Point and Area Source Growth Factor Recommendations

Pechan recommends that LADCO utilize the empirically-derived estimation forecasting approach for the following emission activities:

Surface Coating
Architectural Coatings
Wood Furniture
Miscellaneous Manufacturing
Electronic and Other Electrical

Consumer/Commercial Solvents
All FIFRA Related Products
All Coatings and Related Products

Livestock
Swine Production Composite
Cattle and Calves Waste Emissions, Milk Cows
Poultry Waste Emissions, Layers
Cattle and Calves Waste Emissions, Heifers/Heifer Calves

Gasoline Marketing
Stage 2: Total

Pulp and Paper
Plywood Operations, Waferboard Dryer
Sulfite Pulping

Pechan specifically recommends the use of the empirically-determined equations and state-level forecast data for the REMI variables displayed in Table II-3 of the Task 2 report to forecast these emission activities.[1] For Surface Coating-Architectural Coatings, Pechan recommends that the output of the equation be adjusted for forecasts of the proportion of total coatings that are solvent based in each projection year (from the Freedonia Group/Pechan extrapolations).

For all other stationary point and area source non-energy emission activities of interest, Pechan recommends that a growth surrogate indicator be assigned from version 5.5 of REMI's state-level economic models (i.e., the models used to support emission forecasts for the Clean Air Interstate Rule). Pechan will utilize the REMI growth indicator identified in Table II-4 of the Task 2 report for all emission activities for which the calculated MAD value in Table II-4 is 20 or below. For other non-energy activities, Pechan will select an indicator by comparing MAD values for alternative REMI indicators that Pechan will identify. The REMI growth indicators provide state-level growth rates.

For all stationary point and area source energy emission activities of interest, Pechan recommends that a growth surrogate indicator be assigned from the 2004 Annual Energy Outlook. Pechan will utilize the AEO growth from Table II-4 of the Task 2 report for all emission activities for which the calculated MAD value in Table II-4 is 20 or below. For other energy activities, Pechan will select an indicator by

[1]Pechan will use county-level population forecast data in these equations to the extent that these data are available from the Midwest RPO states.

comparing MAD values for any alternative AEO indicators that Pechan can identify. The AEO generally provides energy forecasts on a regional basis (i.e., the same growth rate would be applied to each Midwest RPO state because each of these states is included in the DOE's East North Central division).

LADCO also requested that Pechan provide an evaluation of the potential for identifying future solvent chemical consumption/substitution trends due to employee health concerns (e.g., elimination/reduction in toluene and acetone consumption). Pechan recommends that relevant records from the April 2003 Freedonia report "Solvents: Green & Conventional to 2007," be purchased for information relevant to this issue. This report analyzes the U.S. solvents industry, presenting historical data for 1992, 1997 and 2002 and forecasts to 2007 and 2012 by product (e.g., alcohols, hydrocarbons, ethers, ketones, esters, chlorinated solvents, propylene glycol, terpenes, butanediol, vegetable oils, tetrahydrofuran, hydrogen peroxide). In addition to purchasing relevant information from Freedonia, Pechan suggests that additional information may be available from contacting trade associations such as the Halogenated Solvents Industry Alliance and the Synthetic Organic Chemical Manufacturers Association.

Nonroad Mobile Growth Factor Recommendations

For commercial marine and locomotive source categories, Pechan recommends the use of fuel consumption projections as published in the Energy Information Administration (EIA)'s *Annual Energy Outlook*. The specific growth rates applied will depend on the final list of SCCs for these categories included in the Midwest RPO state inventories. Because the DOE transportation sector fuel projections for the chosen indicator categories are available only on a national basis, Pechan will regionalize the projections based on growth in the Water Transportation sector and the Railroad Transportation sector in the Midwest RPO states relative to national growth in each sector as determined from REMI's economic models.

Growth factors in NONROAD2004 are based on national, historical changes in fuel-specific equipment populations. Pechan acknowledges that the empirically-derived forecasting approach may result in a more defensible set of growth factors for NONROAD model categories. However, the resources to implement this approach for the NONROAD model categories of interest exceed this project's budget. In addition, Pechan has concerns about using growth rates that vary significantly from the model growth rates without fully evaluating the impact the revised growth rates may have on other related activity variables such as median life and scrappage rates. ~~Pechan recommends using the default NONROAD model growth rates for all model categories.~~

To address LADCO's comments concerning the use of NONROAD model national growth rates for priority categories in the Midwest RPO region, Pechan proposes to reflect regional/state differences in growth rates by adjusting the NONROAD model growth rates. These adjustments would be performed using state-level growth rates based on surrogate economic indicators believed to correlate

with activity for each category. The NONROAD priority categories, along with the proposed State-level economic indicator, are listed in the table below:

NONROAD Category	Growth Indicator
Gasoline lawn and garden equipment	Human population
Diesel construction	Construction sector employment
Diesel farm	Farm sector employment
Snowmobiles	Disposable personal income
Recreational marine	Disposable personal income

For example, the population of recreational marine equipment has been shown in a 1996 joint EPA/National Marine Manufacturers Association study to statistically correlate with disposable personal income. The NONROAD model national growth rate for recreational equipment from 2002 to 2020 is 1.76. Assume that the growth rate for this same time period as calculated by REMI for disposable personal income in Michigan is 1.1, while the REMI national growth rate for disposable personal income is 1.3. Using these values, the revised State-level growth rate for Michigan would be 1.48 (i.e., 1.1 ÷ 1.3, and multiplied by 1.76.). Pechan will calculate and incorporate revised growth rates into the NONROAD model NATION.GRW file for all Midwest RPO States.

Onroad Mobile Source Growth Factor Recommendations

For projecting VMT, Pechan recommends developing VMT growth factors using the draft Section 812 approach. To make these projections as representative as possible of VMT growth in the Midwest RPO states, Pechan recommends replacing the REMI state population projections in this approach with county-level population projections from each of the five Midwest RPO states, if these are available. Assuming that the 2002 base year VMT for the Midwest RPO states will only be available for eight or twelve distinct vehicle types (as opposed to the 28 MOBILE6 vehicle types), we propose to aggregate the MOBILE6 VMT fraction data from the 28 vehicle categories to either eight or twelve vehicle categories to be compatible with the LADCO base year VMT information. The growth factors would then differ by the selected vehicle categories as well as the level of geographic distinction of the population projections. It is assumed that LADCO will collect the MPO VMT growth factors and that these would supersede VMT growth factors prepared using the draft Section 812 projection methodology.