**Age Analysis of Drayage Trucks Operating at the Port of Seattle**
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**Key Data Findings:**

- Average model year of the Port of Seattle drayage truck fleet: 1996
- Average model year of the statewide Class 8 heavy-duty vehicle fleet: 1995
- Average model year for Class 8 heavy-duty vehicle fleet in the Puget Sound Clean Air Agency region: 1998

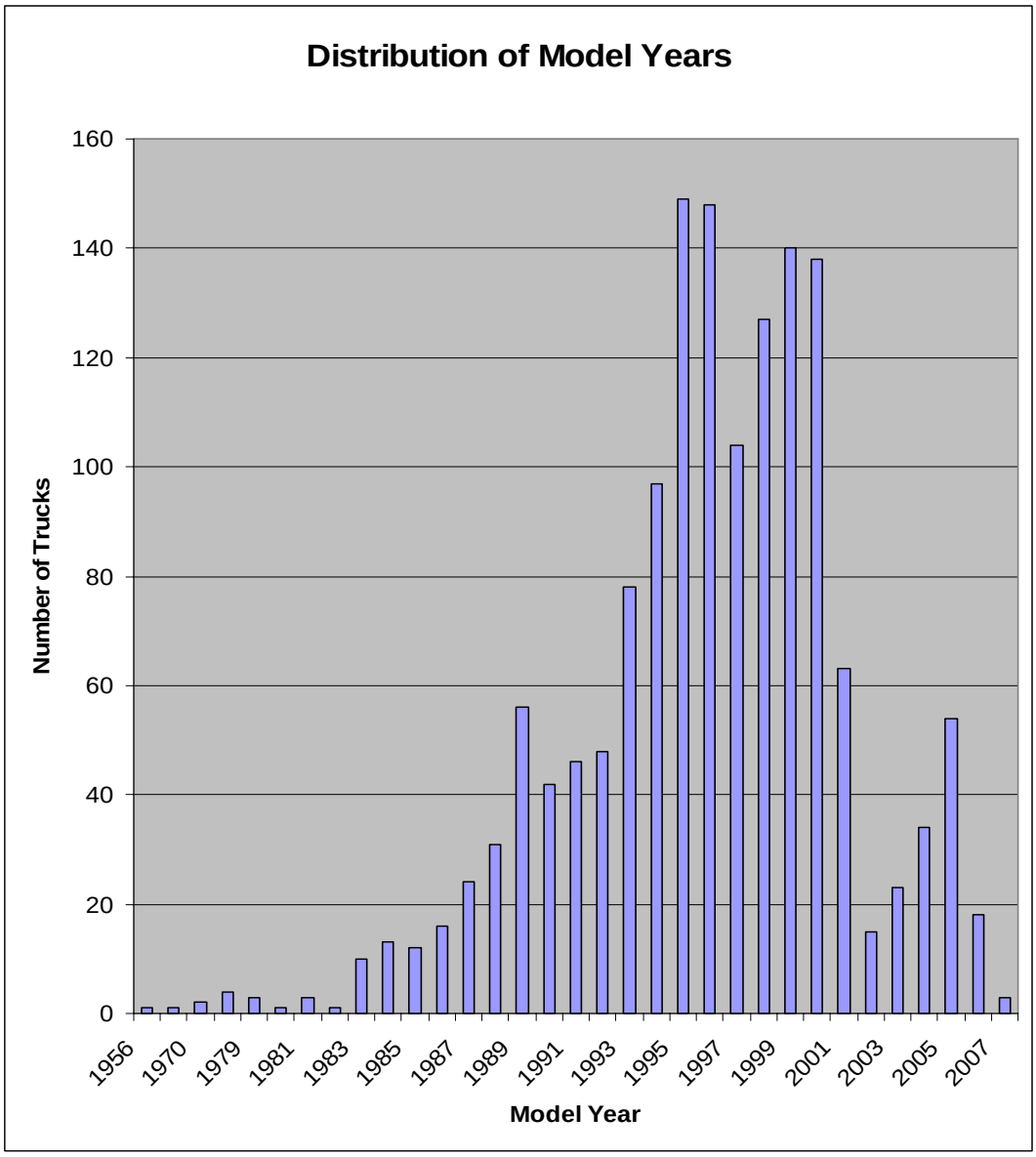
In 2006, the Port of Seattle began a pilot project with SSA Terminals to tag high volume trucks with radio frequency identification (RFID) tags. Each WhereNet RFID tag has a unique identifier which, when read by readers at the entrance to the terminal gate queuing area, corresponds with eModal database that contains information such as truck license, company and driver. Currently, there are 1,505 trucks registered with eModal for the Port of Seattle/SSA pilot. In order to obtain information on the age of the drayage truck fleet, the Port cross referenced the license plate data in the eModal database for the 1,505 registered trucks with the Washington Department of Licensing Vehicle/Vessel Inquiry system. This analysis is compared to the 2007 Washington Trucking Association Intermodal Fleet survey and the 2007 Washington Dept. of Ecology heavy-duty vehicle fleet age analysis. Based on this data, the average model year of a drayage truck operating at the Port of Seattle is 1996.[1]

**Table 1: Port of Seattle Drayage Truck Age Distribution**

| Model Year | # Trucks | % Trucks | | Model Year | # Trucks | % Trucks |
|---|---|---|---|---|---|---|
| 1956 | 1 | 0.1% | | 1992 | 48 | 3.2% |
| 1966 | 1 | 0.1% | | 1993 | 78 | 5.2% |
| 1970 | 2 | 0.1% | | 1994 | 97 | 6.4% |
| 1978 | 4 | 0.3% | | 1995 | 149 | 9.9% |
| 1979 | 3 | 0.2% | | 1996 | 148 | 9.8% |
| 1980 | 1 | 0.1% | | 1997 | 104 | 6.9% |
| 1981 | 3 | 0.2% | | 1998 | 127 | 8.4% |
| 1982 | 1 | 0.1% | | 1999 | 140 | 9.3% |
| 1983 | 10 | 0.7% | | 2000 | 138 | 9.2% |
| 1984 | 13 | 0.9% | | 2001 | 63 | 4.2% |
| 1985 | 12 | 0.8% | | 2002 | 15 | 1.0% |
| 1986 | 16 | 1.1% | | 2003 | 23 | 1.5% |
| 1987 | 24 | 1.6% | | 2004 | 34 | 2.3% |
| 1988 | 31 | 2.1% | | 2005 | 54 | 3.6% |
| 1989 | 56 | 3.7% | | 2006 | 18 | 1.2% |
| 1990 | 42 | 2.8% | | 2007 | 3 | 0.2% |
| 1991 | 46 | 3.1% | | | | |

[1] Average (Mean) = 1996, Mode = 1995, Median = 1996

**Figure 1: Port of Seattle Drayage Truck Age Distribution**



**Comparison to the U.S. EPA Heavy-Duty Engine Standards**

In order to better understand the emissions impacts of each truck model year, the Port of Seattle analysis was broken out based on U.S. EPA heavy-duty engine emissions standards. The chart below shows how the U.S. EPA heavy-duty engine standards have been strengthened over time:[2]

**Figure 2: U.S. EPA Heavy-Duty Engine Standards**

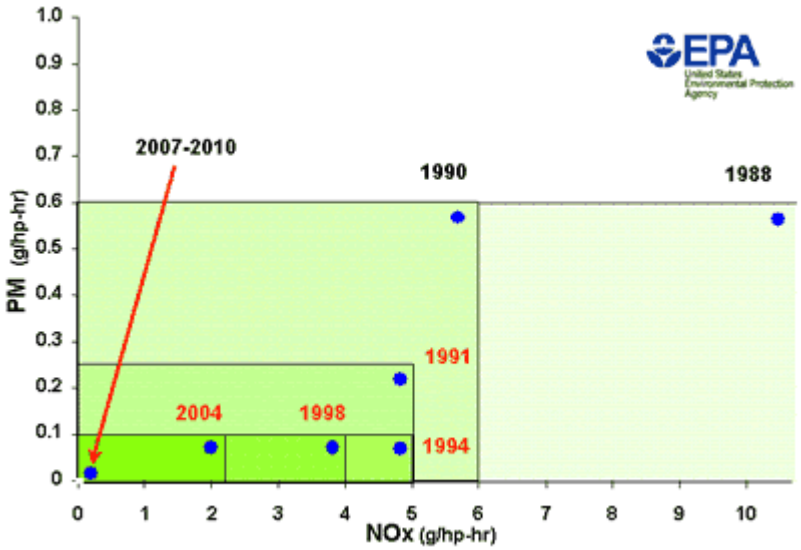



**Table 2: Fleet Age Profile Based on U.S. EPA Heavy-Duty Engine Emissions Standards**

| Age Range | # Trucks | % Trucks |
|---|---|---|
| 1987 and older | 91 | 6% |
| 1988-1989 | 87 | 5.8% |
| 1990 | 42 | 3% |
| 1991-1993 | 172 | 11.4% |
| 1994-1997 | 498 | 33% |
| 1998-2003 | 506 | 33.6% |
| 2004-2006 | 106 | 7% |
| 2007 | 3 | 0.2% |
| *Total* | *1,505* | *100%* |

[2] Source: U.S. Department of Transportation Federal Highway Administration, http://www.fhwa.dot.gov/environment/airtoxic/msatcompare/index.htm

**Comparison to the Washington Trucking Association 2007 Intermodal Fleet Survey**

In 2007, the Washington Trucking Association (WTA) conducted an age fleet survey of intermodal carriers.[3] The companies included in this survey were:

American Motor Freight
Bluestar Transportation Inc.
Castan Inc.
City Delivery Inc.
Elliot Bay Transport
D&B Trucking
Graham Trucking
Lions Trucking
MacMillan-Piper
Northwest Carriers Inc.
Pacer Cartage
Pacific Coast Express
Premier Transport
Puget Sound International
Seattle Transport
West Coast Trucking
Western Ports Trucking

Table 3 compares the results of the WTA survey to the Port of Seattle drayage truck fleet age analysis. The results for each analysis were within the range of the other.

**Table 3: Comparison of the WTA and Port of Seattle Fleet Age Analyses**

| | **WTA** | | **Port of Seattle** | |
|---|---|---|---|---|
| **Age Range** | **# Trucks** | **% Trucks** | **# Trucks** | **% Trucks** |
| 1984 and older | --- | --- | 39 | 2.6% |
| 1985-1989 | 60 | 13% | 139 | 9.2% |
| 1990-1994 | 94 | 20% | 311 | 21% |
| 1995-1999 | 215 | 47% | 668 | 44% |
| 2000-2006 | 91 | 20% | 345 | 23% |
| 2007 | --- | --- | 3 | 0.2% |
| *Total* | *460* | *100%* | *1,505* | *100%* |

[3] Data obtained on 8/9/2007 via hard copy from Larry Pursley, Washington Trucking Association.

**Comparison to the 2007 Washington Department of Ecology Heavy-Duty Vehicle Analysis**

In 2007, the Washington Department of Ecology conducted a fleet age analysis of heavy-duty vehicles using 2007 Washington Department of Licensing data.[4] As of July 2007, there were 56,976 Class 8 vehicles registered in Washington State.[5] Using this data, the average model year for Class 8 heavy-duty trucks in the statewide fleet is 1995.[6] Based on this comparison, the drayage truck fleet operating at the Port of Seattle is approximately 1 year newer than the statewide Class 8 heavy-duty vehicle fleet.

**Table 4: Washington Department of Ecology Statewide Class 8 Heavy-Duty Vehicle Age Distribution in 2007**

| Model Year | # Trucks | % Trucks | | Model Year | # Trucks | % Trucks |
|---|---|---|---|---|---|---|
| 1968 | 105 | 0.2% | | 1989 | 1,753 | 3.1% |
| 1969 | 137 | 0.2% | | 1990 | 1,806 | 3.2% |
| 1970 | 127 | 0.2% | | 1991 | 1,522 | 2.7% |
| 1971 | 172 | 0.3% | | 1992 | 1,442 | 2.5% |
| 1972 | 265 | 0.5% | | 1993 | 1,714 | 3.0% |
| 1973 | 381 | 0.7% | | 1994 | 2,105 | 3.7% |
| 1974 | 384 | 0.7% | | 1995 | 2,636 | 4.6% |
| 1975 | 420 | 0.7% | | 1996 | 2,309 | 4.1% |
| 1976 | 318 | 0.6% | | 1997 | 2,355 | 4.1% |
| 1977 | 533 | 0.9% | | 1998 | 2,584 | 4.5% |
| 1978 | 651 | 1.1% | | 1999 | 3,317 | 5.8% |
| 1979 | 806 | 1.4% | | 2000 | 3,599 | 6.3% |
| 1980 | 665 | 1.2% | | 2001 | 2,514 | 4.4% |
| 1981 | 619 | 1.1% | | 2002 | 1,293 | 2.3% |
| 1982 | 446 | 0.8% | | 2003 | 1,903 | 3.3% |
| 1983 | 373 | 0.7% | | 2004 | 1,741 | 3.1% |
| 1984 | 829 | 1.5% | | 2005 | 3,308 | 5.8% |
| 1985 | 1,071 | 1.9% | | 2006 | 3,219 | 5.6% |
| 1986 | 1,069 | 1.9% | | 2007 | 3,645 | 6.4% |
| 1987 | 1,187 | 2.1% | | 2008 | 163 | 0.3% |
| 1988 | 1,490 | 2.6% | | | | |

[4] Data obtained 8/15/2007 via email from Sally Otterson, Washington State Department of Ecology.

[5] Class 8 heavy-duty vehicles are defined as Class 8A (33,001 - 60,000 lbs gvwt) and Class 8B (>= 60,000 lbs gvwt).

[6] Average (Mean) = 1995, Mode = 2007, Median = 1997. Average calculation verified by Sally Otterson via email 8/20/2007.

**Figure 3: Statewide Class 8 Heavy-Duty Vehicle Age Distribution in 2007**

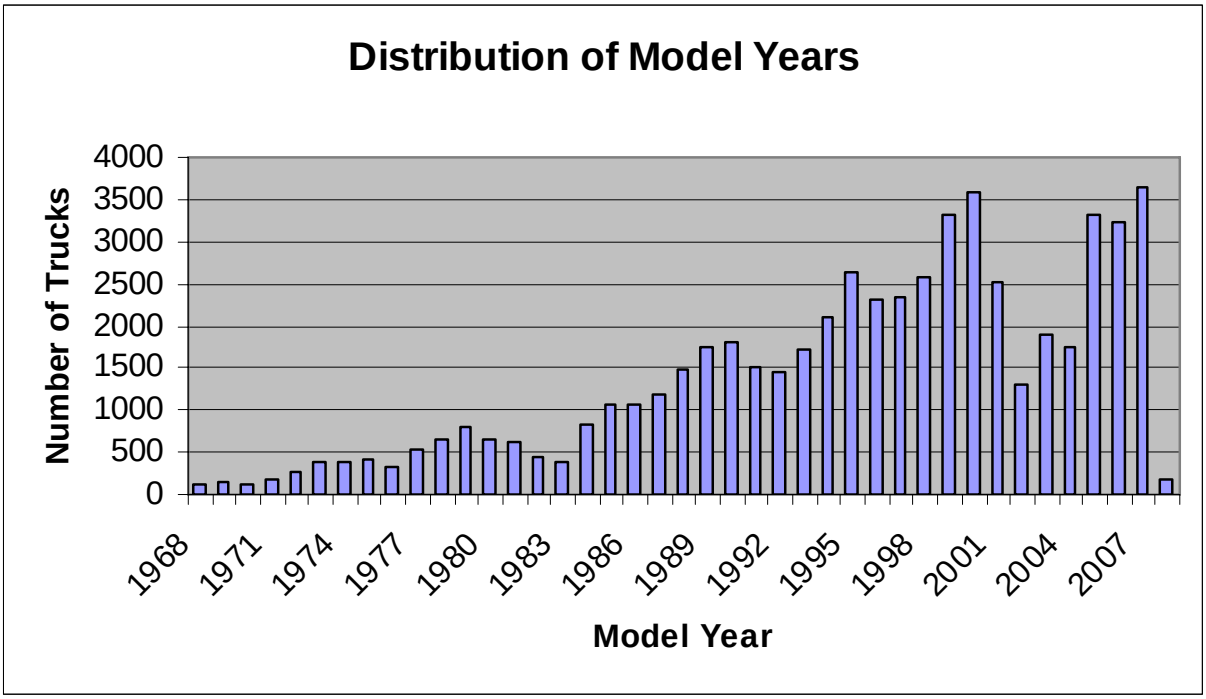



**Table 5: Comparison of the Statewide Washington Department of Ecology and Port of Seattle Fleet Age Analyses Based on U.S. EPA Engine Emissions Standards**

| | Statewide | | Port of Seattle | |
|---|---|---|---|---|
| **Age Range** | **# Trucks** | **% Trucks** | **# Trucks** | **% Trucks** |
| 1987 and older | 10,558 | 18.5% | 91 | 6% |
| 1988-1989 | 3,243 | 5.7% | 87 | 5.8% |
| 1990 | 1,806 | 3.2% | 42 | 3% |
| 1991-1993 | 4,678 | 8.2% | 172 | 11.4% |
| 1994-1997 | 9,405 | 16.5% | 498 | 33% |
| 1998-2003 | 15,210 | 26.7% | 506 | 33.6% |
| 2004-2006 | 8,268 | 14.5% | 106 | 7% |
| 2007+ | 3,808 | 6.7% | 3 | 0.2% |
| *Total* | *56,976* | *100%* | *1,505* | *100%* |

**Comparison to the 2007 Washington Department of Ecology Heavy-Duty Vehicle Analysis for the Puget Sound Clean Air Agency Region**

From the Washington Department of Ecology statewide data set, Class 8 heavy-duty vehicle information for the Puget Sound Clean Air Agency (PSCAA) region[7] was obtained. In 2007, 24,810 Class 8 heavy-duty vehicles were registered in the PSCAA region.[8] Using this data, the average model year for Class 8 heavy-duty trucks in the statewide fleet is 1998.[9] Based on this comparison, the drayage truck fleet operating at the Port of Seattle is approximately 2 years older than the PSCAA region Class 8 heavy-duty vehicle fleet.

**Table 6: Washington Department of Ecology Class 8 Heavy-Duty Vehicle Age Distribution in the PSCAA Region in 2007**

| Model Year | # Trucks | % Trucks | | Model Year | # Trucks | % Trucks |
|---|---|---|---|---|---|---|
| 1968 | 26 | 0.1% | | 1989 | 570 | 2.3% |
| 1969 | 37 | 0.1% | | 1990 | 587 | 2.4% |
| 1970 | 34 | 0.1% | | 1991 | 618 | 2.5% |
| 1971 | 27 | 0.1% | | 1992 | 487 | 2.0% |
| 1972 | 59 | 0.2% | | 1993 | 625 | 2.5% |
| 1973 | 77 | 0.3% | | 1994 | 790 | 3.2% |
| 1974 | 79 | 0.3% | | 1995 | 1,081 | 4.4% |
| 1975 | 88 | 0.4% | | 1996 | 831 | 3.3% |
| 1976 | 65 | 0.3% | | 1997 | 1,018 | 4.1% |
| 1977 | 113 | 0.5% | | 1998 | 1,232 | 5.0% |
| 1978 | 172 | 0.7% | | 1999 | 1,530 | 6.2% |
| 1979 | 179 | 0.7% | | 2000 | 1,727 | 7.0% |
| 1980 | 148 | 0.6% | | 2001 | 1,294 | 5.2% |
| 1981 | 155 | 0.6% | | 2002 | 679 | 2.7% |
| 1982 | 121 | 0.5% | | 2003 | 1,105 | 4.5% |
| 1983 | 103 | 0.4% | | 2004 | 961 | 3.9% |
| 1984 | 212 | 0.9% | | 2005 | 2,126 | 8.6% |
| 1985 | 302 | 1.2% | | 2006 | 1,973 | 8.0% |
| 1986 | 323 | 1.3% | | 2007 | 2,317 | 9.3% |
| 1987 | 352 | 1.4% | | 2008 | 82 | 0.3% |
| 1988 | 505 | 2.0% | | | | |

[7] King, Kitsap, Pierce, and Snohomish Counties

[8] King = 11,455, Kitsap = 878, Pierce = 8,549, Snohomish = 3,928

[9] Average (Mean) = 1997.8, Mode = 2007, Median = 1999. Average calculation verified by Sally Otterson via email 8/20/2007.

**Figure 4: PSCCA Region Class 8 Heavy-Duty Vehicle Age Distribution in 2007**

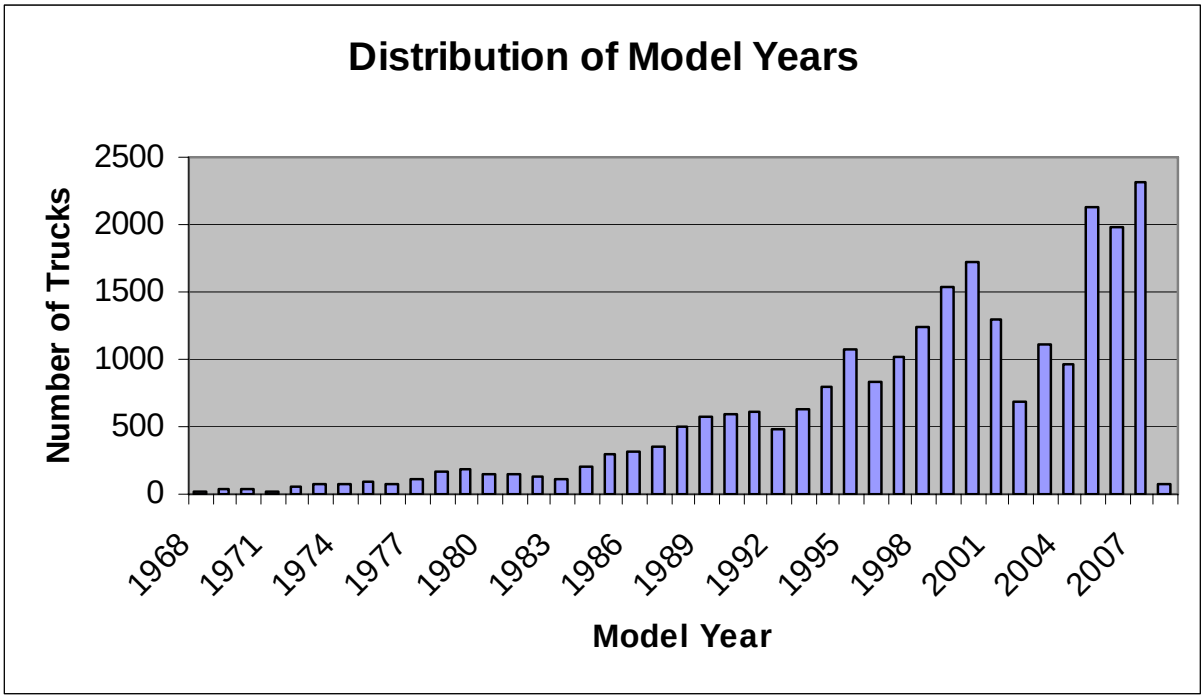



**Table 7: Comparison of the 2007 Washington Department of Ecology Heavy-Duty Vehicle Analysis for the Puget Sound Clean Air Agency Region and the Port of Seattle Fleet Age Analyses Based on U.S. EPA Engine Emissions Standards**

| | PSCAA Region | | Port of Seattle | |
|---|---|---|---|---|
| **Age Range** | **# Trucks** | **% Trucks** | **# Trucks** | **% Trucks** |
| 1987 and older | 2,672 | 10.8% | 91 | 6% |
| 1988-1989 | 1,075 | 4.3% | 87 | 5.8% |
| 1990 | 587 | 2.4% | 42 | 3% |
| 1991-1993 | 1,730 | 7.0% | 172 | 11.4% |
| 1994-1997 | 3,720 | 15.0% | 498 | 33% |
| 1998-2003 | 7,567 | 30.5% | 506 | 33.6% |
| 2004-2006 | 5,060 | 20.4% | 106 | 7% |
| 2007+ | 2,399 | 9.7% | 3 | 0.2% |
| *Total* | *24,810* | *100%* | *1,505* | *100%* |