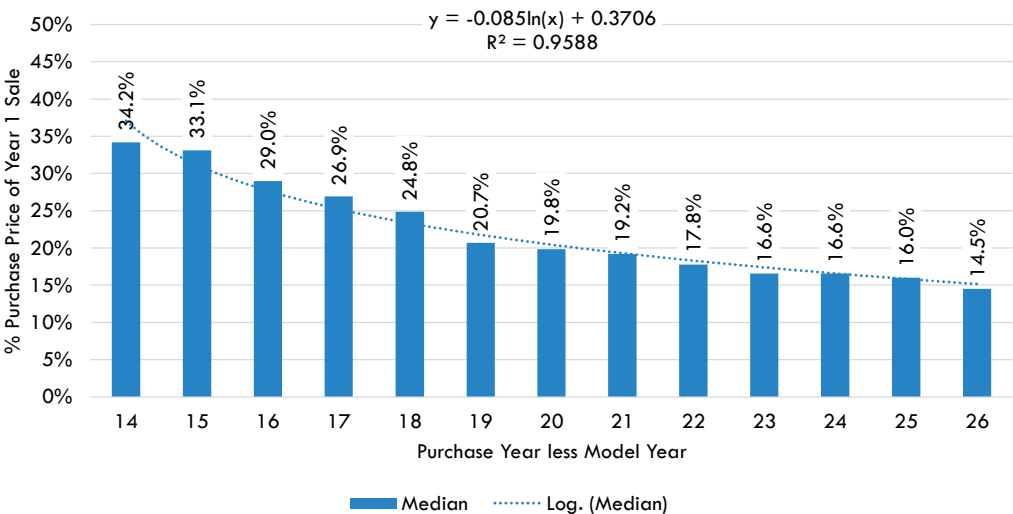
BST recommends combining all propulsion types (power boats and sail boats) into a depreciation schedule, with two length categories:

- 16 feet to 29 feet, and
- 30 Feet to 59 Feet.

### All Propulsion Types, 16 Feet to 29 Feet

For all types of propulsion (sail and power) from 16 feet to 29 feet, the depreciation rate is estimated to be 34.2% at 14 years, declining to 14.5% at 26 years. The regression for this estimate is very strong ( $r^2 = 0.96$ ). (See Figure 5).

Figure 5: Vessel Depreciation, All Propulsion Types, 16' to 29'



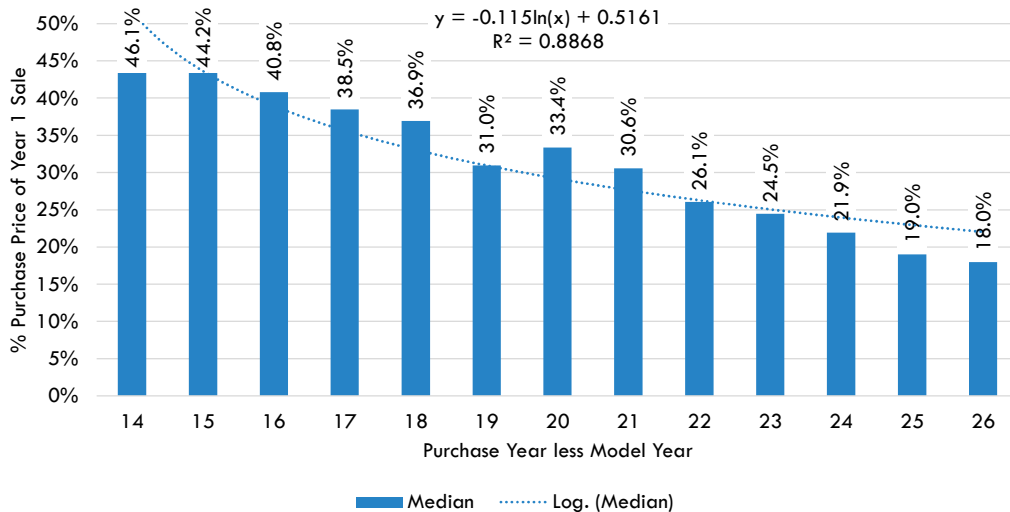
Source: BST Associates, WA Dept of Licensing data

## All Propulsion Types, 30 Feet & Over

For all types of propulsion (sail and power) from 30 feet to 59 feet, depreciation rate is estimated to be 36.9% at 17 years, declining to 22.3% at 26 years. The regression for this estimate is strong ( $r^2 = 0.89$ ).

BST recommends that this rate should be applied to all boats 30 feet or longer (including sailboats and boats 60 feet and longer).

Figure 6: Recommended Vessel Depreciation Rate, All Propulsion Types, 30' & longer



Source: BST Associates, WA Dept of Licensing data

Table 5 presents the DOL depreciation schedule and the BST Associates recommended depreciation schedule.

Table 5: Recommended Vessel Depreciation Schedule

Year of Ownership	DOL Rule			Recommended	
	Sailboat	Powerboat less than 30 feet	Powerboat 30 feet or more	All Boats 16-29 feet	All Boats 30-59 feet
14	0.44	0.39	0.42	0.34	0.46
15	0.44	0.39	0.42	0.33	0.44
16	0.44	0.38	0.41	0.29	0.41
17	0.43	0.36	0.41	0.27	0.38
18	0.43	0.36	0.41	0.25	0.37
19	0.43	0.36	0.41	0.21	0.34
20	0.43	0.36	0.41	0.20	0.33
21	0.43	0.36	0.41	0.19	0.31
22	0.43	0.36	0.41	0.18	0.26
23	0.43	0.36	0.41	0.17	0.24
24	0.43	0.36	0.41	0.17	0.22
25	0.43	0.36	0.41	0.16	0.19
26	0.43	0.36	0.41	0.14	0.18

Source: WAC 458-20-23801, BST Associates

## Report Data

Table 6: Median Value

Boat Type/Length	<-----Age of Boat----->													
	1	14	15	16	17	18	19	20	21	22	23	24	25	26
<b>Boats 16' to 29'</b>														
All	\$24,145	\$8,250	\$7,995	\$7,000	\$6,500	\$5,995	\$5,000	\$4,790	\$4,636	\$4,295	\$4,000	\$4,000	\$3,865	\$3,500
Power	\$24,189	\$8,256	\$7,990	\$7,000	\$6,500	\$5,972	\$5,090	\$4,723	\$4,600	\$4,285	\$4,000	\$3,950	\$3,859	\$3,500
Sail	\$19,500	\$7,125	\$8,000	\$9,500	\$5,500	\$6,750	\$4,450	\$6,750	\$7,000	\$5,000	\$6,190	\$5,000	\$7,000	\$5,790
<b>Boats 30' to 59'</b>														
All	\$260,027	\$120,000	\$115,000	\$106,000	\$100,000	\$96,000	\$80,500	\$86,750	\$79,500	\$67,750	\$63,591	\$57,000	\$49,415	\$46,750
Power	\$271,085	\$124,500	\$123,250	\$106,000	\$105,000	\$98,950	\$80,500	\$88,000	\$80,000	\$65,500	\$61,764	\$57,000	\$49,000	\$47,748
Sail	\$177,980	\$102,000	\$90,000	\$96,450	\$86,500	\$79,750	\$67,500	\$74,500	\$59,500	\$74,000	\$66,500	\$53,200	\$67,000	\$22,350
<b>Boats 60'+</b>														
All	\$129,969	\$422,500	\$593,586	\$67,000	\$525,000	\$243,250	\$495,000	\$9,885	\$9,550	\$15,500	\$4,000	\$4,100	\$469,813	\$480,000
Power	\$129,969	\$422,500	\$593,586	\$67,000	\$525,000	\$243,250	\$495,000	\$9,885	\$9,550	\$15,500	\$4,000	\$4,100	\$469,813	\$480,000
Sail	\$1,400,000	na	na	na	na	na	na	na	na	na	na	na	na	na
<b>Sail Boats</b>														
All	\$28,232	\$13,995	\$26,411	\$45,000	\$35,000	\$11,355	\$12,800	\$36,000	\$11,625	\$10,000	\$12,500	\$8,750	\$35,000	\$9,290

Table 7: Median Value - % Change from Year 0

Boat Type/Length	<-----Age of Boat----->													
	1	14	15	16	17	18	19	20	21	22	23	24	25	26
<b>Boats 16' to 29'</b>														
All		34.2%	33.1%	29.0%	26.9%	24.8%	20.7%	19.8%	19.2%	17.8%	16.6%	16.6%	16.0%	14.5%
Power		34.1%	33.0%	28.9%	26.9%	24.7%	21.0%	19.5%	19.0%	17.7%	16.5%	16.3%	16.0%	14.5%
Sail		36.5%	41.0%	48.7%	28.2%	34.6%	22.8%	34.6%	35.9%	25.6%	31.7%	25.6%	35.9%	29.7%
<b>Boats 30' to 59'</b>														
All		46.1%	44.2%	40.8%	38.5%	36.9%	31.0%	33.4%	30.6%	26.1%	24.5%	21.9%	19.0%	18.0%
Power		45.9%	45.5%	39.1%	38.7%	36.5%	29.7%	32.5%	29.5%	24.2%	22.8%	21.0%	18.1%	17.6%
Sail		57.3%	50.6%	54.2%	48.6%	44.8%	37.9%	41.9%	33.4%	41.6%	37.4%	29.9%	37.6%	12.6%
<b>Boats 60'+</b>														
All		325.1%	456.7%	51.6%	403.9%	187.2%	380.9%	7.6%	7.3%	11.9%	3.1%	3.2%	361.5%	369.3%
Power		325.1%	456.7%	51.6%	403.9%	187.2%	380.9%	7.6%	7.3%	11.9%	3.1%	3.2%	361.5%	369.3%
Sail		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
<b>Sail Boats</b>														
All		49.6%	93.5%	159.4%	124.0%	40.2%	45.3%	127.5%	41.2%	35.4%	44.3%	31.0%	124.0%	32.9%

Table 8: Number of Records

Boat Type/Length	<-----Age of Boat----->													
	1	14	15	16	17	18	19	20	21	22	23	24	25	26
<b>Boats 16' to 29'</b>														
All	67,112	6,618	6,376	5,847	5,083	4,592	4,032	3,648	3,320	2,914	2,394	1,881	1,376	1,101
Power	66,461	6,540	6,313	5,801	5,037	4,536	3,986	3,608	3,287	2,886	2,366	1,862	1,368	1,089
Sail	651	78	63	46	46	56	46	40	33	28	28	19	8	12
	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Boats 30' to 59'</b>														
All	3,580	711	701	633	598	471	457	430	359	276	206	151	124	84
Power	3,325	668	650	583	551	435	417	387	338	260	190	144	113	80
Sail	255	43	51	50	47	36	40	43	21	16	16	7	11	4
	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Boats 60'+</b>														
All	340	44	51	42	31	30	39	34	22	16	28	12	4	3
Power	339	44	51	42	31	30	39	34	22	16	28	12	4	3
Sail	1	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Sail Boats</b>														
All	907	121	114	96	93	92	86	84	54	44	44	26	19	16



STATE OF WASHINGTON  
DEPARTMENT OF REVENUE

February 15, 2022

VIA ELECTRONIC MAIL

Doug Levy

Outcomes By Levy, LLC

Re: Petition for Adjustment to portion of WAC 458-20-23801 (Watercraft Excise Tax Depreciation Schedule) covering vessels owned 14+ years & making no changes at all to value from 17 years onward

Dear Mr. Levy:

Thank you for the communication dated December 23, 2021, regarding a petition to amend WAC 458-2023801 (Rule 23801). This message responds to your petition.

The petition asks the Department of Revenue to amend Rule 23801's guidance regarding the watercraft depreciation schedule, specifically the schedule's depreciable valuation rates for vessels owned for a period of 14 or more years. Pursuant to RCW 34.05.330(1), within 60 days the Department must respond in one of two ways:

Within sixty days after submission of a petition, the agency shall either (a) deny the petition in writing, stating (i) its reasons for the denial, specifically addressing the concerns raised by the petitioner, and, where appropriate, (ii) the alternative means by which it will address the concerns raised by the petitioner, or (b) initiate rule-making proceedings in accordance with RCW 34.05.320.

RCW 34.05.320 describes the process and requirements for filing a notice of proposed rule. The Department interprets option (b) to mean, within 60 days after submission of the petition, the Department must file a notice of proposed rule meeting the requirements of RCW 34.05.320.

The Department intends to begin rulemaking on Rule 23801 later this year, where we will address the depreciable valuation rates for vessels, including considering those owned for a period of 14 or more years, which you've raised in your petition. However, prior to filing the notice of proposed rule, the Department will first file a prenotice inquiry with the Code Reviser, per RCW 34.05.310. This process of filing a prenotice inquiry prior to the notice of proposed rule is the Department's standard practice.

The Department's current plan is to file the prenotice inquiry for Rule 23801 in the second quarter of 2022. After filing the prenotice inquiry, the Department will hold a public meeting to gather questions and comments on potential amendments to Rule 23801. Accordingly, we must deny this petition.



Additionally, the Department reviewed the data submitted as a part of your petition. We identified the following concerns with the data and whether it could support depreciable valuation rates for vessels owned for a period of 14 or more years:

- The information submitted exclusively relied on 2020 vessel sales data;
- The data submitted does not include any assumptions regarding the likelihood of errors and irregularities in Department of Licensing (DEPT OF LICENSING) data (due to the *free-form* nature of DEPT OF LICENSING's data collection for vessel purchases and sales), and;
- The report indicated that over 139,000 records were reviewed to compile the data, which we assume were purchase and sales records. However, DEPT OF LICENSING-published statistics indicate there were only 229,000 registered vessels in Washington in calendar year 2020. As a result, the report's data would suggest that over 50% of registered vessels in Washington were sold during the 2020 calendar year. The 139,000 figure also does not align with quarterly vessel sales data published by a reputable third-party, the *Washington Coast Economist*, which indicates there were approximately 42,000 vessel sales in Washington during calendar year 2020.

While the Department has concerns with the data submitted, we intend to continue working with the vessel industry during the future contemplated rulemaking process to understand the concerns raised, discuss any submitted data, and accommodate those concerns based on best available data.

Given the above, the Department denies your petition to amend the rule because we will not be filing a notice of proposed rule within 60 days after the submission of your petition. However, we do anticipate conducting rulemaking in this area, albeit further out than the 60-day period. Accordingly, we will retain your contact information and send you announcements of the rulemaking actions relating to Rule 23801 as they become available, including the filing of the prenotice inquiry and the public meeting as the Department proceeds with the rulemaking process. The Department will consider the data you have submitted as a part of the forthcoming rulemaking process.

We appreciate your interest in this matter. If you have any questions, please contact me.

Best regards,



Atif Aziz

Rules Coordinator