



Nonroad Engine Population Estimates

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Report No. NR-006b

Assessment and Standards Division
Office of Transportation and Air Quality
U.S. Environmental Protection Agency

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Purpose

The purpose of this memorandum is to document the source of the nonroad engine population values used in EPA's draft NONROAD2002 emission inventory model. Engine populations are provided as default values in EPA's NONROAD emission inventory model categorized by equipment type, power level, and fuel type. This categorization allows the NONROAD model to determine the phase-in of new emission standards and other unique aspects of emissions or allocations by application, fuel type, or power level.

Introduction

The default base year application populations are used as a starting point to estimate future and past year engine populations in the NONROAD emissions model. The base year is either 1996, 1998, or 1999, depending on the application. The base years are the most recent years for which population data are available. The NONROAD model tracks engines rather than equipment because present and planned nonroad emissions regulations focus on engines instead of equipment. EPA anticipates that future nonroad emission regulations would also focus on engines.

The engine populations were divided into many applications because of the variety of ways nonroad engines are used. This variety of applications allows for application-specific geographic and temporal allocations, activity, emission rates, and other input factors to characterize nonroad engine usage and emissions.

The engine populations were also divided into 5 fuel types: diesel (2 and 4-stroke combined), gasoline 2-stroke, gasoline 4-stroke, compressed natural gas (CNG) (2 and 4-stroke combined), and liquid petroleum gas (LPG) (2 and 4-stroke combined). The diesel, CNG, and LPG engine populations for 2 and 4-stroke engines were combined because these engines exhibit little difference in emission rates between 2 and 4-stroke engines, most likely because these engines use fuel injection to deliver the fuel to the combustion chamber. Gasoline 2 and 4-stroke engines were separated because of the availability of information indicating widely different

emission rates, especially for hydrocarbon emissions. Each combination of application and fuel has been assigned a unique “Source Classification Code” (SCC).

The engine populations by application and fuel were further divided into 19 power level categories to account for emission regulations and some technology differences associated with power level. The power level categories provided were 0-1 hp, 1-3 hp, 3-6 hp, 6-11 hp, 11-16 hp, 16-25 hp, 25-40 hp, 40-50 hp, 50-100 hp, 100-175 hp, 175-300 hp, 300-600 hp, 600-750 hp, 750-1000 hp, 1000-1500 hp, 1500-2000 hp, 2000-3000 hp, and 3000+ hp. While this detailed disaggregation by application, fuel type, and power level allows users to make fine distinctions in understanding the effects of control strategies, it also might lead to very small engine populations for some states for some application and power segments.

Appendix A provides the default base year national populations used in draft NONROAD2002.

Equipment Inventory Changes and Classifications

Previous equipment population estimates in the Nonroad Engine and Vehicle Emission Study (NEVES) were provided by Power Systems Research (PSR), an independent marketing research firm. (1) NEVES used 1989 in-use year estimates from PSR. The PSR population estimates were determined from engine manufacturer sales surveys, experimentally determined engine life, and surveys of usage of these engines. The population estimates were verified by equipment owner surveys over the course of several years. A review and evaluation of the PSR methodology was later provided by Pechan, another independent contractor. (2) The NEVES work led to development of source category codes (SCCs) for given applications.

Appendix B describes both significant and minor changes between the SCCs in the NEVES report and the NONROAD model. New equipment classes and power range additions for some equipment types were included in the NONROAD model, altering the engine population estimates. LPG and CNG engines, which were not included in NEVES, were added to the NONROAD model. New SCCs were added to accommodate these new engines. There were other minor changes that did not affect engine populations but rather changed the description of the codes.

For many categories, draft NONROAD2002 uses updated 1998 PSR estimates of national populations, but, as described in the report on geographic allocation, the model uses other methods to allocate populations to the state and county level.(3) The exceptions to the use of 1998 PSR estimates are described in detail in later sections of this report.

PSR developed engine population estimates for 2 and 4-stroke diesel, gasoline, liquid petroleum gas (LPG), and compressed natural gas (CNG) engines, categorized by application codes. These populations were further divided by power level for the NONROAD model to

determine appropriate fleet turnover rates and appropriate engine emission standard phase-in strategies.

Appendix C describes how the PSR application codes correspond to the source categorization codes (SCCs). Each source category is uniquely identified with an SCC, which is a ten-digit number. The SCC number conventions are summarized in Table 1. The first two digits, 22, represent mobile sources. For most categories, the next two digits represent the engine or fuel type (60, 65, 67, 68, and 70, represent 2-stroke gasoline, 4-stroke gasoline, LPG, CNG, and diesel, respectively). The next three digits represent the segment type (for example, recreational or construction). The last three digits represent the specific kind of equipment (for example, golf carts or snowmobiles). If the last three digits are zero, it is implied that all equipment types in the segment are included.

Table 1. SCC Number Conventions (xx refers to '60' for 2-stroke gasoline, '65' for 4-stroke gasoline, '70' for diesel, '67' for LPG, and '68' for CNG)

SCC	Definition
22xx001000	Recreational vehicles
22xx002000	Construction equipment
22xx003000	Industrial equipment
22xx004000	Lawn and garden equipment
22xx005000	Agricultural equipment
22xx006000	Commercial equipment
22xx007000	Logging equipment
22xx008000	Airport service equipment
22xx009000	Underground mining equipment
22xx010000	Oil field equipment
2282005010	Gasoline 2-stroke outboard recreational marine equipment
2282005015	Gasoline 2-stroke personal watercraft
2282010005	Gasoline 4-stroke inboard/sterndrive recreational marine equipment
2282020005	Diesel inboard recreational marine equipment
2282020010	Diesel outboard recreational marine equipment
2285002015	Diesel railway maintenance equipment
2285004015	Gasoline 4-stroke railway maintenance equipment
2285006015	LPG railway maintenance equipment

In order to apply the emission standards for small (<25 hp other than snowmobiles, off-road motorcycles, and all-terrain vehicles, which are not regulated currently) and recreational marine spark-ignition engines, the 2 and 4-stroke gasoline, LPG, and CNG engines were combined into one category (while still maintaining power level distinctions). The new emission standards intend to produce cleaner engines in part by reducing the number of 2-stroke in favor of 4-stroke engines. The reasons for combining these engines, and the associated problems, will be described in more detail later in this report.

Mobile and Stationary Nonroad Engines

One challenge in preparing a mobile source inventory is that engines used for generators, pumps, compressors and other applications may be either mobile or stationary, and, thus, may be subject to different regulations. Therefore it was necessary to determine the fraction of engines used as mobile and stationary emission sources. The NONROAD model estimates emissions from 'mobile' equipment. The legal definition of a mobile nonroad engine is an engine that moves from one place within a 12-month period. (4) In some cases the distinction may not be clear because engines that might appear stationary are in fact considered as mobile. For example, a palette-mounted engine is easily moved from one site to the next with a forklift or other type of lift truck over the course of several months. To account for mobile nonroad engines, EPA used the only information available which was derived from a report to the California Air Resources Board by Booz, Allen, and Hamilton (5) and given in Table 2 to provide fractions of engines used as mobile nonroad engines for the few application classes in which some of the engines are used and regulated as stationary sources. Hydro power units, irrigation sets, generator sets, pumps, compressors, and welders were the applications which were determined to have some stationary engines. The fraction of mobile engines was applied to the equipment populations for the appropriate applications as provided by PSR in order to avoid counting stationary sources in the nonroad mobile sources inventory.

Table 2. Fraction of Hydro Power Units (22xx005050), Irrigation Sets (22xx005060), Generator Sets (22xx006005), Pumps (22xx006010), Compressors (22xx006015 and 22xx006020), and Welders (22xx006025) Considered to be Mobile Sources

Power Range (Hp)	Percent Mobile Equipment
0 to 25	90
25 to 40	90
40 to 100	70
100 to 175	20
175 to 300	15
300 to 600	10
600+	0

Small (<25 hp) Spark-Ignition Equipment

Most small (<25 hp) spark-ignition engines fall under EPA regulations targeting mainly hydrocarbon emissions. (4,6,7) The regulations define new engine classes (I through V) based on use (handheld versus nonhandheld) and displacement, while the NONROAD model classifies engines by application and power level. For the purposes of inventory modeling, the five classes are defined by application and power level. Table 3 describes the definitions of engine class by application and power level that were used in the NONROAD model.

The 1998 PSR population estimates were used for small (<25 hp) SI equipment, except for the following applications: lawn mowers, trimmers/edgers/brush cutters, leafblowers/vacuums, and chain saws. The methodology for calculating the base year populations for these four applications is described below. (Recreational equipment will be discussed in a separate section.)

As of 1998, engines less than 25 hp used in gasoline-fueled nonroad equipment (such as lawn and garden equipment) were required to meet the first set of Federal emission standards, known as Phase 1 standards. Using sales estimates submitted to EPA by manufacturers of small nonroad engines as part of their Phase 1 certification, EPA estimated the total number of engines sold in 1998 in four of the highest sales volume small engine applications: lawn mowers, trimmers/edgers/brush cutters, leafblowers/vacuums, and chain saws. For 1993 and earlier years, EPA used sales estimates that had been submitted for those years by manufacturers during the

Table 3. Small SI Engine Classes (<25 hp) by Application and Power Level

SCC	Description	Power Range & Engine Cycle	Engine Class
22xx004020(1) 22xx007005	Chainsaws	0 to 1 hp (2 and 4-stroke)	III
		1 to 3 hp (2 and 4-stroke)	IV
		3 to 25 hp (2 and 4-stroke)	V
22xx002006 22xx002039 22xx004025(6) 22xx004030(1) 22xx004035(6) 22xx004071	Tampers and Rammers Concrete\Industrial Saws Trimmers\Edgers\Cutters Leaf blowers Snow blowers Commercial Turf	0 to 1 hp (2 and 4-stroke)	III
		1 to 3 hp (2 and 4-stroke)	IV
		3 to 6 hp (2-stroke)	V
		3 to 6 hp (4 stroke)	I
		6 to 25 hp (2 and 4-stroke)	II
22xx004015(6) 22xx005040 All Others	Tillers All Others	0 to 1 hp (2 and 4-stroke)	III
		1 to 3 hp (2 and 4-stroke)	IV
		3 to 6 hp (2 and 4-stroke)	I
		6 to 25 hp (2 and 4-stroke)	II
22xx001050 22xx001060 22xx002015 22xx002024 22xx002030 22xx002033 22xx002042 22xx002072 22xx002078 22xx003050 22xx004010 (1) 22xx004040 (1) 22xx004045 (6) 22xx004050 (1) 22xx007010 22xx004055 (6) 22xx004065 (6) 22xx004075 (6) 22xx005030 22xx008005 228500x015	Golf Carts Specialty Carts Rollers Surfacing Equipment Trenchers Bore\Drill Rigs Cement\Motar Mixers Skid Steer Loaders Dumpers\Tenders Other Material Handling Lawnmower Rear Engine Riding Mower Front Mowers Shredders Lawn & Garden Tractors Chippers and Stump Grinders Other Lawn & Garden Equipment Agricultural Mowers Aircraft Support Railway Maintenance	0 to 6 hp (2 and 4-stroke)	I
		6 to 25 hp (2 and 4-stroke)	II

22xx004065(6) indicates that both 22xx004065 and 22xx004066 SCC are considered, for instance.

development of EPA's Phase 1 rulemaking. For the years 1994 to 1997, EPA linearly interpolated between the 1993 and 1998 sales estimates for each application. Using this year by year sales information and the expected scrappage of small nonroad equipment, EPA estimated the total 1996 calendar year population for the four applications noted above. In order to determine the power category specific populations, EPA relied on the fractions of engines in each engine class based on the certification sales estimates for all categories other than lawnmowers. For lawnmowers, nearly all of which were certified as Class I engines, EPA used the power category fractions in the PSR database. The resulting 1996 base year populations were used in draft NONROAD2002. (8,9)

Two important issues regarding small (<25 hp) SI engines and equipment require further discussion: treating commercial and residential users separately, and accounting for the effects of new regulations.

Many of the small spark-ignited engines are used in lawn and garden equipment applications, and lawn and garden equipment is used both by commercial and residential users. The commercial users are grounds keepers for golf courses, nonresidential buildings, large apartment complexes, and some single-family homes. Commercial equipment therefore has significantly different usage than residential equipment in terms of hours per year as well as hours per weekday versus weekend day. To account for these differences in equipment usage, separate SCCs were defined to account for commercial and residential lawn and garden equipment. The 1998 PSR population estimates and the 1996 population estimates for the four lawn and garden applications described above were divided into residential and commercial fractions as shown in Table 4. For applications not shown in Table 4, 100% commercial use was assumed for the engines because these applications include such categories as construction, agricultural, commercial, and many other applications already considered commercial.

From information derived by California (10), the sales fraction combined with the average life (in years of average operation shown in another report, NR-005B) of the engines was used to calculate an in-use population fraction of residential and commercial equipment. The calculation uses the sales fraction multiplied by the average life for both residential and commercial equipment and the population fraction determined from the two populations as shown in the equation below.

$$\text{Commercial Population Fraction} = \frac{(\text{Commercial Sales Fraction} * \text{Commercial Average Life in Years})}{(\text{Commercial Sales Fraction} * \text{Commercial Average Life} + \text{Residential Sales Fraction} * \text{Residential Average Life})}$$

The above methodology was applied for all applications in Table 4 with the exception of trimmers/edgers/cutters, chain saws, and leafblowers/vacuums. Based on discussions with manufacturers during the Phase 2 rulemaking process, we believe that the residential/commercial split for these three applications is strongly dependent on engine class. We now classify all these equipment powered by Class III two-stroke engines as residential. Equipment powered by Class

Table 4. Residential and Commercial Percentages of Small Spark-Ignition Engine Equipment

SCC	Application	Hp Categories	Residential % of Population	Commercial % of Population
22xx004010 22xx004011	Lawn mowers	All	96.3	3.7
22xx004025 22xx004026	Trimmers/edgers/cutters	0-1 hp	100	0
		1-3 hp	85.3	14.7
		>3 hp	0	100
22xx004020 22xx004021	Chainsaws	0-1 hp	100	0
		1-3 hp	97.0	3.0
		>3 hp	0	100
22xx004030 22xx004031	Leaf blowers/vacuums	0-1 hp	100	0
		1-3 hp	92.5	7.5
		>3 hp	0	100
22xx004015 22xx004016	Tillers <6 hp	All	85.7	14.3
22xx004035 22xx004036	Snowblowers	All	90.0	10.0
22xx004071	Commercial turf equipment	All	0.0	100.0
22xx004040 22xx004041	Rear engine rider	All	97.4	2.6
22xx004055 22xx004056	Lawn and garden tractors	All	97.4	2.6
22xx004075 22xx004076	Other lawn and garden equipment	All	45.7	54.3
22xx004045 22xx004046 22xx004050 22xx004051 22xx004065 22xx004066	Front Mowers Shredders <6 hp Chippers\Stump Grinders	All	0.0	100.0
All others	All other equipment			

IV two-stroke engines is now predominantly classified as residential. The Class IV split was estimated based on input from the three largest manufacturers of commercial equipment (i.e., ECHO, Stihl, and Husqvarna) and production estimates from all manufacturers of Class IV chainsaw engines. We now also classify the four-stroke engines over 6 hp as commercial equipment. (11)

The regulations to be proposed require reduced emission rates in future years, and, among other consequences, are estimated to reduce the number of two-stroke engines sold in favor of four-stroke engines. With the current NONROAD modeling methodology, it was not possible to keep the 2-stroke and 4-stroke spark-ignition engines in separate SCCs in the emissions model and account for the shift of 2-stroke to 4-stroke engines. Therefore, spark-ignition engines of less than 25 horsepower (except for snowmobiles, offroad motorcycles, and ATVs, which are not regulated currently) were lumped into one SCC category, eliminating the SCC distinction between 2 and 4-stroke gasoline, LPG, and CNG engines. The SCC description was changed to reflect the new engine classes described in Table 3. The distinction between 2 and 4-stroke gasoline, LPG, and CNG engines will be maintained for sales fraction and emission rates by using technology groups within the SCC.

One problem with lumping 2-stroke and 4-stroke engines together is that the different engine types have different conversion factors for converting total hydrocarbons (THC) to other hydrocarbon types (TOG, NMHC, NMOG, and VOC). This problem was ameliorated somewhat by defining the population to be primarily 2-stroke or primarily 4-stroke fuel types. In the base year, engine classes of III, IV, and V were primarily 2-stroke gasoline engines, so they were assigned SCCs of 2260xxxxxx. Engine classes I and II are primarily 4-stroke gasoline, therefore they were assigned SCCs of 2265xxxxxx. This means that 2-stroke hydrocarbon conversion factors were used for engine classes III, IV, and V, and 4-stroke conversion factors were used for engine classes I and II.

Large Spark-Ignition Equipment

The 1998 PSR population estimates were used for large SI equipment, with the exception of forklifts. We are using different population estimates for forklifts based on a recent market study. That study identified a 1996 population of 491,321 for Class 4 through 6 forklifts, which includes all forklifts powered by internal combustion engines. Approximately 80 percent of those were estimated to be fueled by propane, with the rest running on either gasoline or diesel fuel. Assuming an even split between gasoline and diesel for these remaining forklifts leads to a total population of SI forklifts of 442,000. (12) Draft NONROAD2002 therefore uses this estimate for the 1996 base year forklift population.

Analysis and assumptions regarding refueling methods was necessary in order to establish fuel type distributions in the absence of other data. Some applications of nonroad SI equipment face much different refueling situations. Lawn and garden equipment is usually not centrally fueled and therefore operates almost exclusively on gasoline, which is more readily available.

Agriculture equipment is predominantly powered by diesel engines. Most of these operators likely have storage tanks for diesel fuel. For those who use spark-ignition engines in addition to, or instead of, the diesel models, we would expect them in many cases to be ready to invest in gasoline storage tanks as well, resulting in little or no use of LPG or natural gas for those applications. For construction, general industrial, and other equipment, there may be a mix of central and noncentral fueling, and motive and portable equipment. We therefore believe that estimating an even mix of LPG and gasoline for these engines is most appropriate. The approximate distribution of fuel types for the individual applications used in the NONROAD model are listed in Table 5.

Table 5. Fuel Type Distribution for Various Large SI Applications

Application	Percent LPG/CNG	Application	Percent LPG/CNG
Forklift	95	Bore/drill rig	50
Generator	100	Concrete/industrial saw	50
Commercial turf	0	Rough terrain forklift	50
Aerial lift	50	Other material handling	50
Pump	50	Ag. tractor	0
Welder	50	Paver	50
Baler	0	Roller	50
Air compressor	50	Other construction	50
Scrubber/sweeper	50	Crane	50
Chipper/grinder	50	Pressure washer	50
Swathers	0	Paving equipment	50
Leaf blower/vacuum	0	Aircraft support	50
Sprayers	0	Gas compressor	100
Specialty vehicle/cart	50	Front mowers	0
Oil field equipment	100	Other lawn & garden	0
Skid/steer loader	50	Tractor/loader/backhoe	50
Other agriculture equipment	0	Hydraulic power unit	50
Irrigation set	50	Surfacing equipment	50
Trencher	50	Crushing/processing equip	50
Rubber-tired loader	50	Refrigeration/AC	100
Other general industrial	50	Railway maintenance	50
Terminal tractor	50	Recreational marine	0

Recreational Equipment

Recreational equipment consists of snowmobiles, off-road motorcycles, all terrain vehicles (ATVs), golf carts, and specialty vehicle carts. The 1998 PSR population estimates were used for golf carts and non-diesel specialty vehicle carts.

The 1998 PSR population estimates were not used for snowmobiles, off-road motorcycles, ATVs, or diesel specialty vehicle carts. For snowmobiles, a study done by the Oak Ridge National Laboratory (ORNL) estimated the total snowmobile population for 1999 based on state registrations. They also developed a methodology for estimating the number of snowmobiles unregistered in each state, which works out to be approximately five percent of the total. Thus, they estimate a total snowmobile population of 1,567,000, which is used in draft NONROAD2002. (13) The International Snowmobile Manufacturers Association (ISMA) also estimated the total number of snowmobiles by summing the total number of registered snowmobiles in those states that require snowmobile registration. However, they did not estimate the number of unregistered snowmobiles. Therefore, we use the value presented by ORNL as the estimate of total snowmobiles. The distribution into hp categories was based on the hp category fractions in the PSR database.

For off-road motorcycles, the only source is the Motorcycle Industry Council (MIC). MIC projects a total population for 1998 of 1,196,000 off-road motorcycles nationwide (13), which is used in draft NONROAD2002. Based on sales information, 67 percent are 2-stroke engines and 33 percent are 4-stroke engines.

The population of ATVs used in draft NONROAD2002 for the 1998 base year is 3,910,000. This estimate comes from a 1998 Consumer Products Safety Commission study. (14)

Populations of diesel specialty vehicle carts are estimated per the methodology presented below for compression-ignition equipment in general.

Compression-Ignition (CI) Equipment

Past versions of NONROAD used PSR's population estimates directly. The PSR population estimates are derived using PSR's estimates of equipment sales, load factor, activity, median life, and a default scrappage curve used to estimate the percent of equipment in operation with age. Draft NONROAD2002, however, incorporates a number of significant changes that affect the CI equipment inventory, including load factor and median life estimates. In order to maintain consistency between the revised inputs for load factor and activity used in the model and the load factor and activity inputs used to derive base year population estimates, the 1998 PSR diesel populations were not used. Instead, the latest PSR sales estimates (15) were used in conjunction with the latest draft NONROAD2002 input values for load factor, activity, median life and the default scrappage curve to calculate the 1998 base year populations for CI equipment

used in draft NONROAD2002. The 1998 populations are a sum of equipment in operation from model years 1948 through 1998, based on a backcast extrapolation of sales from 1973.

Recreational Marine Equipment

The 1998 PSR population estimates were used for the recreational marine equipment category.

The LPG and CNG recreational marine engine population values were estimated to be zero, which was confirmed with the PSR estimates. There were some diesel recreational marine engines not covered by the emissions regulations for spark-ignition marine engines and therefore not included in the recreational marine estimate just described.

Recreational marine spark-ignition engines fall under EPA regulations targeting mainly hydrocarbon emissions. (16) The regulations require reduced emission rates and, among other consequences, are estimated to reduce the number of 2-stroke engines sold in favor of 4-stroke engines. With the current NONROAD modeling methodology, it was not possible to keep the 2-stroke and 4-stroke spark-ignition engines in separate SCCs in the emissions model and account for the expected effects of the regulations. Therefore, spark-ignition engines are lumped into one SCC, which eliminates 2- and 4-stroke distinctions.

As with small gasoline engines, one problem with lumping 2-stroke and 4-stroke recreational marine engines into a single SCC is that the different engine types have different conversion factors for converting total hydrocarbons (THC) to other hydrocarbon types (TOG, NMHC, NMOG, and VOC). This problem is ameliorated somewhat by defining the population to be primarily 2-stroke or primarily 4-stroke fuel types. For outboard (SCC 2282005010) and personal water craft (SCC 2282005015), the primary engine type in the base year is 2-stroke; for inboard engines (SCC 2282010005), the primary engine type in the base year is 4-stroke. The NONROAD model uses these primary engine types as the basis for the conversion factors for these SCCs.

As presented in Appendix A, three types of recreational marine equipment are differentiated: inboard, outboard, and personal water craft. The NEVES report documents three types of recreational applications; inboard, outboard, and sterndrive. Since sterndrive vessels use the same engines as inboard vessels, the EPA no longer considered the sterndrive category to be a unique application and eliminated it. Personal water craft, sometimes known by the brand name Jet Ski, were added to what was formerly the sterndrive category, and the SCC description was changed accordingly.

Sailboat auxiliary propulsion engines are also included in the outboard and inboard engine categories. The national estimates include these engines, so NONROAD does not use this category to avoid double counting. PSR estimates that these engines only represent a small percentage of recreational marine engines.

The population of diesel recreation marine engines provided in the default engine populations was derived from the PSR estimates and uses SCCs of 22820200xx. The 'xx' here denotes inboard as '05', outboard as '10', and sailboat auxiliary as '25.' The categories of '15' and '20' were not used because sterndrive is no longer a category, and the sailboat auxiliary diesel engines were of a low horsepower design resembling outboard engines rather than inboard engines. There is little distinction between inboard and outboard for activity, allocations, or any other parameter, so assigning these sailboat auxiliary engines to outboard rather than inboard is a moot issue.

Note that the population values shown in this report for diesel recreational marine engines are expected to decrease slightly in the next version of the model, based on setting the median life to an equivalent of 25 years, which is less than the current median life hours at full load, load factor, and activity inputs would generate.

Average Horsepower (Hp) Estimates

As seen in Appendix A, the base year population estimates in NONROAD are provided by equipment type/hp category. In order to calculate an emissions inventory, the average hp corresponding to each equipment type/hp category is required. For draft NONROAD2002, a sales-weighted average hp for each equipment type/hp category was generated using information from PSR. For diesel equipment the average hp inputs come from the same 1999 PSR sales information that was used for the engine population calculations. For SI equipment the average hp inputs come from the same 1998 PSR Partslink database from which most of the SI equipment populations were obtained. The resulting average hp estimates are also provided in Appendix A.

References

- (1) EPA, "Nonroad Engine and Vehicle Emission Study," EPA-21A-2001, November, 1991.
- (2) E.H. Pechan, "Evaluation of Power Systems Research (PSR) Nonroad Population Data Base," prepared for Office of Mobile Sources, U.S. Environmental Protection Agency, September 1997, EPA Contract No. 68-D3-0035, Work Assignment No. III-107, Pechan Report No. 97.09.003/1807.
- (3) Power Systems Research, "US Parts Link Edition 6.2," St. Paul, MN. 1998
- (4) EPA, "Determination of Significance for Nonroad Sources and Emission Standards for New Nonroad Compression-Ignition Engines At or Above 37 kW; Final Rule," 59 FR 31306, June, 17, 1994.
- (5) Booz, Allen and Hamilton Inc., "Off-Road Mobile Equipment Emission Inventory," January, 1992.
- (6) EPA, "Final Regulatory Impact Analysis, Phase 2: Emission Standards for New Nonroad Nonhandheld Spark-Ignition Engines At or Below 19 Kilowatts," EPA420-R-99-003, March 1999.

- (7) EPA, "Final Regulatory Impact Analysis, Phase 2 Final Rule: Emission Standards for New Nonroad Handheld Spark-Ignition Engines At or Below 19 Kilowatts," EPA420-R-00-004, March 2000.
- (8) Harvey, Craig A., "U.S. EPA NONROAD Model Technical Report Addenda for Tier 2 Rulemaking Version," EPA420-R-99-008, March 24, 1999.
- (9) EPA, "Revised NONROAD Populations for Chainsaws Above 3 Horsepower," Note from Phil Carlson to Craig Harvey, November 1, 2001.
- (10) California Air Resources Board, "Technical Support Document for California Exhaust Emission Standards and Test Procedures for 1994 and Subsequent Model-Year Utility and Lawn and Garden Equipment Engines," Attachment C to CARB Mailout # 92-06, El Monte, CA. January 1992.
- (11) EPA, "Request for Revisions to the NONROAD Model Affecting Small Spark-Ignition Nonroad Handheld Engines," Memorandum from Phil Carlson to Craig Harvey, December 10, 1999.
- (12) EPA, "Draft Regulatory Support Document: Control of Emissions from Unregulated Nonroad Engines," EPA420-D-01-004, September 2001.
- (13) EPA, "Emission Modeling for Recreational Vehicles," Memorandum from Linc Wehrly to Docket A-98-01, EPA420-F-00-051, November 13, 2000.
- (14) Consumer Products Safety Commission, April 1998, Part 1, "Report 1997 ATV Exposure Survey", Bethesda, MD.
- (15) Power Systems Research, OELink (Sales) Database, October 2001 updated version.
- (16) EPA, "Regulatory Impact Analysis: Control of Air Pollution Emission Standards for New Spark-Ignition Marine Engines," October, 1996.

Appendix A

Base Year U.S. Population Estimates in Draft NONROAD2002

Year	SCC	Equipment Description	HPmn	HPmx	HPavg	Population
1999	2260001020	2-Str Snowmobiles	1	3	2.5	6349
1999	2260001020	2-Str Snowmobiles	3	6	4	3029
1999	2260001020	2-Str Snowmobiles	11	16	15.66	47777
1999	2260001020	2-Str Snowmobiles	16	25	20.26	316612
1999	2260001020	2-Str Snowmobiles	25	40	32.86	283754
1999	2260001020	2-Str Snowmobiles	40	50	45.68	210260
1999	2260001020	2-Str Snowmobiles	50	100	67.38	644448
1999	2260001020	2-Str Snowmobiles	100	175	112.4	54772
1998	2260001010	2-Str Offroad Motorcycles	0	1 ¹	1 ¹	801320
1998	2265001010	4-Str Offroad Motorcycles	0	1 ¹	1 ¹	394680
1998	2260001030	2-Str All Terrain Vehicles	0	1 ¹	1 ¹	405000
1998	2265001030	4-Str All Terrain Vehicles	0	1 ¹	1 ¹	3505000
1998	2265001050	4-Str Golf Carts	6	11	9.15	175537
1998	2260001060	2-Str Specialty Vehicle Carts	6	11	8.046	326568
1998	2260001060	2-Str Specialty Vehicle Carts	25	40	37	97
1998	2260001060	2-Str Specialty Vehicle Carts	50	100	55	55
1998	2265001060	4-Str Specialty Vehicle Carts	1	3	3	165
1998	2265001060	4-Str Specialty Vehicle Carts	3	6	4.424	6706
1998	2265001060	4-Str Specialty Vehicle Carts	11	16	15.99	12701
1998	2265001060	4-Str Specialty Vehicle Carts	16	25	19.62	100050
1998	2265001060	4-Str Specialty Vehicle Carts	25	40	30.55	1023
1998	2265001060	4-Str Specialty Vehicle Carts	40	50	46	25
1998	2265001060	4-Str Specialty Vehicle Carts	50	100	61.68	2489
1998	2265001060	4-Str Specialty Vehicle Carts	100	175	118.3	935
1998	2267001060	LPG - Specialty Vehicle Carts	25	40	30.55	1023
1998	2267001060	LPG - Specialty Vehicle Carts	40	50	46	25
1998	2267001060	LPG - Specialty Vehicle Carts	50	100	61.68	2488.5
1998	2267001060	LPG - Specialty Vehicle Carts	100	175	118.3	934.5
1998	2265002003	4-Str Pavers	3	6	5.35	746
1998	2265002003	4-Str Pavers	6	11	9.328	5198
1998	2265002003	4-Str Pavers	11	16	12.56	241
1998	2265002003	4-Str Pavers	16	25	20.85	1883
1998	2265002003	4-Str Pavers	25	40	31.75	318
1998	2265002003	4-Str Pavers	50	100	62.41	351
1998	2267002003	LPG - Pavers	25	40	31.75	317.5
1998	2267002003	LPG - Pavers	50	100	62.41	351
1998	2260002006	2-Str Tampers/Rammers	3	6	3.75	155522
1998	2265002006	4-Str Tampers/Rammers	6	11	7.518	340
1998	2260002009	2-Str Plate Compactors	1	3	1.649	14614
1998	2265002009	4-Str Plate Compactors	3	6	4.409	74153
1998	2265002009	4-Str Plate Compactors	6	11	8.225	22828
1998	2265002009	4-Str Plate Compactors	11	16	12.67	4046
1998	2265002015	4-Str Rollers	6	11	8.901	5621
1998	2265002015	4-Str Rollers	11	16	14.82	1004
1998	2265002015	4-Str Rollers	16	25	19.08	2613
1998	2265002015	4-Str Rollers	25	40	36.82	309
1998	2265002015	4-Str Rollers	50	100	69.81	358
1998	2267002015	LPG - Rollers	25	40	36.82	308.5
1998	2267002015	LPG - Rollers	50	100	69.81	357.5
1998	2260002021	2-Str Paving Equipment	1	3	1.823	13997
1998	2265002021	4-Str Paving Equipment	3	6	5.136	40940
1998	2265002021	4-Str Paving Equipment	6	11	8.535	34719
1998	2265002021	4-Str Paving Equipment	11	16	13.26	17389

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Year	SCC	Equipment Description	HPmn	HPmx	HPavg	Population
1998	2265002021	4-Str Paving Equipment	16	25	20	12251
1998	2265002021	4-Str Paving Equipment	25	40	36.6	498
1998	2265002021	4-Str Paving Equipment	50	100	66	45
1998	2267002021	LPG - Paving Equipment	25	40	36.6	497.5
1998	2267002021	LPG - Paving Equipment	50	100	66	44.5
1998	2265002024	4-Str Surfacing Equipment	3	6	5.16	6079
1998	2265002024	4-Str Surfacing Equipment	6	11	8.918	9362
1998	2265002024	4-Str Surfacing Equipment	11	16	15.61	2707
1998	2265002024	4-Str Surfacing Equipment	16	25	19.05	1141
1998	2265002024	4-Str Surfacing Equipment	25	40	30.24	113
1998	2265002024	4-Str Surfacing Equipment	50	100	66	41
1998	2267002024	LPG - Surfacing Equipment	25	40	30.24	112.5
1998	2267002024	LPG - Surfacing Equipment	50	100	66	40.5
1998	2260002027	2-Str Signal Boards/Light Plants	1	3	2.2	38
1998	2265002027	4-Str Signal Boards/Light Plants	3	6	5.032	687
1998	2265002027	4-Str Signal Boards/Light Plants	6	11	8.25	684
1998	2265002027	4-Str Signal Boards/Light Plants	16	25	18	26
1998	2265002030	4-Str Trenchers	1	3	3	29
1998	2265002030	4-Str Trenchers	3	6	5.211	10643
1998	2265002030	4-Str Trenchers	6	11	8.883	10419
1998	2265002030	4-Str Trenchers	11	16	13.44	3723
1998	2265002030	4-Str Trenchers	16	25	19.3	4245
1998	2265002030	4-Str Trenchers	25	40	30	707
1998	2265002030	4-Str Trenchers	50	100	69.74	1068
1998	2267002030	LPG - Trenchers	25	40	30	707
1998	2267002030	LPG - Trenchers	50	100	69.74	1067.5
1998	2265002033	4-Str Bore/Drill Rigs	0	1	0.9	4390
1998	2265002033	4-Str Bore/Drill Rigs	1	3	2.209	89858
1998	2265002033	4-Str Bore/Drill Rigs	3	6	4.809	3634
1998	2265002033	4-Str Bore/Drill Rigs	6	11	8.754	1111
1998	2265002033	4-Str Bore/Drill Rigs	11	16	16	1410
1998	2265002033	4-Str Bore/Drill Rigs	16	25	21.31	926
1998	2265002033	4-Str Bore/Drill Rigs	25	40	31.39	373
1998	2265002033	4-Str Bore/Drill Rigs	50	100	61.34	340
1998	2265002033	4-Str Bore/Drill Rigs	100	175	118.1	563
1998	2267002033	LPG - Bore/Drill Rigs	25	40	31.39	373
1998	2267002033	LPG - Bore/Drill Rigs	50	100	61.34	339.5
1998	2267002033	LPG - Bore/Drill Rigs	100	175	118.1	563
1998	2260002039	2-Str Concrete/Industrial Saws	1	3	1.897	11491
1998	2260002039	2-Str Concrete/Industrial Saws	3	6	4.532	55066
1998	2265002039	4-Str Concrete/Industrial Saws	6	11	8.535	28313
1998	2265002039	4-Str Concrete/Industrial Saws	11	16	14.68	5937
1998	2265002039	4-Str Concrete/Industrial Saws	16	25	19.41	2610
1998	2265002039	4-Str Concrete/Industrial Saws	25	40	34.79	718
1998	2265002039	4-Str Concrete/Industrial Saws	50	100	65.78	391
1998	2267002039	LPG - Concrete/Industrial Saws	25	40	34.79	718
1998	2267002039	LPG - Concrete/Industrial Saws	50	100	65.78	391
1998	2265002042	4-Str Cement & Mortar Mixers	1	3	2.89	1558
1998	2265002042	4-Str Cement & Mortar Mixers	3	6	5.22	87327
1998	2265002042	4-Str Cement & Mortar Mixers	6	11	8.373	145895
1998	2265002042	4-Str Cement & Mortar Mixers	11	16	13.52	4950
1998	2265002042	4-Str Cement & Mortar Mixers	16	25	17.87	3793
1998	2265002045	4-Str Cranes	6	11	8	148
1998	2265002045	4-Str Cranes	11	16	14.02	209
1998	2265002045	4-Str Cranes	16	25	18.16	74
1998	2265002045	4-Str Cranes	25	40	37	3

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Year	SCC	Equipment Description	HPmn	HPmx	HPavg	Population
1998	2265002045	4-Str Cranes	50	100	69.04	520
1998	2265002045	4-Str Cranes	100	175	115.2	84
1998	2267002045	LPG - Cranes	25	40	37	3
1998	2267002045	LPG - Cranes	50	100	69.04	520
1998	2267002045	LPG - Cranes	100	175	115.2	84
1998	2260002054	2-Str Crushing/Proc. Equipment	1	3	1.8	1405
1998	2265002054	4-Str Crushing/Proc. Equipment	3	6	4.321	1975
1998	2265002054	4-Str Crushing/Proc. Equipment	6	11	8.93	3603
1998	2265002054	4-Str Crushing/Proc. Equipment	11	16	16	924
1998	2265002054	4-Str Crushing/Proc. Equipment	50	100	62.53	115
1998	2267002054	LPG - Crushing/Proc. Equipment	50	100	62.53	115
1998	2265002057	4-Str Rough Terrain Forklift	16	25	23	33
1998	2265002057	4-Str Rough Terrain Forklift	25	40	29	112
1998	2265002057	4-Str Rough Terrain Forklift	40	50	46	1
1998	2265002057	4-Str Rough Terrain Forklift	50	100	65.98	742
1998	2265002057	4-Str Rough Terrain Forklift	100	175	113.3	87
1998	2267002057	LPG - Rough Terrain Forklift	25	40	29	112
1998	2267002057	LPG - Rough Terrain Forklift	40	50	46	1
1998	2267002057	LPG - Rough Terrain Forklift	50	100	66.0	742
1998	2267002057	LPG - Rough Terrain Forklift	100	175	113.3	87
1998	2265002060	4-Str Rubber Tire Loaders	25	40	37	32
1998	2265002060	4-Str Rubber Tire Loaders	50	100	70.4	1474
1998	2265002060	4-Str Rubber Tire Loaders	100	175	113.0	49
1998	2267002060	LPG - Rubber Tire Loaders	25	40	37	32
1998	2267002060	LPG - Rubber Tire Loaders	50	100	70.4	1473.5
1998	2267002060	LPG - Rubber Tire Loaders	100	175	113	48.5
1998	2265002066	4-Str Tractors/Loaders/Backhoes	6	11	10.8	362
1998	2265002066	4-Str Tractors/Loaders/Backhoes	16	25	19.08	7534
1998	2265002066	4-Str Tractors/Loaders/Backhoes	25	40	30	28
1998	2265002066	4-Str Tractors/Loaders/Backhoes	50	100	63.05	148
1998	2267002066	LPG - Tractors/Loaders/Backhoes	25	40	30	28
1998	2267002066	LPG - Tractors/Loaders/Backhoes	50	100	63.05	148
1998	2265002072	4-Str Skid Steer Loaders	11	16	15.93	297
1998	2265002072	4-Str Skid Steer Loaders	16	25	18.41	5986
1998	2265002072	4-Str Skid Steer Loaders	25	40	31.93	1698
1998	2265002072	4-Str Skid Steer Loaders	50	100	67.37	1941
1998	2267002072	LPG - Skid Steer Loaders	25	40	31.93	1698
1998	2267002072	LPG - Skid Steer Loaders	50	100	54.58	1940.5
1998	2265002078	4-Str Dumpers/Tenders	3	6	4.96	5279
1998	2265002078	4-Str Dumpers/Tenders	6	11	8.52	17418
1998	2265002078	4-Str Dumpers/Tenders	11	16	12.28	2622
1998	2265002078	4-Str Dumpers/Tenders	16	25	18.74	3202
1998	2265002078	4-Str Dumpers/Tenders	50	100	66	124
1998	2265002081	4-Str Other Construction Equipment	16	25	18	20
1998	2265002081	4-Str Other Construction Equipment	100	175	126	624.5
1998	2267002081	LPG - Other Construction Equipment	100	175	126	596.5
1998	2268002081	CNG - Other Construction Equipment	100	175	105	28
1998	2265003010	4-Str Aerial Lifts	6	11	8.075	2188
1998	2265003010	4-Str Aerial Lifts	11	16	14.39	608
1998	2265003010	4-Str Aerial Lifts	16	25	21.13	14037
1998	2265003010	4-Str Aerial Lifts	25	40	31.22	6208
1998	2265003010	4-Str Aerial Lifts	50	100	59.86	12931
1998	2265003010	4-Str Aerial Lifts	100	175	111.5	287
1998	2267003010	LPG - Aerial Lifts	25	40	31.22	6208
1998	2267003010	LPG - Aerial Lifts	50	100	59.88	12931
1998	2267003010	LPG - Aerial Lifts	100	175	111.5	287

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Year	SCC	Equipment Description	HPmn	HPmx	HPavg	Population
1996	2265003020	4-Str Forklifts	25	40	36.12	1654
1996	2265003020	4-Str Forklifts	40	50	45.16	5905
1996	2265003020	4-Str Forklifts	50	100	65.38	10099
1996	2265003020	4-Str Forklifts	100	175	144.7	4421
1996	2265003020	4-Str Forklifts	175	300	215.8	22
1996	2267003020	LPG - Forklifts	25	40	33.44	31418
1996	2267003020	LPG - Forklifts	40	50	45.43	68675
1996	2267003020	LPG - Forklifts	50	100	59.25	191872
1996	2267003020	LPG - Forklifts	100	175	131.5	84003
1996	2267003020	LPG - Forklifts	175	300	215.8	411
1996	2268003020	CNG - Forklifts	40	50	48	43521
1998	2260003030	2-Str Sweepers/Scrubbers	1	3	1.276	3298
1998	2265003030	4-Str Sweepers/Scrubbers	3	6	4.735	3777
1998	2265003030	4-Str Sweepers/Scrubbers	6	11	9.855	5779
1998	2265003030	4-Str Sweepers/Scrubbers	11	16	14.85	1563
1998	2265003030	4-Str Sweepers/Scrubbers	16	25	18.23	3348
1998	2265003030	4-Str Sweepers/Scrubbers	25	40	31.91	2011
1998	2265003030	4-Str Sweepers/Scrubbers	40	50	46	2273
1998	2265003030	4-Str Sweepers/Scrubbers	50	100	63.61	2329
1998	2265003030	4-Str Sweepers/Scrubbers	100	175	150.0	47
1998	2265003030	4-Str Sweepers/Scrubbers	300	600	411.0	3
1998	2267003030	LPG - Sweepers/Scrubbers	25	40	31	2011
1998	2267003030	LPG - Sweepers/Scrubbers	40	50	47	2273
1998	2267003030	LPG - Sweepers/Scrubbers	50	100	63.61	2329
1998	2267003030	LPG - Sweepers/Scrubbers	100	175	150	47
1998	2267003030	LPG - Sweepers/Scrubbers	300	600	411	2.5
1998	2268003030	CNG - Sweepers/Scrubbers	175	300	190	20
1998	2260003040	2-Str Other General Industrial Eqp	1	3	2.044	156
1998	2265003040	4-Str Other General Industrial Eqp	3	6	4.289	63996
1998	2265003040	4-Str Other General Industrial Eqp	6	11	9.063	12092
1998	2265003040	4-Str Other General Industrial Eqp	11	16	13.53	6158
1998	2265003040	4-Str Other General Industrial Eqp	16	25	18.24	5205
1998	2265003040	4-Str Other General Industrial Eqp	25	40	30.12	465
1998	2265003040	4-Str Other General Industrial Eqp	50	100	63.32	750
1998	2265003040	4-Str Other General Industrial Eqp	100	175	136	246
1998	2265003040	4-Str Other General Industrial Eqp	175	300	195	9
1998	2267003040	LPG - Other General Industrial Eqp	25	40	30.12	465
1998	2267003040	LPG - Other General Industrial Eqp	50	100	63.32	726
1998	2267003040	LPG - Other General Industrial Eqp	100	175	136	246
1998	2267003040	LPG - Other General Industrial Eqp	175	300	195	8.5
1998	2268003040	CNG - Other General Industrial Eqp	50	100	98.5	24
1998	2265003050	4-Str Other Material Handling Eqp	1	3	3	33
1998	2265003050	4-Str Other Material Handling Eqp	16	25	18.12	1271
1998	2265003050	4-Str Other Material Handling Eqp	50	100	80.55	801.5
1998	2267003050	LPG - Other Material Handling Eqp	50	100	53.6	801.5
1998	2265003060	4-Str AC\Refrigeration	6	11	9.0	22
1998	2265003060	4-Str AC\Refrigeration	11	16	13.0	35
1998	2265003060	4-Str AC\Refrigeration	16	25	18.0	1067
1998	2268003060	CNG - AC\Refrigeration	40	50	48	120
1998	2268003060	CNG - AC\Refrigeration	50	100	74	41
1998	2265003070	4-Str Terminal Tractors	25	40	35	11
1998	2265003070	4-Str Terminal Tractors	50	100	69.12	599
1998	2265003070	4-Str Terminal Tractors	100	175	114.2	739
1998	2265003070	4-Str Terminal Tractors	175	300	250	9
1998	2267003070	LPG - Terminal Tractors	25	40	35	11
1998	2267003070	LPG - Terminal Tractors	50	100	72.89	535

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1998	2267003070	LPG - Terminal Tractors	100	175	104	729.5
1998	2267003070	LPG - Terminal Tractors	175	300	190	0
1998	2268003070	CNG - Terminal Tractors	50	100	82.5	64
1998	2268003070	CNG - Terminal Tractors	100	175	125	9
1998	2268003070	CNG - Terminal Tractors	175	300	250	9
1996	2265004010	4-Str Lawn mowers (res)	1	3	2.55	636892
1996	2265004010	4-Str Lawn mowers (res)	3	6	4.1	31652672
1996	2265004010	4-Str Lawn mowers (res)	6	11	6.24	10436
1996	2265004011	4-Str Lawn mowers (Com)	1	3	2.55	29577
1996	2265004011	4-Str Lawn mowers (Com)	3	6	4.1	1469938
1996	2265004011	4-Str Lawn mowers (Com)	6	11	6.24	485
1998	2260004015	2-Str Rotary Tillers < 6 HP (res)	0	1	0.957	59060
1998	2260004015	2-Str Rotary Tillers < 6 HP (res)	1	3	2.514	417521
1998	2265004015	4-Str Rotary Tillers < 6 HP (res)	3	6	4.712	2965010
1998	2260004016	2-Str Rotary Tillers < 6 HP (com)	0	1	0.957	9855
1998	2260004016	2-Str Rotary Tillers < 6 HP (com)	1	3	2.514	69668
1998	2265004016	4-Str Rotary Tillers < 6 HP (com)	3	6	4.712	494745
1996	2260004020	2-Str Chain Saws < 6 HP (res)	1	3	2.11	5150700
1996	2260004020	2-Str Chain Saws < 6 HP (res)	3	6	3.916	0
1996	2260004021	2-Str Chain Saws < 6 HP (com)	1	3	2.11	159300
1996	2260004021	2-Str Chain Saws < 6 HP (com)	3	6	3.916	560500
1996	2260004025	2-Str Trimmers/Edgers/Brush Cutter (res)	0	1	0.81	3850000
1996	2260004025	2-Str Trimmers/Edgers/Brush Cutter (res)	1	3	1.4	9750000
1996	2260004025	2-Str Trimmers/Edgers/Brush Cutter (res)	3	6	3.3	0
1996	2260004026	2-Str Trimmers/Edgers/Brush Cutter (com)	0	1	0.81	0
1996	2260004026	2-Str Trimmers/Edgers/Brush Cutter (com)	1	3	1.4	1680650
1996	2260004026	2-Str Trimmers/Edgers/Brush Cutter (com)	3	6	3.30	119350
1996	2265004025	4-Str Trimmers/Edgers/Brush Cutter (res)	3	6	3.3	222344
1996	2265004025	4-Str Trimmers/Edgers/Brush Cutter (res)	6	11	7.9	0
1996	2265004025	4-Str Trimmers/Edgers/Brush Cutter (res)	11	16	16	0
1996	2265004025	4-Str Trimmers/Edgers/Brush Cutter (res)	16	25	18.00	0
1996	2265004026	4-Str Trimmers/Edgers/Brush Cutter (com)	3	6	3.3	26363
1996	2265004026	4-Str Trimmers/Edgers/Brush Cutter (com)	6	11	7.9	7052
1996	2265004026	4-Str Trimmers/Edgers/Brush Cutter (com)	11	16	16	373
1996	2265004026	4-Str Trimmers/Edgers/Brush Cutter (com)	16	25	18	809
1996	2260004030	2-Str Leafblowers/Vacuums (res)	0	1	0.84	570000
1996	2260004030	2-Str Leafblowers/Vacuums (res)	1	3	1.41	6330000
1996	2260004030	2-Str Leafblowers/Vacuums (res)	3	6	3.42	0
1996	2260004031	2-Str Leafblowers/Vacuums (com)	0	1	0.84	0
1996	2260004031	2-Str Leafblowers/Vacuums (com)	1	3	1.41	510000
1996	2260004031	2-Str Leafblowers/Vacuums (com)	3	6	3.42	190000
1996	2265004030	4-Str Leafblowers/Vacuums (res)	3	6	3.4	358692
1996	2265004030	4-Str Leafblowers/Vacuums (res)	6	11	8.3	0
1996	2265004030	4-Str Leafblowers/Vacuums (res)	11	16	14.23	0
1996	2265004030	4-Str Leafblowers/Vacuums (res)	16	25	20.96	0
1996	2265004031	4-Str Leafblowers/Vacuums (com)	3	6	3.4	29083
1996	2265004031	4-Str Leafblowers/Vacuums (com)	6	11	8.3	284431
1996	2265004031	4-Str Leafblowers/Vacuums (com)	11	16	14.2	8959
1996	2265004031	4-Str Leafblowers/Vacuums (com)	16	25	21.0	9747
1996	2265004031	4-Str Leafblowers/Vacuums (com)	25	40	31	742
1996	2265004031	4-Str Leafblowers/Vacuums (com)	50	100	61.21	5061
1996	2265004031	4-Str Leafblowers/Vacuums (com)	100	175	120.8	5020
1998	2260004035	2-Str Snowblowers (res)	1	3	2.921	966993
1998	2260004035	2-Str Snowblowers (res)	3	6	4.686	1480768
1998	2265004035	4-Str Snowblowers (res)	6	11	8.699	2498136
1998	2265004035	4-Str Snowblowers (res)	11	16	12.59	116759

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1998	2260004036	2-Str Snowblowers (com)	1	3	2.921	107444
1998	2260004036	2-Str Snowblowers (com)	3	6	4.686	164530
1998	2265004036	4-Str Snowblowers (com)	6	11	8.699	277571
1998	2265004036	4-Str Snowblowers (com)	11	16	12.59	12973
1998	2265004040	4-Str Rear Engine Riding Mowers (res)	3	6	5.105	6954
1998	2265004040	4-Str Rear Engine Riding Mowers (res)	6	11	9.153	1006160
1998	2265004040	4-Str Rear Engine Riding Mowers (res)	11	16	12.61	780271
1998	2265004040	4-Str Rear Engine Riding Mowers (res)	16	25	18.26	3691
1998	2265004041	4-Str Rear Engine Riding Mowers (com)	3	6	5.105	186
1998	2265004041	4-Str Rear Engine Riding Mowers (com)	6	11	9.153	26858
1998	2265004041	4-Str Rear Engine Riding Mowers (com)	11	16	12.61	20829
1998	2265004041	4-Str Rear Engine Riding Mowers (com)	16	25	18.26	99
1998	2265004046	4-Str Front Mowers (com)	6	11	8	27794
1998	2265004046	4-Str Front Mowers (com)	11	16	13.47	94937
1998	2265004046	4-Str Front Mowers (com)	16	25	17	41976
1998	2265004046	4-Str Front Mowers (com)	25	40	32.27	630
1998	2265004051	4-Str Shredders < 6 HP (com)	1	3	2.986	101841
1998	2265004051	4-Str Shredders < 6 HP (com)	3	6	4.835	199316
1998	2265004055	4-Str Lawn & Garden Tractors (res)	3	6	5.002	24846
1998	2265004055	4-Str Lawn & Garden Tractors (res)	6	11	9.735	778998
1998	2265004055	4-Str Lawn & Garden Tractors (res)	11	16	13.61	8655718
1998	2265004055	4-Str Lawn & Garden Tractors (res)	16	25	18.41	2821097
1998	2265004056	4-Str Lawn & Garden Tractors (com)	3	6	5.002	663
1998	2265004056	4-Str Lawn & Garden Tractors (com)	6	11	9.735	20795
1998	2265004056	4-Str Lawn & Garden Tractors (com)	11	16	13.61	231056
1998	2265004056	4-Str Lawn & Garden Tractors (com)	16	25	18.41	75306
1998	2265004066	4-Str Chippers/Stump Grinders (com)	3	6	3.5	34
1998	2265004066	4-Str Chippers/Stump Grinders (com)	6	11	9.791	1678
1998	2265004066	4-Str Chippers/Stump Grinders (com)	11	16	15.32	6916
1998	2265004066	4-Str Chippers/Stump Grinders (com)	16	25	20.05	13034
1998	2265004066	4-Str Chippers/Stump Grinders (com)	25	40	35.1	984
1998	2265004066	4-Str Chippers/Stump Grinders (com)	50	100	60.94	4237
1998	2265004066	4-Str Chippers/Stump Grinders (com)	100	175	119	1005
1998	2267004066	LPG - Chippers/Stump Grinders (com)	25	40	35.1	984
1998	2267004066	LPG - Chippers/Stump Grinders (com)	50	100	60.94	4237
1998	2267004066	LPG - Chippers/Stump Grinders (com)	100	175	119	1005
1998	2260004071	2-Str Commercial Turf Equipment (com)	1	3	3	119
1998	2265004071	4-Str Commercial Turf Equipment (com)	3	6	5.217	343058
1998	2265004071	4-Str Commercial Turf Equipment (com)	6	11	8.771	91253
1998	2265004071	4-Str Commercial Turf Equipment (com)	11	16	13.99	203640
1998	2265004071	4-Str Commercial Turf Equipment (com)	16	25	19.33	265433
1998	2265004071	4-Str Commercial Turf Equipment (com)	25	40	27.24	52592
1998	2265004071	4-Str Commercial Turf Equipment (com)	50	100	59.59	454
1998	2265004075	4-Str Other Lawn & Garden Eqp. (res)	0	1	0.914	25378
1998	2265004075	4-Str Other Lawn & Garden Eqp. (res)	1	3	2.34	109896
1998	2265004075	4-Str Other Lawn & Garden Eqp. (res)	3	6	4.867	280075
1998	2265004075	4-Str Other Lawn & Garden Eqp. (res)	6	11	8.208	185063
1998	2265004075	4-Str Other Lawn & Garden Eqp. (res)	11	16	15.54	2710
1998	2265004075	4-Str Other Lawn & Garden Eqp. (res)	16	25	20.04	1776
1998	2265004076	4-Str Other Lawn & Garden Eqp. (com)	0	1	0.914	30154
1998	2265004076	4-Str Other Lawn & Garden Eqp. (com)	1	3	2.34	130577
1998	2265004076	4-Str Other Lawn & Garden Eqp. (com)	3	6	4.867	332781
1998	2265004076	4-Str Other Lawn & Garden Eqp. (com)	6	11	8.208	219889
1998	2265004076	4-Str Other Lawn & Garden Eqp. (com)	11	16	15.54	3220
1998	2265004076	4-Str Other Lawn & Garden Eqp. (com)	16	25	20.04	2111
1998	2265004076	4-Str Other Lawn & Garden Eqp. (com)	25	40	36.04	206

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Year	SCC	Equipment Description	HPmn	HPmx	HPavg	Population
1998	2265004076	4-Str Other Lawn & Garden Eqp. (com)	50	100	71.20	96
1998	2265004076	4-Str Other Lawn & Garden Eqp. (com)	100	175	113	83
1998	2265005010	4-Str 2-Wheel Tractors	6	11	8.197	2595
1998	2265005010	4-Str 2-Wheel Tractors	11	16	14.19	2239
1998	2265005015	4-Str Agricultural Tractors	16	25	20.4	1075
1998	2265005015	4-Str Agricultural Tractors	25	40	30.5	111
1998	2265005015	4-Str Agricultural Tractors	50	100	82.13	1286
1998	2265005015	4-Str Agricultural Tractors	100	175	125	145
1998	2265005020	4-Str Combines	50	100	87	10
1998	2265005020	4-Str Combines	100	175	141.2	20
1998	2265005025	4-Str Balers	25	40	34.57	13265
1998	2265005025	4-Str Balers	50	100	65.28	4246
1998	2265005025	4-Str Balers	100	175	113	482
1998	2265005030	4-Str Agricultural Mowers	3	6	6	88
1998	2265005030	4-Str Agricultural Mowers	6	11	9.206	6148
1998	2265005030	4-Str Agricultural Mowers	11	16	16	90
1998	2265005030	4-Str Agricultural Mowers	16	25	18	1880
1998	2260005035	2-Str Sprayers	0	1	0.88	22521
1998	2260005035	2-Str Sprayers	1	3	2.567	20997
1998	2265005035	4-Str Sprayers	3	6	4.37	81764
1998	2265005035	4-Str Sprayers	6	11	8.204	29819
1998	2265005035	4-Str Sprayers	11	16	14.85	10243
1998	2265005035	4-Str Sprayers	16	25	20.51	17354
1998	2265005035	4-Str Sprayers	25	40	33.28	4227
1998	2265005035	4-Str Sprayers	50	100	76.25	3247
1998	2265005035	4-Str Sprayers	100	175	130.3	1630
1998	2265005040	4-Str Tillers > 6 HP	6	11	7.501	719032
1998	2265005040	4-Str Tillers > 6 HP	11	16	14.76	1796
1996 ²	2265005045	4-Str Swathers	50	100	80	7168
1996 ²	2265005045	4-Str Swathers	100	175	121.9	4061
1998	2260005050	2-Str Hydro Power Units	1	3	1.709	1273
1998	2265005050	4-Str Hydro Power Units	3	6	4.834	6056
1998	2265005050	4-Str Hydro Power Units	6	11	9.855	5486
1998	2265005050	4-Str Hydro Power Units	11	16	13.1	4322
1998	2265005050	4-Str Hydro Power Units	16	25	18.35	4424
1998	2265005050	4-Str Hydro Power Units	25	40	33.91	67
1998	2265005050	4-Str Hydro Power Units	40	50	46	28
1998	2265005050	4-Str Hydro Power Units	50	100	66.79	66
1998	2265005050	4-Str Hydro Power Units	100	175	113	1
1998	2267005050	LPG - Hydro Power Units	25	40	33.91	67
1998	2267005050	LPG - Hydro Power Units	40	50	46	28
1998	2267005050	LPG - Hydro Power Units	50	100	66.79	65.5
1998	2267005050	LPG - Hydro Power Units	100	175	154	1
1998	2268005050	CNG - Hydro Power Units	100	175	148	1
1998	2265005055	4-Str Other Agricultural Equipment	3	6	4.84	1544
1998	2265005055	4-Str Other Agricultural Equipment	6	11	9.14	7506
1998	2265005055	4-Str Other Agricultural Equipment	11	16	14.11	4462
1998	2265005055	4-Str Other Agricultural Equipment	16	25	18.64	3953
1998	2265005055	4-Str Other Agricultural Equipment	25	40	32.23	314
1998	2265005055	4-Str Other Agricultural Equipment	50	100	65.9	589
1998	2265005055	4-Str Other Agricultural Equipment	100	175	167.4	2977
1998	2265005055	4-Str Other Agricultural Equipment	175	300	230.1	1244
1998	2267005055	LPG - Other Agricultural Equipment	100	175	154	80
1998	2268005055	CNG - Other Agricultural Equipment	100	175	148	134
1998	2265005060	4-Str Irrigation Sets	3	6	4.692	761
1998	2265005060	4-Str Irrigation Sets	6	11	8.918	209

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Year	SCC	Equipment Description	HPmn	HPmx	HPavg	Population
1998	2265005060	4-Str Irrigation Sets	16	25	18	3
1998	2265005060	4-Str Irrigation Sets	50	100	73.64	1483
1998	2265005060	4-Str Irrigation Sets	100	175	120.5	467
1998	2265005060	4-Str Irrigation Sets	175	300	210.2	213
1998	2267005060	LPG - Irrigation Sets	100	175	113	12
1998	2268005060	CNG - Irrigation Sets	25	40	32	248
1998	2268005060	CNG - Irrigation Sets	50	100	86.52	3183
1998	2268005060	CNG - Irrigation Sets	100	175	138.9	184
1998	2268005060	CNG - Irrigation Sets	175	300	233.3	214
1998	2268005060	CNG - Irrigation Sets	300	600	384.4	44
1998	2260006005	2-Str Generator Sets	0	1	0.8	4052
1998	2260006005	2-Str Generator Sets	1	3	1.663	100577
1998	2265006005	4-Str Generator Sets	3	6	4.567	707572
1998	2265006005	4-Str Generator Sets	6	11	8.816	1699093
1998	2265006005	4-Str Generator Sets	11	16	14.34	375830
1998	2265006005	4-Str Generator Sets	16	25	20.72	537782
1998	2265006005	4-Str Generator Sets	25	40	30.32	0
1998	2265006005	4-Str Generator Sets	40	50	45.99	0
1998	2265006005	4-Str Generator Sets	50	100	70.49	0
1998	2265006005	4-Str Generator Sets	100	175	138.5	0
1998	2265006005	4-Str Generator Sets	175	300	212.6	0
1998	2267006005	LPG - Generator Sets	25	40	30.32	49803
1998	2267006005	LPG - Generator Sets	40	50	45.99	374
1998	2267006005	LPG - Generator Sets	50	100	62.91	43888
1998	2267006005	LPG - Generator Sets	100	175	138.8	7750
1998	2267006005	LPG - Generator Sets	175	300	239.6	179
1998	2267006005	LPG - Generator Sets	300	600	372	30
1998	2268006005	CNG - Generator Sets	25	40	31.73	471
1998	2268006005	CNG - Generator Sets	40	50	47.67	797
1998	2268006005	CNG - Generator Sets	50	100	69.24	21270
1998	2268006005	CNG - Generator Sets	100	175	147.8	1849
1998	2268006005	CNG - Generator Sets	175	300	239.8	756
1998	2268006005	CNG - Generator Sets	300	600	392.6	382
1998	2260006010	2-Str Pumps	0	1	0.991	127359
1998	2260006010	2-Str Pumps	1	3	1.998	230103
1998	2260006010	2-Str Pumps	25	40	38	140
1998	2260006010	2-Str Pumps	50	100	55	29
1998	2265006010	4-Str Pumps	3	6	4.631	329762
1998	2265006010	4-Str Pumps	6	11	8.337	206833
1998	2265006010	4-Str Pumps	11	16	14.81	20034
1998	2265006010	4-Str Pumps	16	25	18.35	11674
1998	2265006010	4-Str Pumps	25	40	31.95	10150
1998	2265006010	4-Str Pumps	40	50	46	94
1998	2265006010	4-Str Pumps	50	100	61.87	5037
1998	2265006010	4-Str Pumps	100	175	115.3	728
1998	2267006010	LPG - Pumps	25	40	31.95	9817
1998	2267006010	LPG - Pumps	40	50	46	94
1998	2267006010	LPG - Pumps	50	100	57	5033
1998	2267006010	LPG - Pumps	100	175	115.3	682
1998	2268006010	CNG - Pumps	25	40	32	333
1998	2268006010	CNG - Pumps	50	100	52	4
1998	2268006010	CNG - Pumps	100	175	175	46
1998	2268006010	CNG - Pumps	175	300	246	52
1998	2268006010	CNG - Pumps	300	600	423.3	49
1998	2260006015	2-Str Air Compressors	1	3	2.209	59
1998	2265006015	4-Str Air Compressors	3	6	5.188	52263

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Year	SCC	Equipment Description	HPmn	HPmx	HPavg	Population
1998	2265006015	4-Str Air Compressors	6	11	9.925	48785
1998	2265006015	4-Str Air Compressors	11	16	13.63	5984
1998	2265006015	4-Str Air Compressors	16	25	18.67	6485
1998	2265006015	4-Str Air Compressors	25	40	31.67	950
1998	2265006015	4-Str Air Compressors	50	100	64.45	6371
1998	2265006015	4-Str Air Compressors	100	175	131.9	524
1998	2267006015	LPG - Air Compressors	25	40	31.67	950
1998	2267006015	LPG - Air Compressors	50	100	64.45	6220.5
1998	2267006015	LPG - Air Compressors	100	175	131.9	280
1998	2268006015	CNG - Air Compressors	50	100	52	150
1998	2268006015	CNG - Air Compressors	100	175	148	244
1998	2268006020	CNG - Gas Compressors	25	40	27.5	155
1998	2268006020	CNG - Gas Compressors	40	50	45.24	92
1998	2268006020	CNG - Gas Compressors	50	100	89.36	295
1998	2268006020	CNG - Gas Compressors	100	175	145.9	45
1998	2268006020	CNG - Gas Compressors	175	300	242.1	117
1998	2268006020	CNG - Gas Compressors	300	600	401.9	26
1998	2265006025	4-Str Welders	3	6	5.974	6910
1998	2265006025	4-Str Welders	6	11	9.326	26796
1998	2265006025	4-Str Welders	11	16	15.71	98775
1998	2265006025	4-Str Welders	16	25	18.2	32951
1998	2265006025	4-Str Welders	50	100	65.0	8469
1998	2265006025	4-Str Welders	100	175	130	156
1998	2267006025	LPG - Welders	50	100	67.51	8468.5
1998	2267006025	LPG - Welders	100	175	130	156
1998	2265006030	4-Str Pressure Washers	1	3	3	164
1998	2265006030	4-Str Pressure Washers	3	6	4.827	872534
1998	2265006030	4-Str Pressure Washers	6	11	9.104	539616
1998	2265006030	4-Str Pressure Washers	11	16	14.13	160083
1998	2265006030	4-Str Pressure Washers	16	25	18.8	30104
1998	2265006030	4-Str Pressure Washers	25	40	36.55	510
1998	2265006030	4-Str Pressure Washers	50	100	66.5	40
1998	2267006030	LPG - Pressure Washers	25	40	36.55	510
1998	2267006030	LPG - Pressure Washers	50	100	66.5	40
1996	2260007005	2-Str Chain Saws > 6 HP	6	11	6.81	29500
1998	2265007010	4-Str Shredders > 6 HP	6	11	8.117	187298
1998	2265007010	4-Str Shredders > 6 HP	11	16	12.62	10359
1998	2265007010	4-Str Shredders > 6 HP	16	25	20.56	3357
1998	2265007015	4-Str Forest Eqp - Feller/Bunch/Skidder	3	6	5.5	326
1998	2265007015	4-Str Forest Eqp - Feller/Bunch/Skidder	6	11	9	134
1998	2265008005	4-Str Airport Support Equipment	3	6	4.861	897
1998	2265008005	4-Str Airport Support Equipment	6	11	8.171	102
1998	2265008005	4-Str Airport Support Equipment	11	16	16	363
1998	2265008005	4-Str Airport Support Equipment	16	25	18.36	19
1998	2265008005	4-Str Airport Support Equipment	25	40	37	21
1998	2265008005	4-Str Airport Support Equipment	40	50	46	7
1998	2265008005	4-Str Airport Support Equipment	50	100	81.05	120
1998	2265008005	4-Str Airport Support Equipment	100	175	113	287
1998	2267008005	LPG - Airport Support Equipment	25	40	37	21
1998	2267008005	LPG - Airport Support Equipment	40	50	46	7
1998	2267008005	LPG - Airport Support Equipment	50	100	81.05	119.5
1998	2267008005	LPG - Airport Support Equipment	100	175	113	286.5
1998	2265010010	4-Str Other Oil Field Equipment	6	11	9.568	4015
1998	2265010010	4-Str Other Oil Field Equipment	11	16	12.68	7361
1998	2265010010	4-Str Other Oil Field Equipment	16	25	20.31	4889
1998	2265010010	4-Str Other Oil Field Equipment	25	40	37	0

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1998	2268010010	CNG - Other Oil Field Equipment	25	40	32.59	4792
1998	2268010010	CNG - Other Oil Field Equipment	40	50	43.74	656
1998	2268010010	CNG - Other Oil Field Equipment	50	100	58.6	2107
1998	2268010010	CNG - Other Oil Field Equipment	100	175	131.1	201
1998	2268010010	CNG - Other Oil Field Equipment	600	750	725	14
1998	2270001060	Dsl - Specialty Vehicle Carts	11	16	15.00	778
1998	2270001060	Dsl - Specialty Vehicle Carts	16	25	21.10	17457
1998	2270001060	Dsl - Specialty Vehicle Carts	25	40	26.04	7264
1998	2270001060	Dsl - Specialty Vehicle Carts	40	50	44.00	20
1998	2270001060	Dsl - Specialty Vehicle Carts	50	100	76.20	299
1998	2270001060	Dsl - Specialty Vehicle Carts	100	175	143.1	2149
1998	2270001060	Dsl - Specialty Vehicle Carts	175	300	246.3	2679
1998	2270001060	Dsl - Specialty Vehicle Carts	300	600	348.9	1110
1998	2270001060	Dsl - Specialty Vehicle Carts	1000	1500	1200	50
1998	2270002003	Dsl - Pavers	16	25	22.18	205
1998	2270002003	Dsl - Pavers	25	40	33.36	2194
1998	2270002003	Dsl - Pavers	40	50	46.14	293
1998	2270002003	Dsl - Pavers	50	100	69.19	6418
1998	2270002003	Dsl - Pavers	100	175	140.0	5729
1998	2270002003	Dsl - Pavers	175	300	188.7	3275
1998	2270002003	Dsl - Pavers	300	600	362.3	483
1998	2270002006	Dsl - Tampers/Rammers	3	6	4.2	0
1998	2270002009	Dsl - Plate Compactors	3	6	4.54	10301
1998	2270002009	Dsl - Plate Compactors	6	11	7.97	4633
1998	2270002009	Dsl - Plate Compactors	11	16	13.53	2377
1998	2270002009	Dsl - Plate Compactors	16	25	17.70	320
1998	2270002015	Dsl - Rollers	3	6	5.60	1673
1998	2270002015	Dsl - Rollers	6	11	8.84	2262
1998	2270002015	Dsl - Rollers	11	16	14.64	2471
1998	2270002015	Dsl - Rollers	16	25	19.08	4063
1998	2270002015	Dsl - Rollers	25	40	31.06	6211
1998	2270002015	Dsl - Rollers	40	50	44.95	5560
1998	2270002015	Dsl - Rollers	50	100	78.87	23925
1998	2270002015	Dsl - Rollers	100	175	135.8	17231
1998	2270002015	Dsl - Rollers	175	300	205.9	4454
1998	2270002015	Dsl - Rollers	300	600	427.3	1242
1998	2270002018	Dsl - Scrapers	50	100	66.00	9
1998	2270002018	Dsl - Scrapers	100	175	170.0	735
1998	2270002018	Dsl - Scrapers	175	300	252.5	5727
1998	2270002018	Dsl - Scrapers	300	600	411.7	9541
1998	2270002018	Dsl - Scrapers	600	750	672.3	2867
1998	2270002021	Dsl - Paving Equipment	3	6	5.81	1005
1998	2270002021	Dsl - Paving Equipment	6	11	8.92	1342
1998	2270002021	Dsl - Paving Equipment	11	16	13.92	53
1998	2270002021	Dsl - Paving Equipment	16	25	21.91	808
1998	2270002021	Dsl - Paving Equipment	25	40	35.38	866
1998	2270002021	Dsl - Paving Equipment	40	50	50.00	0
1998	2270002021	Dsl - Paving Equipment	50	100	70.43	1652
1998	2270002021	Dsl - Paving Equipment	100	175	144.7	1917
1998	2270002021	Dsl - Paving Equipment	175	300	250.6	584
1998	2270002021	Dsl - Paving Equipment	300	600	467.4	12
1998	2270002024	Dsl - Surfacing Equipment	16	25	23.49	732
1998	2270002024	Dsl - Surfacing Equipment	25	40	31.48	513
1998	2270002024	Dsl - Surfacing Equipment	40	50	44.90	235
1998	2270002024	Dsl - Surfacing Equipment	50	100	84.75	590
1998	2270002024	Dsl - Surfacing Equipment	100	175	116.0	166

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1998	2270002024	Dsl - Surfacing Equipment	175	300	221.0	4
1998	2270002024	Dsl - Surfacing Equipment	300	600	492.6	101
1998	2270002024	Dsl - Surfacing Equipment	600	750	750.0	3
1998	2270002027	Dsl - Signal Boards/Light Plants	3	6	5.39	6222
1998	2270002027	Dsl - Signal Boards/Light Plants	6	11	7.70	10924
1998	2270002027	Dsl - Signal Boards/Light Plants	11	16	12.66	2520
1998	2270002027	Dsl - Signal Boards/Light Plants	16	25	23.02	20734
1998	2270002027	Dsl - Signal Boards/Light Plants	25	40	28.09	1464
1998	2270002027	Dsl - Signal Boards/Light Plants	40	50	42.36	23
1998	2270002027	Dsl - Signal Boards/Light Plants	50	100	54.92	1947
1998	2270002027	Dsl - Signal Boards/Light Plants	100	175	157.5	625
1998	2270002027	Dsl - Signal Boards/Light Plants	175	300	216.0	151
1998	2270002030	Dsl - Trenchers	3	6	5.00	0
1998	2270002030	Dsl - Trenchers	6	11	9.16	18
1998	2270002030	Dsl - Trenchers	11	16	15.50	141
1998	2270002030	Dsl - Trenchers	16	25	19.00	115
1998	2270002030	Dsl - Trenchers	25	40	34.86	5790
1998	2270002030	Dsl - Trenchers	40	50	44.78	10880
1998	2270002030	Dsl - Trenchers	50	100	68.56	23758
1998	2270002030	Dsl - Trenchers	100	175	137.2	2801
1998	2270002030	Dsl - Trenchers	175	300	232.2	1110
1998	2270002030	Dsl - Trenchers	300	600	409.2	592
1998	2270002030	Dsl - Trenchers	600	750	742.5	76
1998	2270002030	Dsl - Trenchers	1000	1500	1500	11
1998	2270002033	Dsl - Bore/Drill Rigs	6	11	8.00	63
1998	2270002033	Dsl - Bore/Drill Rigs	11	16	15.30	72
1998	2270002033	Dsl - Bore/Drill Rigs	16	25	23.74	274
1998	2270002033	Dsl - Bore/Drill Rigs	25	40	32.24	3051
1998	2270002033	Dsl - Bore/Drill Rigs	40	50	45.06	2114
1998	2270002033	Dsl - Bore/Drill Rigs	50	100	73.29	9940
1998	2270002033	Dsl - Bore/Drill Rigs	100	175	134.1	7536
1998	2270002033	Dsl - Bore/Drill Rigs	175	300	218.3	6334
1998	2270002033	Dsl - Bore/Drill Rigs	300	600	466.6	3801
1998	2270002033	Dsl - Bore/Drill Rigs	600	750	674.9	817
1998	2270002033	Dsl - Bore/Drill Rigs	750	1000	910.4	894
1998	2270002033	Dsl - Bore/Drill Rigs	1000	1500	1362	18
1998	2270002036	Dsl - Excavators	3	6	6.00	59
1998	2270002036	Dsl - Excavators	6	11	6.80	238
1998	2270002036	Dsl - Excavators	11	16	12.93	783
1998	2270002036	Dsl - Excavators	16	25	21.16	2056
1998	2270002036	Dsl - Excavators	25	40	34.32	4448
1998	2270002036	Dsl - Excavators	40	50	45.92	1819
1998	2270002036	Dsl - Excavators	50	100	87.84	15047
1998	2270002036	Dsl - Excavators	100	175	145.0	39117
1998	2270002036	Dsl - Excavators	175	300	236.1	31383
1998	2270002036	Dsl - Excavators	300	600	392.5	7739
1998	2270002036	Dsl - Excavators	600	750	744.4	337
1998	2270002036	Dsl - Excavators	750	1000	859.5	278
1998	2270002036	Dsl - Excavators	1000	1500	1304	25
1998	2270002036	Dsl - Excavators	1500	2000	1796	98
1998	2270002036	Dsl - Excavators	2000	3000	2200	8
1998	2270002039	Dsl - Concrete/Industrial Saws	6	11	10.00	390
1998	2270002039	Dsl - Concrete/Industrial Saws	16	25	19.26	84
1998	2270002039	Dsl - Concrete/Industrial Saws	25	40	32.85	2500
1998	2270002039	Dsl - Concrete/Industrial Saws	40	50	45.25	86
1998	2270002039	Dsl - Concrete/Industrial Saws	50	100	71.42	1529

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Year	SCC	Equipment Description	HPmn	HPmx	HPavg	Population
1998	2270002039	Dsl - Concrete/Industrial Saws	100	175	120.8	180
1998	2270002039	Dsl - Concrete/Industrial Saws	175	300	210.0	1
1998	2270002042	Dsl - Cement & Mortar Mixers	3	6	6.00	5867
1998	2270002042	Dsl - Cement & Mortar Mixers	6	11	7.77	7676
1998	2270002042	Dsl - Cement & Mortar Mixers	11	16	12.70	2962
1998	2270002042	Dsl - Cement & Mortar Mixers	16	25	20.71	1241
1998	2270002042	Dsl - Cement & Mortar Mixers	25	40	32.98	339
1998	2270002042	Dsl - Cement & Mortar Mixers	40	50		0
1998	2270002042	Dsl - Cement & Mortar Mixers	50	100	73.79	1598
1998	2270002042	Dsl - Cement & Mortar Mixers	100	175	124.0	326
1998	2270002042	Dsl - Cement & Mortar Mixers	175	300	250.8	116
1998	2270002042	Dsl - Cement & Mortar Mixers	300	600	347.3	133
1998	2270002042	Dsl - Cement & Mortar Mixers	600	750	701.8	27
1998	2270002045	Dsl - Cranes	25	40	39.40	493
1998	2270002045	Dsl - Cranes	40	50	41.00	35
1998	2270002045	Dsl - Cranes	50	100	77.92	3164
1998	2270002045	Dsl - Cranes	100	175	144.5	10176
1998	2270002045	Dsl - Cranes	175	300	229.4	8544
1998	2270002045	Dsl - Cranes	300	600	381.5	3657
1998	2270002045	Dsl - Cranes	600	750	656.4	176
1998	2270002045	Dsl - Cranes	750	1000	918.8	19
1998	2270002048	Dsl - Graders	25	40	36.00	0
1998	2270002048	Dsl - Graders	40	50	44.00	0
1998	2270002048	Dsl - Graders	50	100	77.79	1270
1998	2270002048	Dsl - Graders	100	175	152.3	11514
1998	2270002048	Dsl - Graders	175	300	236.0	19658
1998	2270002048	Dsl - Graders	300	600	347.9	1741
1998	2270002048	Dsl - Graders	600	750	750.0	16
1998	2270002051	Dsl - Off-highway Trucks	100	175	165.0	6
1998	2270002051	Dsl - Off-highway Trucks	175	300	253.1	1635
1998	2270002051	Dsl - Off-highway Trucks	300	600	431.0	4579
1998	2270002051	Dsl - Off-highway Trucks	600	750	727.4	3208
1998	2270002051	Dsl - Off-highway Trucks	750	1000	917.0	1036
1998	2270002051	Dsl - Off-highway Trucks	1000	1500	1320	1118
1998	2270002051	Dsl - Off-highway Trucks	1500	2000	1902	1870
1998	2270002051	Dsl - Off-highway Trucks	2000	3000	2388	550
1998	2270002054	Dsl - Crushing/Proc. Equipment	16	25	20.95	58
1998	2270002054	Dsl - Crushing/Proc. Equipment	25	40	33.09	275
1998	2270002054	Dsl - Crushing/Proc. Equipment	40	50	44.90	267
1998	2270002054	Dsl - Crushing/Proc. Equipment	50	100	61.34	4301
1998	2270002054	Dsl - Crushing/Proc. Equipment	100	175	139.6	1365
1998	2270002054	Dsl - Crushing/Proc. Equipment	175	300	237.7	438
1998	2270002054	Dsl - Crushing/Proc. Equipment	300	600	424.6	1208
1998	2270002054	Dsl - Crushing/Proc. Equipment	600	750	659.0	63
1998	2270002054	Dsl - Crushing/Proc. Equipment	750	1000	920.0	4
1998	2270002057	Dsl - Rough Terrain Forklifts	11	16	13.50	17
1998	2270002057	Dsl - Rough Terrain Forklifts	16	25	22.61	164
1998	2270002057	Dsl - Rough Terrain Forklifts	25	40	31.70	4004
1998	2270002057	Dsl - Rough Terrain Forklifts	40	50	43.45	4333
1998	2270002057	Dsl - Rough Terrain Forklifts	50	100	82.53	5991
1998	2270002057	Dsl - Rough Terrain Forklifts	100	175	121.4	24948
1998	2270002057	Dsl - Rough Terrain Forklifts	175	300	207.8	1176
1998	2270002057	Dsl - Rough Terrain Forklifts	300	600	318.3	1576
1998	2270002060	Dsl - Rubber Tire Loaders	6	11	8.34	493
1998	2270002060	Dsl - Rubber Tire Loaders	11	16	15.40	87
1998	2270002060	Dsl - Rubber Tire Loaders	16	25	24.83	26

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Year	SCC	Equipment Description	HPmn	HPmx	HPavg	Population
1998	2270002060	Dsl - Rubber Tire Loaders	25	40	35.61	2527
1998	2270002060	Dsl - Rubber Tire Loaders	40	50	43.51	2849
1998	2270002060	Dsl - Rubber Tire Loaders	50	100	90.19	24587
1998	2270002060	Dsl - Rubber Tire Loaders	100	175	146.7	39298
1998	2270002060	Dsl - Rubber Tire Loaders	175	300	229.2	36978
1998	2270002060	Dsl - Rubber Tire Loaders	300	600	430.0	31882
1998	2270002060	Dsl - Rubber Tire Loaders	600	750	746.3	1862
1998	2270002060	Dsl - Rubber Tire Loaders	750	1000	819.4	1114
1998	2270002060	Dsl - Rubber Tire Loaders	1000	1500	1070	1136
1998	2270002060	Dsl - Rubber Tire Loaders	1500	2000	1903	311
1998	2270002060	Dsl - Rubber Tire Loaders	2000	3000	2210	73
1998	2270002066	Dsl - Tractors/Loaders/Backhoes	11	16	15.00	8
1998	2270002066	Dsl - Tractors/Loaders/Backhoes	16	25	23.01	1512
1998	2270002066	Dsl - Tractors/Loaders/Backhoes	25	40	32.93	3070
1998	2270002066	Dsl - Tractors/Loaders/Backhoes	40	50	46.23	2676
1998	2270002066	Dsl - Tractors/Loaders/Backhoes	50	100	83.37	207476
1998	2270002066	Dsl - Tractors/Loaders/Backhoes	100	175	124.9	94882
1998	2270002066	Dsl - Tractors/Loaders/Backhoes	175	300	249.0	13
1998	2270002069	Dsl - Crawler Tractor/Dozers	25	40	35.00	0
1998	2270002069	Dsl - Crawler Tractor/Dozers	40	50	42.50	0
1998	2270002069	Dsl - Crawler Tractor/Dozers	50	100	87.92	15227
1998	2270002069	Dsl - Crawler Tractor/Dozers	100	175	133.6	31078
1998	2270002069	Dsl - Crawler Tractor/Dozers	175	300	249.5	25911
1998	2270002069	Dsl - Crawler Tractor/Dozers	300	600	430.0	15768
1998	2270002069	Dsl - Crawler Tractor/Dozers	600	750	750.0	5788
1998	2270002069	Dsl - Crawler Tractor/Dozers	750	1000	966.4	1570
1998	2270002069	Dsl - Crawler Tractor/Dozers	1000	1500	1329	4527
1998	2270002072	Dsl - Skid Steer Loaders	11	16	15.00	11148
1998	2270002072	Dsl - Skid Steer Loaders	16	25	19.82	50305
1998	2270002072	Dsl - Skid Steer Loaders	25	40	34.45	97152
1998	2270002072	Dsl - Skid Steer Loaders	40	50	44.89	26935
1998	2270002072	Dsl - Skid Steer Loaders	50	100	64.40	233886
1998	2270002072	Dsl - Skid Steer Loaders	100	175	115.2	1121
1998	2270002075	Dsl - Off-Highway Tractors	100	175	145.8	6
1998	2270002075	Dsl - Off-Highway Tractors	175	300	243.8	136
1998	2270002075	Dsl - Off-Highway Tractors	300	600	503.0	444
1998	2270002075	Dsl - Off-Highway Tractors	600	750	743.0	617
1998	2270002075	Dsl - Off-Highway Tractors	750	1000	932.1	399
1998	2270002075	Dsl - Off-Highway Tractors	1000	1500	1455	421
1998	2270002075	Dsl - Off-Highway Tractors	1500	2000	1886	19
1998	2270002075	Dsl - Off-Highway Tractors	2000	3000	2200	10
1998	2270002078	Dsl - Dumpers/Tenders	6	11	9.00	433
1998	2270002078	Dsl - Dumpers/Tenders	11	16	12.95	294
1998	2270002078	Dsl - Dumpers/Tenders	16	25	24.52	343
1998	2270002078	Dsl - Dumpers/Tenders	25	40	35.33	476
1998	2270002078	Dsl - Dumpers/Tenders	40	50	48.45	53
1998	2270002078	Dsl - Dumpers/Tenders	50	100	88.13	296
1998	2270002078	Dsl - Dumpers/Tenders	100	175	111.5	80
1998	2270002081	Dsl - Other Construction Equipment	6	11	7.75	118
1998	2270002081	Dsl - Other Construction Equipment	11	16	14.40	83
1998	2270002081	Dsl - Other Construction Equipment	16	25	21.44	48
1998	2270002081	Dsl - Other Construction Equipment	25	40	34.07	356
1998	2270002081	Dsl - Other Construction Equipment	40	50	45.19	23
1998	2270002081	Dsl - Other Construction Equipment	50	100	76.60	689
1998	2270002081	Dsl - Other Construction Equipment	100	175	144.1	2556
1998	2270002081	Dsl - Other Construction Equipment	175	300	240.9	2034

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Year	SCC	Equipment Description	HPmn	HPmx	HPavg	Population
1998	2270002081	Dsl - Other Construction Equipment	300	600	450.2	5444
1998	2270002081	Dsl - Other Construction Equipment	600	750	721.9	626
1998	2270002081	Dsl - Other Construction Equipment	750	1000		29
1998	2270003010	Dsl - Aerial Lifts	6	11	8.00	55
1998	2270003010	Dsl - Aerial Lifts	11	16	13.22	1039
1998	2270003010	Dsl - Aerial Lifts	16	25	24.07	10390
1998	2270003010	Dsl - Aerial Lifts	25	40	33.63	14673
1998	2270003010	Dsl - Aerial Lifts	40	50	45.45	2644
1998	2270003010	Dsl - Aerial Lifts	50	100	68.43	32277
1998	2270003010	Dsl - Aerial Lifts	100	175	113.0	175
1998	2270003020	Dsl - Forklifts	25	40	34.35	3
1998	2270003020	Dsl - Forklifts	40	50	49.90	610
1998	2270003020	Dsl - Forklifts	50	100	74.30	30255
1998	2270003020	Dsl - Forklifts	100	175	142.5	6013
1998	2270003020	Dsl - Forklifts	175	300	206.2	1117
1998	2270003020	Dsl - Forklifts	300	600	364.7	1221
1998	2270003030	Dsl - Sweepers/Scrubbers	6	11	11.00	51
1998	2270003030	Dsl - Sweepers/Scrubbers	11	16	14.00	24
1998	2270003030	Dsl - Sweepers/Scrubbers	16	25	20.80	1931
1998	2270003030	Dsl - Sweepers/Scrubbers	25	40	35.55	4108
1998	2270003030	Dsl - Sweepers/Scrubbers	40	50	44.22	2644
1998	2270003030	Dsl - Sweepers/Scrubbers	50	100	77.13	13831
1998	2270003030	Dsl - Sweepers/Scrubbers	100	175	121.0	11702
1998	2270003030	Dsl - Sweepers/Scrubbers	175	300	193.0	3434
1998	2270003040	Dsl - Other General Industrial Eqp	3	6	4.20	6124
1998	2270003040	Dsl - Other General Industrial Eqp	6	11	7.37	8012
1998	2270003040	Dsl - Other General Industrial Eqp	11	16	14.30	234
1998	2270003040	Dsl - Other General Industrial Eqp	16	25	24.20	263
1998	2270003040	Dsl - Other General Industrial Eqp	25	40	31.35	1018
1998	2270003040	Dsl - Other General Industrial Eqp	40	50	46.33	805
1998	2270003040	Dsl - Other General Industrial Eqp	50	100	76.62	13453
1998	2270003040	Dsl - Other General Industrial Eqp	100	175	136.7	16904
1998	2270003040	Dsl - Other General Industrial Eqp	175	300	216.2	4698
1998	2270003040	Dsl - Other General Industrial Eqp	300	600	371.9	575
1998	2270003040	Dsl - Other General Industrial Eqp	600	750	650.0	80
1998	2270003040	Dsl - Other General Industrial Eqp	1000	1500	1350	0
1998	2270003050	Dsl - Other Material Handling Eqp	6	11	8.50	0
1998	2270003050	Dsl - Other Material Handling Eqp	16	25	19.00	0
1998	2270003050	Dsl - Other Material Handling Eqp	40	50	41.00	279
1998	2270003050	Dsl - Other Material Handling Eqp	50	100	72.48	1857
1998	2270003050	Dsl - Other Material Handling Eqp	100	175	121.8	1978
1998	2270003050	Dsl - Other Material Handling Eqp	175	300	218.4	875
1998	2270003050	Dsl - Other Material Handling Eqp	300	600	433.9	96
1998	2270003060	Dsl - AC\Refrigeration	6	11	9.42	7073
1998	2270003060	Dsl - AC\Refrigeration	11	16	12.51	17275
1998	2270003060	Dsl - AC\Refrigeration	16	25	19.48	23352
1998	2270003060	Dsl - AC\Refrigeration	25	40	34.04	2891
1998	2270003060	Dsl - AC\Refrigeration	40	50	48.70	31312
1998	2270003060	Dsl - AC\Refrigeration	50	100	55.71	123529
1998	2270003070	Dsl - Terminal Tractors	16	25	21.20	4
1998	2270003070	Dsl - Terminal Tractors	25	40	39.00	3
1998	2270003070	Dsl - Terminal Tractors	40	50	45.75	0
1998	2270003070	Dsl - Terminal Tractors	50	100	77.47	4918
1998	2270003070	Dsl - Terminal Tractors	100	175	153.6	5338
1998	2270003070	Dsl - Terminal Tractors	175	300	205.1	9706
1998	2270003070	Dsl - Terminal Tractors	300	600	431.8	198

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Year	SCC	Equipment Description	HPmn	HPmx	HPavg	Population
1998	2270003070	Dsl - Terminal Tractors	600	750	655.0	1
1998	2270004031	Dsl - Leafblowers/Vacuums (com)	3	6	6.00	235
1998	2270004031	Dsl - Leafblowers/Vacuums (com)	25	40	28.00	6
1998	2270004031	Dsl - Leafblowers/Vacuums (com)	40	50	49.00	0
1998	2270004031	Dsl - Leafblowers/Vacuums (com)	50	100	78.00	0
1998	2270004031	Dsl - Leafblowers/Vacuums (com)	100	175	118.5	0
1998	2270004036	Dsl - Snowblowers (com)	100	175	165.0	22
1998	2270004036	Dsl - Snowblowers (com)	175	300	251.8	193
1998	2270004036	Dsl - Snowblowers (com)	300	600	384.4	238
1998	2270004046	Dsl - Commercial Mowers (com)	3	6	5.00	173
1998	2270004046	Dsl - Commercial Mowers (com)	6	11	8.5	0
1998	2270004046	Dsl - Commercial Mowers (com)	11	16	14.64	8904
1998	2270004046	Dsl - Commercial Mowers (com)	16	25	21.97	269287
1998	2270004046	Dsl - Commercial Mowers (com)	25	40	31.87	104092
1998	2270004046	Dsl - Commercial Mowers (com)	40	50	44.67	10974
1998	2270004046	Dsl - Commercial Mowers (com)	50	100	60.97	38020
1998	2270004056	Dsl - Lawn & Garden Tractors (com)	6	11	10.50	66
1998	2270004056	Dsl - Lawn & Garden Tractors (com)	11	16	15.00	2866
1998	2270004056	Dsl - Lawn & Garden Tractors (com)	16	25	21.47	57371
1998	2270004056	Dsl - Lawn & Garden Tractors (com)	40	50	48.00	521
1998	2270004056	Dsl - Lawn & Garden Tractors (com)	50	100	80.00	751
1998	2270004066	Dsl - Chippers/Stump Grinders (com)	16	25	25.00	4
1998	2270004066	Dsl - Chippers/Stump Grinders (com)	25	40	37.09	163
1998	2270004066	Dsl - Chippers/Stump Grinders (com)	40	50	45.25	945
1998	2270004066	Dsl - Chippers/Stump Grinders (com)	50	100	70.00	6428
1998	2270004066	Dsl - Chippers/Stump Grinders (com)	100	175	122.4	2111
1998	2270004066	Dsl - Chippers/Stump Grinders (com)	175	300	251.0	2237
1998	2270004066	Dsl - Chippers/Stump Grinders (com)	300	600	419.7	3908
1998	2270004066	Dsl - Chippers/Stump Grinders (com)	600	750	710.8	889
1998	2270004066	Dsl - Chippers/Stump Grinders (com)	750	1000	964.9	118
1998	2270004071	Dsl - Commercial Turf Equipment (com)	6	11	7.75	0
1998	2270004071	Dsl - Commercial Turf Equipment (com)	11	16	13.45	1204
1998	2270004071	Dsl - Commercial Turf Equipment (com)	16	25	22.62	1378
1998	2270004071	Dsl - Commercial Turf Equipment (com)	25	40	34.52	1958
1998	2270004071	Dsl - Commercial Turf Equipment (com)	40	50	44.89	1518
1998	2270004071	Dsl - Commercial Turf Equipment (com)	50	100	80.11	21330
1998	2270004071	Dsl - Commercial Turf Equipment (com)	100	175	113.8	4359
1998	2270004071	Dsl - Commercial Turf Equipment (com)	175	300	201.4	1935
1998	2270004071	Dsl - Commercial Turf Equipment (com)	300	600	325.0	96
1998	2270004076	Dsl - Other Lawn & Garden Eqp. (com)	11	16	15.00	81
1998	2270004076	Dsl - Other Lawn & Garden Eqp. (com)	16	25	22.92	301
1998	2270004076	Dsl - Other Lawn & Garden Eqp. (com)	25	40	31.00	3
1998	2270004076	Dsl - Other Lawn & Garden Eqp. (com)	40	50	44.00	12
1998	2270004076	Dsl - Other Lawn & Garden Eqp. (com)	50	100	53.76	384
1998	2270004076	Dsl - Other Lawn & Garden Eqp. (com)	100	175	131.0	20
1998	2270005010	Dsl - 2-Wheel Tractors	3	6	6.00	158
1998	2270005010	Dsl - 2-Wheel Tractors	6	11	8.58	515
1998	2270005015	Dsl - Agricultural Tractors	11	16	16.00	20
1998	2270005015	Dsl - Agricultural Tractors	16	25	22.19	63707
1998	2270005015	Dsl - Agricultural Tractors	25	40	31.85	189344
1998	2270005015	Dsl - Agricultural Tractors	40	50	46.83	117777
1998	2270005015	Dsl - Agricultural Tractors	50	100	71.51	412262
1998	2270005015	Dsl - Agricultural Tractors	100	175	130.6	305681
1998	2270005015	Dsl - Agricultural Tractors	175	300	220.0	277195
1998	2270005015	Dsl - Agricultural Tractors	300	600	343.6	115170
1998	2270005015	Dsl - Agricultural Tractors	600	750	615.0	15

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Year	SCC	Equipment Description	HPmn	HPmx	HPavg	Population
1998	2270005020	Dsl - Combines	50	100	89.72	9148
1998	2270005020	Dsl - Combines	100	175	148.3	84499
1998	2270005020	Dsl - Combines	175	300	213.0	109477
1998	2270005020	Dsl - Combines	300	600	325.4	3363
1998	2270005025	Dsl - Balers	40	50	50.00	173
1998	2270005025	Dsl - Balers	50	100	67.39	4482
1998	2270005025	Dsl - Balers	100	175	142.4	1000
1998	2270005025	Dsl - Balers	175	300	177.0	26
1998	2270005030	Dsl - Agricultural Mowers	50	100	76.00	2
1998	2270005035	Dsl - Sprayers	16	25	23.64	1894
1998	2270005035	Dsl - Sprayers	25	40	36.43	752
1998	2270005035	Dsl - Sprayers	40	50	48.75	455
1998	2270005035	Dsl - Sprayers	50	100	84.88	8865
1998	2270005035	Dsl - Sprayers	100	175	121.8	12726
1998	2270005035	Dsl - Sprayers	175	300	241.8	12457
1998	2270005035	Dsl - Sprayers	300	600	348.8	1922
1998	2270005040	Dsl - Tillers > 6 HP	3	6	6.00	0
1998	2270005040	Dsl - Tillers > 6 HP	175	300	245.0	0
1998	2270005040	Dsl - Tillers > 6 HP	300	600	424.5	0
1998	2270005045	Dsl - Swathers	50	100	85.22	42034
1998	2270005045	Dsl - Swathers	100	175	114.4	6598
1998	2270005050	Dsl - Hydro Power Units	3	6	4.47	87
1998	2270005050	Dsl - Hydro Power Units	6	11	9.21	174
1998	2270005050	Dsl - Hydro Power Units	11	16	15.37	74
1998	2270005050	Dsl - Hydro Power Units	16	25	20.05	553
1998	2270005050	Dsl - Hydro Power Units	25	40	33.90	880
1998	2270005050	Dsl - Hydro Power Units	40	50	42.57	208
1998	2270005050	Dsl - Hydro Power Units	50	100	71.80	2288
1998	2270005050	Dsl - Hydro Power Units	100	175	131.4	376
1998	2270005050	Dsl - Hydro Power Units	175	300	208.3	45
1998	2270005050	Dsl - Hydro Power Units	300	600	434.7	11
1998	2270005050	Dsl - Hydro Power Units	600	750	743.3	0
1998	2270005055	Dsl - Other Agricultural Equipment	11	16	14.46	393
1998	2270005055	Dsl - Other Agricultural Equipment	16	25	22.32	1219
1998	2270005055	Dsl - Other Agricultural Equipment	25	40	27.28	505
1998	2270005055	Dsl - Other Agricultural Equipment	40	50	46.56	350
1998	2270005055	Dsl - Other Agricultural Equipment	50	100	78.50	7208
1998	2270005055	Dsl - Other Agricultural Equipment	100	175	146.4	7585
1998	2270005055	Dsl - Other Agricultural Equipment	175	300	235.2	7103
1998	2270005055	Dsl - Other Agricultural Equipment	300	600	366.5	2388
1998	2270005055	Dsl - Other Agricultural Equipment	750	1000	965.0	2
1998	2270005060	Dsl - Irrigation Sets	6	11	9.50	0
1998	2270005060	Dsl - Irrigation Sets	11	16	14.75	12
1998	2270005060	Dsl - Irrigation Sets	16	25	22.40	683
1998	2270005060	Dsl - Irrigation Sets	25	40	33.90	798
1998	2270005060	Dsl - Irrigation Sets	40	50	46.55	584
1998	2270005060	Dsl - Irrigation Sets	50	100	82.34	14729
1998	2270005060	Dsl - Irrigation Sets	100	175	126.4	6038
1998	2270005060	Dsl - Irrigation Sets	175	300	208.4	1389
1998	2270005060	Dsl - Irrigation Sets	300	600	362.4	75
1998	2270005060	Dsl - Irrigation Sets	600	750	714.0	0
1998	2270006005	Dsl - Generator Sets	3	6	5.86	23136
1998	2270006005	Dsl - Generator Sets	6	11	8.16	46821
1998	2270006005	Dsl - Generator Sets	11	16	13.93	33105
1998	2270006005	Dsl - Generator Sets	16	25	22.05	94573
1998	2270006005	Dsl - Generator Sets	25	40	33.92	75739

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Year	SCC	Equipment Description	HPmn	HPmx	HPavg	Population
1998	2270006005	Dsl - Generator Sets	40	50	46.29	15824
1998	2270006005	Dsl - Generator Sets	50	100	75.89	106785
1998	2270006005	Dsl - Generator Sets	100	175	138.1	25897
1998	2270006005	Dsl - Generator Sets	175	300	239.3	14421
1998	2270006005	Dsl - Generator Sets	300	600	432.2	8927
1998	2270006005	Dsl - Generator Sets	600	750	665.3	0
1998	2270006005	Dsl - Generator Sets	750	1000	939.2	0
1998	2270006005	Dsl - Generator Sets	1000	1500	1306	0
1998	2270006005	Dsl - Generator Sets	1500	2000	1850	0
1998	2270006005	Dsl - Generator Sets	2000	3000	2435	0
1998	2270006010	Dsl - Pumps	1	3	3.00	40
1998	2270006010	Dsl - Pumps	3	6	4.93	10627
1998	2270006010	Dsl - Pumps	6	11	7.87	22616
1998	2270006010	Dsl - Pumps	11	16	13.08	6198
1998	2270006010	Dsl - Pumps	16	25	23.00	5232
1998	2270006010	Dsl - Pumps	25	40	34.88	8734
1998	2270006010	Dsl - Pumps	40	50	44.45	2313
1998	2270006010	Dsl - Pumps	50	100	73.96	30256
1998	2270006010	Dsl - Pumps	100	175	132.2	7379
1998	2270006010	Dsl - Pumps	175	300	232.9	1686
1998	2270006010	Dsl - Pumps	300	600	386.4	903
1998	2270006010	Dsl - Pumps	600	750	665.5	0
1998	2270006010	Dsl - Pumps	750	1000	876.9	0
1998	2270006010	Dsl - Pumps	1000	1500	1200	0
1998	2270006010	Dsl - Pumps	1500	2000	1885	0
1998	2270006010	Dsl - Pumps	2000	3000	2373	0
1998	2270006015	Dsl - Air Compressors	3	6	5.73	273
1998	2270006015	Dsl - Air Compressors	6	11	9.73	823
1998	2270006015	Dsl - Air Compressors	11	16	14.34	116
1998	2270006015	Dsl - Air Compressors	16	25	21.08	371
1998	2270006015	Dsl - Air Compressors	25	40	32.73	4661
1998	2270006015	Dsl - Air Compressors	40	50	45.26	4786
1998	2270006015	Dsl - Air Compressors	50	100	70.19	63072
1998	2270006015	Dsl - Air Compressors	100	175	129.6	4350
1998	2270006015	Dsl - Air Compressors	175	300	253.0	4448
1998	2270006015	Dsl - Air Compressors	300	600	401.1	1017
1998	2270006015	Dsl - Air Compressors	600	750	650.0	0
1998	2270006020	Dsl - Gas Compressors	25	40	38.00	1
1998	2270006020	Dsl - Gas Compressors	40	50	40.10	0
1998	2270006020	Dsl - Gas Compressors	50	100	70.48	13
1998	2270006020	Dsl - Gas Compressors	300	600	432.8	0
1998	2270006025	Dsl - Welders	6	11	9.02	5215
1998	2270006025	Dsl - Welders	11	16	12.60	19716
1998	2270006025	Dsl - Welders	16	25	23.42	31349
1998	2270006025	Dsl - Welders	25	40	36.49	19820
1998	2270006025	Dsl - Welders	40	50	46.63	47733
1998	2270006025	Dsl - Welders	50	100	64.66	54857
1998	2270006025	Dsl - Welders	100	175	120.5	963
1998	2270006025	Dsl - Welders	300	600		5
1998	2270006030	Dsl - Pressure Washers	3	6	5.07	594
1998	2270006030	Dsl - Pressure Washers	6	11	8.87	3996
1998	2270006030	Dsl - Pressure Washers	11	16	14.04	5828
1998	2270006030	Dsl - Pressure Washers	16	25	20.92	6556
1998	2270006030	Dsl - Pressure Washers	25	40	36.26	5556
1998	2270006030	Dsl - Pressure Washers	40	50	44.90	950
1998	2270006030	Dsl - Pressure Washers	50	100	63.15	3475

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Year	SCC	Equipment Description	HPmn	HPmx	HPavg	Population
1998	2270006030	Dsl - Pressure Washers	100	175	132.6	2364
1998	2270006030	Dsl - Pressure Washers	175	300	230.6	1960
1998	2270006030	Dsl - Pressure Washers	300	600	378.6	231
1998	2270006030	Dsl - Pressure Washers	600	750	663.8	138
1998	2270007010	Dsl - Shredders > 6 HP	40	50	41.00	0
1998	2270007015	Dsl - Forest Eqp - Feller/Bunch/Skidder	25	40	36.69	19
1998	2270007015	Dsl - Forest Eqp - Feller/Bunch/Skidder	40	50	45.66	4
1998	2270007015	Dsl - Forest Eqp - Feller/Bunch/Skidder	50	100	95.08	1560
1998	2270007015	Dsl - Forest Eqp - Feller/Bunch/Skidder	100	175	143.5	8829
1998	2270007015	Dsl - Forest Eqp - Feller/Bunch/Skidder	175	300	216.1	9767
1998	2270007015	Dsl - Forest Eqp - Feller/Bunch/Skidder	300	600	421.5	1055
1998	2270007015	Dsl - Forest Eqp - Feller/Bunch/Skidder	600	750	701.2	403
1998	2270007015	Dsl - Forest Eqp - Feller/Bunch/Skidder	1000	1500	1050	12
1998	2270008005	Dsl - Airport Support Equipment	6	11	8.00	14
1998	2270008005	Dsl - Airport Support Equipment	11	16	15.50	10
1998	2270008005	Dsl - Airport Support Equipment	16	25	25.00	24
1998	2270008005	Dsl - Airport Support Equipment	25	40	31.81	47
1998	2270008005	Dsl - Airport Support Equipment	40	50	42.85	63
1998	2270008005	Dsl - Airport Support Equipment	50	100	77.68	2894
1998	2270008005	Dsl - Airport Support Equipment	100	175	134.5	4538
1998	2270008005	Dsl - Airport Support Equipment	175	300	204.6	2234
1998	2270008005	Dsl - Airport Support Equipment	300	600	471.8	1829
1998	2270008005	Dsl - Airport Support Equipment	600	750	678.2	129
1998	2270009010	Dsl - Other Underground Mining Equip	16	25	22.76	9
1998	2270009010	Dsl - Other Underground Mining Equip	25	40	31.89	324
1998	2270009010	Dsl - Other Underground Mining Equip	40	50	44.42	516
1998	2270009010	Dsl - Other Underground Mining Equip	50	100	76.15	3607
1998	2270009010	Dsl - Other Underground Mining Equip	100	175	145.0	2301
1998	2270009010	Dsl - Other Underground Mining Equip	175	300	251.1	655
1998	2270009010	Dsl - Other Underground Mining Equip	300	600	339.6	321
1998	2270010010	Dsl - Other Oil Field Equipment	6	11	9.00	0
1998	2270010010	Dsl - Other Oil Field Equipment	16	25	22.00	0
1998	2270010010	Dsl - Other Oil Field Equipment	25	40	36.61	247
1998	2270010010	Dsl - Other Oil Field Equipment	40	50	42.04	115
1998	2270010010	Dsl - Other Oil Field Equipment	50	100	62.65	1286
1998	2270010010	Dsl - Other Oil Field Equipment	100	175	128.3	2410
1998	2270010010	Dsl - Other Oil Field Equipment	175	300	276.2	1189
1998	2270010010	Dsl - Other Oil Field Equipment	300	600	361.4	1865
1998	2270010010	Dsl - Other Oil Field Equipment	600	750	692.3	961
1998	2270010010	Dsl - Other Oil Field Equipment	750	1000	836.0	433
1998	2270010010	Dsl - Other Oil Field Equipment	1000	1500	1419	454
1998	2270010010	Dsl - Other Oil Field Equipment	1500	2000	2000	73
1998	2270010010	Dsl - Other Oil Field Equipment	2000	3000	2268	9
1998	2282005010	2-Str Outboard	1	3	2.412	145520
1998	2282005010	2-Str Outboard	3	6	5.337	1695543
1998	2282005010	2-Str Outboard	6	11	8.76	1459985
1998	2282005010	2-Str Outboard	11	16	14.99	525884
1998	2282005010	2-Str Outboard	16	25	21.54	1395767
1998	2282005010	2-Str Outboard	25	40	36	912262
1998	2282005010	2-Str Outboard	40	50	49.34	469725
1998	2282005010	2-Str Outboard	50	100	78.17	865284
1998	2282005010	2-Str Outboard	100	175	139.4	1070559
1998	2282005010	2-Str Outboard	175	300	217.9	379252
1998	2282005015	2-Str Personal Water Craft	16	25	18.41	7056
1998	2282005015	2-Str Personal Water Craft	25	40	36.75	86832
1998	2282005015	2-Str Personal Water Craft	40	50	43.95	87107

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Year	SCC	Equipment Description	HPmn	HPmx	HPavg	Population
1998	2282005015	2-Str Personal Water Craft	50	100	73.46	795375
1998	2282005015	2-Str Personal Water Craft	100	175	116.3	229408
1998	2282010005	4-Str Inboard/Sterndrive	3	6	5	774
1998	2282010005	4-Str Inboard/Sterndrive	6	11	10	554
1998	2282010005	4-Str Inboard/Sterndrive	11	16	15	328
1998	2282010005	4-Str Inboard/Sterndrive	25	40	30.47	1415
1998	2282010005	4-Str Inboard/Sterndrive	50	100	59.55	12439
1998	2282010005	4-Str Inboard/Sterndrive	100	175	149.7	1245405
1998	2282010005	4-Str Inboard/Sterndrive	175	300	211.1	580347
1998	2282010005	4-Str Inboard/Sterndrive	300	600	380.8	23961
1998	2282010005	4-Str Inboard/Sterndrive	600	750	630	1
1998	2282020005	Dsl - Inboard ³	6	11	9.74	7630
1998	2282020005	Dsl - Inboard ³	11	16	14.92	3925
1998	2282020005	Dsl - Inboard ³	16	25	21.41	8700
1998	2282020005	Dsl - Inboard ³	25	40	31.20	4882
1998	2282020005	Dsl - Inboard ³	40	50	42.40	955
1998	2282020005	Dsl - Inboard ³	50	100	73.63	7104
1998	2282020005	Dsl - Inboard ³	100	175	144.9	23659
1998	2282020005	Dsl - Inboard ³	175	300	223.1	47495
1998	2282020005	Dsl - Inboard ³	300	600	387.1	30025
1998	2282020005	Dsl - Inboard ³	600	750	677.0	1640
1998	2282020005	Dsl - Inboard ³	750	1000	876.5	2215
1998	2282020005	Dsl - Inboard ³	1000	1500	1233	1167
1998	2282020005	Dsl - Inboard ³	1500	2000	1577	8
1998	2282020005	Dsl - Inboard ³	2000	3000	2289	473
1998	2282020010	Dsl - Outboard ³	25	40	32.25	10049
1998	2285002015	Dsl - Railway Maintenance	3	6	4.20	14
1998	2285002015	Dsl - Railway Maintenance	6	11	8.23	99
1998	2285002015	Dsl - Railway Maintenance	11	16	15.31	85
1998	2285002015	Dsl - Railway Maintenance	16	25	17.50	172
1998	2285002015	Dsl - Railway Maintenance	25	40	33.80	498
1998	2285002015	Dsl - Railway Maintenance	40	50	44.90	628
1998	2285002015	Dsl - Railway Maintenance	50	100	71.51	2321
1998	2285002015	Dsl - Railway Maintenance	100	175	130.4	5315
1998	2285002015	Dsl - Railway Maintenance	175	300	222.9	1409
1998	2285002015	Dsl - Railway Maintenance	300	600	473.8	287
1998	2285002015	Dsl - Railway Maintenance	600	750	684.4	64
1998	2285002015	Dsl - Railway Maintenance	750	1000	892.3	10
1998	2285002015	Dsl - Railway Maintenance	1000	1500	1243	23
1998	2285002015	Dsl - Railway Maintenance	1500	2000	1800	4
1998	2285004015	4-Str Railway Maintenance	1	3	3	70
1998	2285004015	4-Str Railway Maintenance	3	6	3.52	2238
1998	2285004015	4-Str Railway Maintenance	6	11	6.59	9202
1998	2285004015	4-Str Railway Maintenance	11	16	12.07	165
1998	2285004015	4-Str Railway Maintenance	16	25	18.19	421
1998	2285004015	4-Str Railway Maintenance	25	40	33.15	131
1998	2285004015	4-Str Railway Maintenance	100	175	113	1
1998	2285006015	LPG - Railway Maintenance	25	40	33.15	131
1998	2285006015	LPG - Railway Maintenance	100	175	113	1

- 1 Inputs for ATV's and offroad motorcycles are set to allow calculations based on g/mile emission factors instead of g/bhp-hr. Thus the hp values shown here do not represent the actual in-use hp of these engines.
- 2 The base year for swathers should be 1998. This will be corrected in the next version of NONROAD.
- 3 Diesel recreational marine populations are expected to change in next version due to different median life.

Appendix B

Engine Source Classification Code (SCC) Changes in NONROAD from NEVES

SCC	SCC Description in NONROAD	Changes from NEVES
22xx003060*	Industrial Equipment AC\Refrigeration	New Category
22xx005060	Farm Equipment Irrigation Sets	New Category
22xx009010	Other Underground Mining Equipment	New Category
22xx010010	Other Oil Field Equipment	New Category
2285002015	Diesel Railway Maintenance	New Category
2285003015	2-Stroke Gasoline Railway Maintenance	New Category
2285004015	4-Stroke Gasoline Railway Maintenance	New Category
2285006015	LPG Railway Maintenance	New Category
2285008015	CNG Railway Maintenance	New Category
22xx006005	Light Commercial Generator Sets	Engines Greater than 50 hp are included
22xx006010	Light Commercial Pumps	Engines Greater than 50 hp are included
22xx006015	Light Commercial Air Compressors	Engines Greater than 50 hp are included
22xx006020	Light Commercial Gas Compressors	Engines Greater than 50 hp are included
22xx006025	Light Commercial Welders	Engines Greater than 50 hp are included
22xx002012	Construction Equipment Concrete Pavers	Unused; population included in 22xx002003
22xx002003	Construction Equipment, Pavers	New Description (Asphalt + Concrete) Pavers
22xx007020	Logging Equipment Fellers/Bunchers	Unused; population included in 22xx007015
22xx008005	Airport Service Equipment	Changed SCC to 22xx003070 because terminal tractors are not Airport Service Equipment
22xx007015	Logging Equipment Forest Equipment	New Description (Skidders + Fellers/Bunchers)
22xx004010	Lawn & Garden Equipment Lawn mowers (Residential)	New Description
22xx004011	Lawn & Garden Equipment Lawn mowers (Commercial)	New SCC
22xx004015	Lawn & Garden Equipment Rotary Tillers < 6 HP (Residential)	New Power Level, Description
22xx004016	Lawn & Garden Equipment Rotary Tillers < 6 HP (Commercial)	New SCC
22xx004020	Lawn & Garden Equipment Chain Saws < 6 HP (Residential)	New Power Level, Description
22xx004021	Lawn & Garden Equipment Chain Saws < 6 HP (Commercial)	New SCC
22xx004025	Lawn & Garden Equipment Trimmers/Edgers/Brush Cutters (Residential)	New Description
22xx004026	Lawn & Garden Equipment Trimmers/Edgers/Brush Cutters (Commercial)	New SCC
22xx004030	Lawn & Garden Equipment Leafblowers/Vacuums (Residential)	New Description
22xx004031	Lawn & Garden Equipment Leafblowers/Vacuums (Commercial)	New SCC
22xx004035	Lawn & Garden Equipment Snowblowers (Residential)	New Description
22xx004036	Lawn & Garden Equipment Snowblowers (Commercial)	New SCC
22xx004040	Lawn & Garden Equipment Rear Engine Riding Mowers (Residential)	New Description
22xx004041	Lawn & Garden Equipment Rear Engine Riding Mowers (Commercial)	New SCC

SCC	SCC Description in NONROAD	Changes from NEVES
22xx004045	Lawn & Garden Equipment Front Mowers (Residential)	New Description
22xx004046	Lawn & Garden Equipment Front Mowers (Commercial)	New SCC
22xx004050	Lawn & Garden Equipment Shredders < 6 HP (Residential)	New Power Level, Description
22xx004051	Lawn & Garden Equipment Shredders < 6 HP (Commercial)	New SCC
22xx004055	Lawn & Garden Equipment Lawn & Garden Tractors (Residential)	New Description
22xx004056	Lawn & Garden Equipment Lawn & Garden Tractors (Commercial)	New SCC
22xx004060	Lawn & Garden Equipment Wood Splitters (Residential)	New Description
22xx004061	Lawn & Garden Equipment Wood Splitters (Commercial)	New SCC
22xx004065	Lawn & Garden Equipment Chippers/Stump Grinders (Residential)	New Description
22xx004066	Lawn & Garden Equipment Chippers/Stump Grinders (Commercial)	New SCC
22xx004070	Lawn & Garden Equipment Commercial Turf Equipment (Residential)	Unused; no 'residential' commercial turf equipment
22xx004071	Lawn & Garden Equipment Commercial Turf Equipment (Commercial)	New SCC
22xx004075	Lawn & Garden Equipment Other Lawn & Garden Equipment (Residential)	New Description
22xx004076	Lawn & Garden Equipment Other Lawn & Garden Equipment (Commercial)	New SCC
22xx002069	Construction Equipment Crawler Dozer	New Description (Changed from Tractor to Dozer)
22xx004015	Lawn & Garden Equipment Rotary Tillers < 6 HP	New Power Level
22xx007005	Logging Equipment Chain Saws > 6 HP	New Power Level
22xx007010	Logging Equipment Shredders > 6 HP	New Power Level
2282005010	Recreational Pleasure Craft, Gasoline 2-Stroke Outboards	Includes 2 and 4-stroke engines
2282005015	Recreational Pleasure Craft, Gasoline 2-stroke Personal Water Craft	New Description (Changed from Sterndrive to Personal Water Craft) Primarily 2-stroke
2282010005	Recreational Pleasure Craft, Gasoline 4-Stroke Inboards	Includes 2 and 4-stroke engines
2282010015	Recreational Pleasure Craft, Gasoline 4-Stroke Sterndrive	Unused
2282010010	Recreational Pleasure Craft, Gasoline 4-Stroke Outboard	Unused (included in 2282005010 as a technical type)
2282005020	Recreational Pleasure Craft, Gasoline 2-Stroke Sailboat Aux. Inboard	Unused (included in 4-stroke Inboard)
2282005025	Mobile Sources Marine Vessels, Recreational Pleasure Craft, Gasoline 2-Stroke Sailboat Aux. Outboard	Unused (included in 4-stroke Outboard)
2282010020	Recreational Pleasure Craft, Gasoline 4-Stroke Sailboat Aux. Inboard	Unused (included in 4-stroke Inboard)
2282010025	Recreational Pleasure Craft, Gasoline 4-Stroke Sailboat Aux. Outboard	Unused (included in 4-stroke Outboard)
2282005005	Recreational Pleasure Craft, Gasoline 2-Stroke Inboards	Unused (included in 2282010005 as a technical type)
2282020015	Recreational Pleasure Craft, Diesel Sterndrive	Unused (included in 2282020005)
2282020020	Recreational Pleasure Craft, Diesel Sailboat Aux. Inboard	Unused (included in 2282020025)

* The “xx” denotes that all fuel types (diesel (“70”), 2-stroke gasoline (“60”), 4-stroke gasoline (“65”), LPG (“67”), and CNG (“68”) engines) are included with the new or altered application categories.

Appendix C

The conversion from PSR applications to SCC categories.

SCC	SCC Description	PSR Code	PSR Description
22xx001010	Recreational Vehicles Motorcycles: Off-Road		Included in 22xx001030
22xx001020	Recreational Vehicles Snowmobiles	71	Snowmobile
22xx001030	Recreational Vehicles All Terrain Vehicles	91	All-Terrain Vehicles
22xx001040	Recreational Vehicles Minibikes	93	Mini-Bikes
22xx001050	Recreational Vehicles Golf Carts	94	Golf Carts
22xx001060	Recreational Vehicles Specialty Vehicle Carts [diesel now also includes PSR "Utility Vehicle" sales category]	62 +32	Specialty Veh./Carts
22xx002003	Construction Equipment Asphalt Pavers	41	Pavers
22xx002006	Construction Equipment Tampers/Rammers	95	Tampers/Rammer
22xx002009	Construction Equipment Plate Compactors	61	Plate Compactors
22xx002012	Construction Equipment Concrete Pavers		Unused (included in 22xx002003)
22xx002015	Construction Equipment Rollers	39	Rollers
22xx002018	Construction Equipment Scrapers	29	Scrapers
22xx002021	Construction Equipment Paving Equipment	35	Paving Equipment
22xx002024	Construction Equipment Surfacing Equipment	23	Surfacing Equipment
22xx002027	Construction Equipment Signal Boards	73	Light Plants
22xx002030	Construction Equipment Trenchers	42	Trenchers
22xx002033	Construction Equipment Bore/Drill Rigs	37	Bore/Drill Rigs
22xx002036	Construction Equipment Excavators	28	Excavators
22xx002039	Construction Equipment Concrete/Industrial Saws	77	Concrete/Ind Saws
22xx002042	Construction Equipment Cement & Mortar Mixers	57	Cem/Mtr Mixers
22xx002045	Construction Equipment Cranes	27	Cranes
22xx002048	Construction Equipment Graders	30	Graders
22xx002051	Construction Equipment Off-highway Trucks	40	Off-Highway Truck
22xx002054	Construction Equipment Crushing/Proc. Equipment	34	Crush/Proc Equipment
22xx002057	Construction Equipment Rough Terrain Forklifts	84	Rough Terrain Forklifts
22xx002060	Construction Equipment Rubber Tire Loaders	33	R/T Loader
22xx001060	[was Rubber Tire Dozers 22xx002063. EPA now combines #32 with #62 Specialty Vehicle Carts above]	32	Utility Vehicles
22xx002066	Construction Equipment Tractors/Loaders/Backhoes	43	Tractor\Loader\ Backhoe
22xx002069	Construction Equipment Crawler Dozer	31	Crawler Dozers
22xx002072	Construction Equipment Skid Steer Loaders	38	S/S Loader
22xx002075	Construction Equipment Off-Highway Tractors	68	Off-Hwy Tractors
22xx002078	Construction Equipment Dumpers/Tenders	60	Dumpers/Tenders
22xx002081	Construction Equipment Other Construction Equipment	36	Other Construction
22xx003010	Industrial Equipment Aerial Lifts	64	Aerial Lifts
22xx003020	Industrial Equipment Forklifts	18	Forklifts
22xx003030	Industrial Equipment Sweepers/Scrubbers	21	Scrubbers/ Sweepers
22xx003040	Industrial Equipment Other General Industrial Equipment	74	Other General Industrial
22xx003050	Industrial Equipment Other Material Handling Equipment	19	Other Material Handling
22xx003060	Industrial Equipment AC\Refrigeration	14	Refrigeration/AC
22xx003070	Industrial Equipment Terminal Tractors	16	Terminal Tractors
22xx004010	Lawn & Garden Equipment Lawn mowers (Residential)	65	Lawn Mowers
22xx004011	Lawn & Garden Equipment Lawn mowers (Commercial)	65	Lawn Mowers
22xx004015	Lawn & Garden Equipment Rotary Tillers < 6 HP (Residential)	59	Tillers
22xx004016	as above except (Commercial)	59	Tillers

SCC	SCC Description	PSR Code	PSR Description
22xx004020	Lawn & Garden Equipment Chain Saws < 6 HP (Residential)	70	Chainsaws
22xx004021	as above except (Commercial)	70	Chainsaws
22xx004025	Lawn & Garden Equipment Trimmers/Edgers/Brush Cutters (Residential)	53	Trimmer/Edger/ Cutter
22xx004026	as above except (Commercial)	53	Trimmer/Edger/ Cutter
22xx004030	Lawn & Garden Equipment Leafblowers/Vacuums (Residential)	66	Leaf Blower/Vac
22xx004031	as above except (Commercial)	66	Leaf Blower/Vac
22xx004035	Lawn & Garden Equipment Snowblowers (Residential)	56	Snowblower
22xx004036	as above except (Commercial)	56	Snowblower
22xx004040	Lawn & Garden Equipment Rear Engine Riding Mowers (Residential)	82	Rear Engine Rider
22xx004041	as above except (Commercial)	82	Rear Engine Rider
22xx004045	Lawn & Garden Equipment Front Mowers (Residential)	88	Front Mowers
22xx004046	as above except (Commercial) [diesel versions are now referred to as "Commercial Mowers"]	88	Front Mowers
22xx004050	Lawn & Garden Equipment Shredders < 6 HP (Residential)	96	Shredders
22xx004051	as above except (Commercial)	96	Shredders
22xx004055	Lawn & Garden Equipment Lawn & Garden Tractors (Residential)	63	Lawn & Garden Tractor
22xx004056	as above except (Commercial)	63	Lawn & Garden Tractor
22xx004060	Lawn & Garden Equipment Wood Splitters (Residential)	75	Wood Splitter
22xx004061	as above except (Commercial)	75	Wood Splitter
22xx004065	Lawn & Garden Equipment Chippers/Stump Grinders (Residential)	26	Chippers/ Grinders
22xx004066	as above except (Commercial)	26	Chippers/ Grinders
22xx004070	Lawn & Garden Equipment Commercial Turf Equipment (Residential)		Unused
22xx004071	as above except (Commercial)	67	Commercial Turf
22xx004075	Lawn & Garden Equipment Other Lawn & Garden Equipment (Residential)	76	Other Lawn Garden
22xx004076	as above except (Commercial)	76	Other Lawn Garden
22xx005010	Farm Equipment 2-Wheel Tractors	98	2-Wheel Tractors
22xx005015	Farm Equipment Agricultural Tractors	45	Agricultural Tractor
22xx005020	Farm Equipment Combines	47	Combines
22xx005025	Farm Equipment Balers	49	Balers
22xx005030	Farm Equipment Agricultural Mowers	55	Agricultural Mowers
22xx005035	Farm Equipment Sprayers	69	Sprayers
22xx005040	Farm Equipment Tillers > 6 HP	59	Tillers
22xx005045	Farm Equipment Swathers	48	Swathers
22xx005050	Farm Equipment Hydro Power Units	85	Hydro Power Unit
22xx005055	Farm Equipment Other Agricultural Equipment	46	Other Ag Equipment
22xx005060	Farm Equipment Irrigation Sets	44	Irrigation Sets
22xx006005	Light Commercial Generator Sets	9	Generator Sets
22xx006010	Light Commercial Pumps	11	Pumps
22xx006015	Light Commercial Air Compressors	10	Air Compressors
22xx006020	Light Commercial Gas Compressors	89	Gas Compressors
22xx006025	Light Commercial Welders	17	Welders
22xx006030	Light Commercial Pressure Washers	58	Pressure Washer
22xx007005	Logging Equipment Chain Saws > 6 HP	70	Chainsaws
22xx007010	Logging Equipment Shredders > 6 HP	96	Shredders
22xx007015	Logging Equipment Skidders	24	Forest Equipment
22xx007020	Logging Equipment Fellers/Bunchers		Unused (included in 22xx007015)
22xx008005	Airport Service Equipment Airport Support Equipment	81	Aircraft Support
22xx008010	Airport Service Equipment Terminal Tractors		Unused
22xx009010	Other Underground Mining Equipment	13	Underground Mine Equipment
22xx010010	Other Oil Field Equipment	12	Oil Field Equipment

SCC	SCC Description	PSR Code	PSR Description
22820xx005	Recreational Pleasure Craft, Inboards	50	Powerboats
22820xx010	Recreational Pleasure Craft, Outboards	99	Outboard Motors
2282005015	Pleasure Craft, Gasoline Personal Water Craft	92	New SCC Description
22820xx020 22820xx025	Pleasure Craft, Sailboat Aux. Outboard	79	Sailboat Aux. Unused
228500x015	Railway Maintenance	80	Railway Maintenance