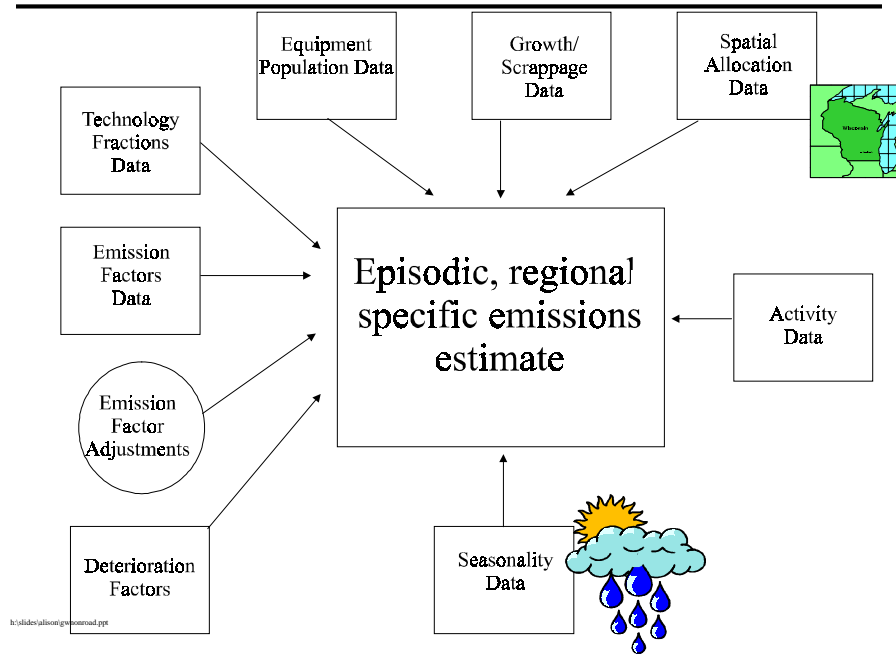


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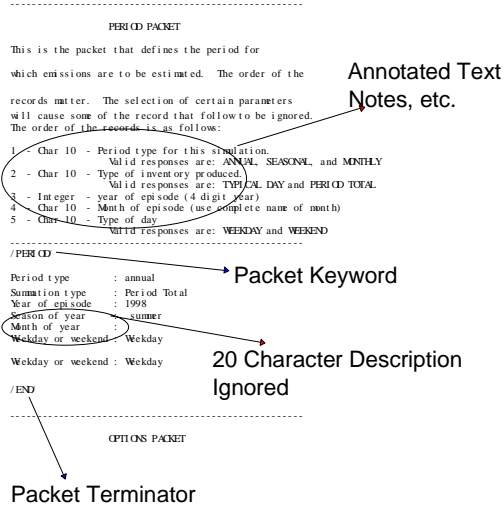


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PACKET STRUCTURE

- Packet begins with packet identifier “/KEYWORD/”.
- Packet ends with packet terminator “/END/”.
- Mixed case is supported.
- Packets can appear in any order.
- Any text (notes, caveats, etc.) can appear between packets.
- Some packets have indeterminate number of records.
- In most cases, the first 20 characters of a record are ignored.

Example of Packet Structure



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BEST MATCH CRITERIA

- State County Code:
 - Specific County 06031
 - State 06000
 - Entire US 00000

- Source Category Code:
 - Specific Equipment type 2265004001
 - Source Classification 2265004000
 - Fuel type 2265000000

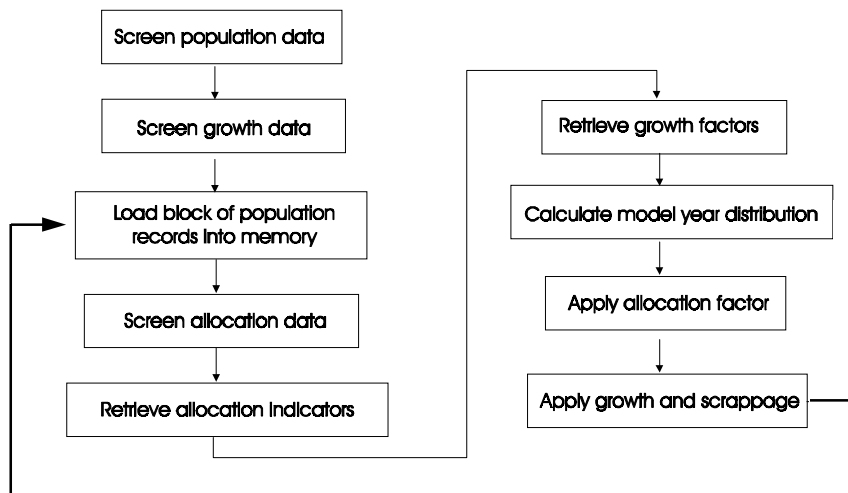
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BEST MATCH CRITERIA (concluded)

- Technology Type:
 - Specific Technology Type: G2N2
 - Global Tech Type: ALL
- Horsepower Range:
 - Smallest range containing the average HP of the equipment
For example: For a 5 HP lawnmower the range of 0 to 25 is a better match than the range of 0 to 500

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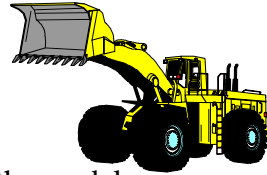
PROCESSING EQUIPMENT POPULATION



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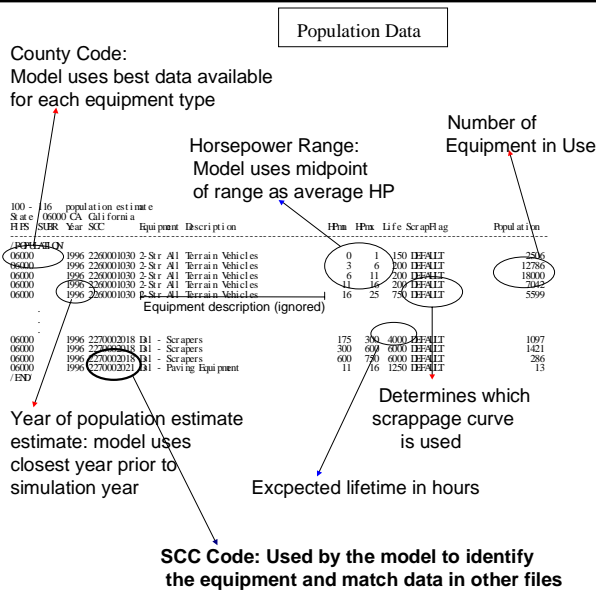
POPULATION DATA



- Drives the rest of the model
- Must correspond to HP ranges coded into the model
- Model uses best data it can find for specified region
- Data is screened and sorted and written to a temporary file
- When processing, data is read into memory one block at a time (all records with the same SCC)

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ALLOCATION DATA

- Allocation indicators, such as employees in manufacturing facilities, are used as a surrogate for spatial distribution of equipment populations
- Equipment types are mapped to allocation indicator using a “best match” criteria
- Allocation indicator code is arbitrary 3 character code, such as MFG for Manufacturing and LSC for Landscape and Horticultural Services

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ALLOCATION DATA (concluded)

- If multiple years are supplied, the model uses the closest year prior to the simulation year or interpolates between years
- The allocation factor is a linear combination of the ratio of the smaller region’s allocation value to the larger region’s allocation value
- Allocation supported for:
 - US to State
 - State to County
 - County to Subcounty

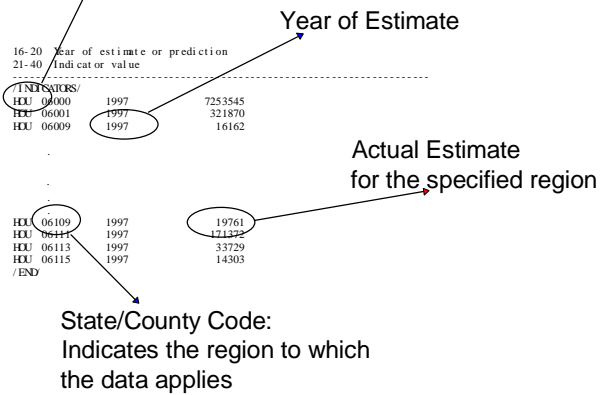


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Allocation Indicator Data

Allocation Indicator Code: Mapped to equipment types in the allocation.xrf file



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GROWTH FACTOR DATA

- Growth indicators are derived from historical growth in equipment population
- Equipment growth applied to base year model population
- Two years of data must be provided. Model uses the best two years to solve the exponential growth equation to get the annual growth rate

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GROWTH FACTORS DATA (concluded)

- Growth factor data can be specified for:
 - Equipment Type
 - Technology Type
 - Region Code
 - Horsepower Range
- Best match criteria applied in mapping growth codes

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Growth Code Mapping Data

County Code:
growth factor mapping
can be region specific

```
008 -- Transportation by air
009 -- Total Population
-----
/TND/FACTORS/
00000 001 2260001000 0 9999 ALL 2-Stroke Recreational Vehicles
00000 004 2260002000 0 9999 ALL 2-Stroke Construction Equipment
00000 005 2260003000 0 9999 ALL 2-Stroke Industrial Equipment
.
.
.
00000 007 2285000000 0 9999 ALL Railroad Equipment
/END
```

Horsepower range

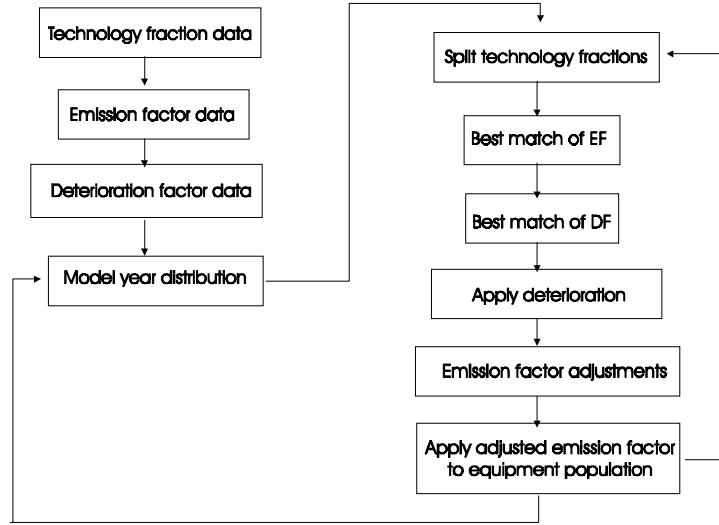
Equipment description (ignored)

Arbitrary 3-character
growth factor code

Technology type:
Must be either the
global ALL or match a
tech type in the tech
fractions file

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PROCESSING EMISSION FACTOR DATA



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Growth Factor Data

County code:
Model uses best match

Projected value

County code	Year	Code	Projected value
00000	1995	001	1000
00000	1995	002	1000
00000	2000	001	1079
00000	2000	002	1064
.	.	.	.
00000	2000	003	1027
00000	2010	001	1285
00000	2010	002	1167
00000	2025	001	1467
00000	2025	002	1305

Arbitrary growth code: must match code in cross reference file

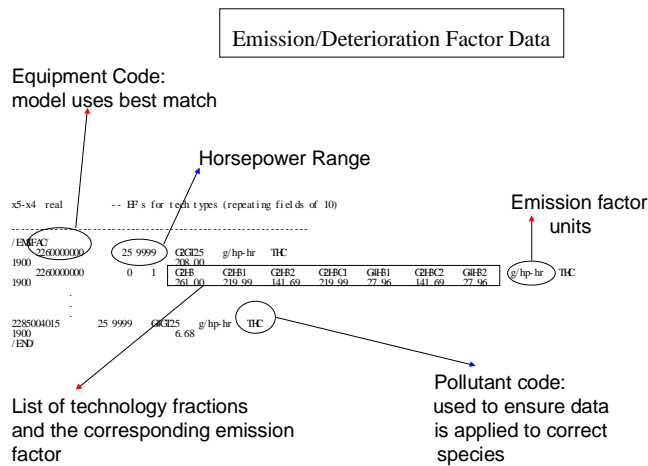
Year of estimate:
Model uses closest two
Year to base population year

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EMISSION/DETERIORATION FACTOR DATA

- One file for each pollutant
- Best match criteria applied to equipment code (SCC) and horsepower range
- Emission factor supplied by technology type code
- Multiple years can be supplied -- model uses best year prior to current model year

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TECHNOLOGY FRACTION DATA

- Technology codes are arbitrary codes of length 10
- Best match criteria applied to equipment code (SCC) and horsepower range
- Can phase-in technology types by supplying data for a succession of years
- Any equipment type not included in the technology fractions file is assumed to consist entirely of the default technology code of ALL

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Technology Fractions Data

Year: technology types are phased in

Fractions for each tech type (each in field of 10 chars)

Horsepower range

```
35 - end
-----
/TECH FRACTION
2240000000 0 9999 C2HC25
1900 1.000
2285000000 0 9999 G2HC25
1900 1.000
2240000000 0 1
1900 1.000
1996 0.500
1997 0.000
2001 0.000
2002 0.000
2003 0.000
2004 0.000
...
2285004013 25 9999 G2HC25
1900 1.000
/END
```

C2HC	C2HC1	C2HC2	C2HC3	G2HC1	G2HC2	G2HC3
1.000	0.000	0.000	0.000	0.000	0.000	0.000
0.500	0.495	0.000	0.005	0.000	0.000	0.000
0.000	0.990	0.000	0.010	0.000	0.000	0.000
0.000	0.792	0.198	0.008	0.000	0.002	0.000
0.000	0.594	0.396	0.006	0.000	0.004	0.000
0.000	0.297	0.693	0.003	0.000	0.007	0.000
0.000	0.000	0.990	0.000	0.000	0.010	0.000

Equipment code: Model uses best match

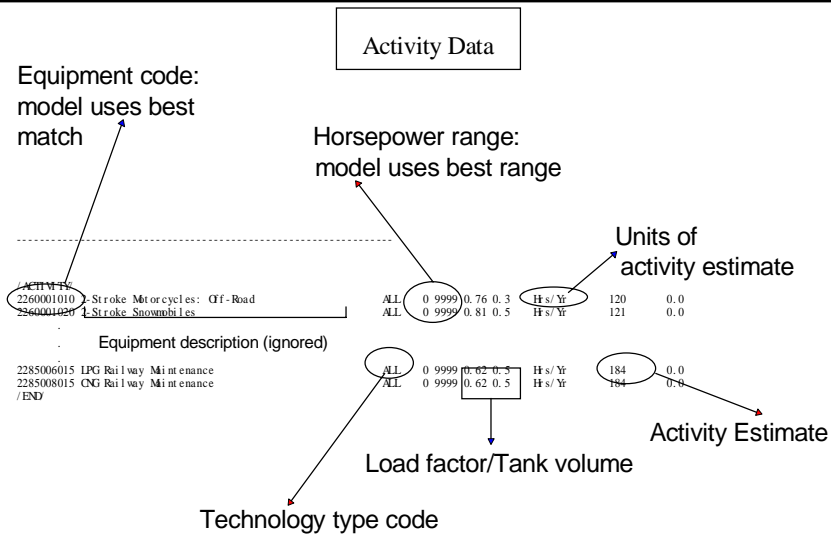
List of tech types and corresponding tech fractions

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ACTIVITY DATA

- Best match criteria applied to equipment code, technology type code, and horsepower range
- Can provide region specific activity by specifying a region code
- Activity estimates can be hrs/year of use or hrs/day of use
- Activity file also contains the load factor and tank volume data

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SEASONALITY DATA

- Temporal distribution of activity provided for:
 - Months of Year
 - Days of Week
- Factors can be supplied for specific regions or can be nation-wide
- Best match criteria applied to equipment code
- Day-of-week data is for typical weekday and typical weekend-day

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ENVIRON

Region Definition Data

User defined region code:
Used to identify the region
in other data files

/REGIONS			
SE	Southeast	01000	Alabam
MW	Great Lakes/Mdwest	02000	Alaska
SW	Southwest	04000	Arizona
SC	South Central	05000	Arkansas
WST	West Coast	06000	California
Region description (ignored)			
CE	Central East	54000	West Virginia
MW	Great Lakes/Mdwest	55000	Wisconsin
CW	Central West	56000	Woming
/END			

State/county description (not used)

State/County Code:
Model uses best match

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Seasonality Data

Region code:
Must match a code
in region definition file

Region Code	Equipment Code	Description	01	02	03	04	05	06	07	08	09	10	11	12
WEST	225000000	Average	0.080	0.080	0.074	0.074	0.074	0.105	0.105	0.105	0.074	0.074	0.074	0.080
CE	2260001020	Snowblowers / Snowmobiles	0.333	0.333	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.333
WEST	2270008000	Airport Service	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083
WEST	2282000000	Recreational Mrine	0.023	0.023	0.075	0.075	0.075	0.160	0.160	0.160	0.075	0.075	0.075	0.023

Fraction of annual activity in each month

Equipment code:
Model uses best match