

**STUDY DESIGN
TO DEVELOP GRIDDED MOBILE SOURCE EMISSIONS
INVENTORIES IN SUPPORT OF THE COASTAL OXIDANT ASSESSMENT
FOR THE SOUTHEAST TEXAS PROJECT**

by

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The purpose of this study design is to describe the work tasks that will need to be performed and products that will need to be produced in preparing mobile source emissions inventories in support of the Coastal Oxidant Assessment for Southeast Texas (COAST) Project.

MAJOR TASK 1: Develop Vehicle Miles Traveled (VMT) Mix for Eight Vehicle Types.

Task 1a: Select vehicle classification count locations and specifications:

1. Vehicle classification counts will be made at the 34 locations listed. The classifications will be made manually or using AVC equipment depending on the physical layout of the site and the availability of AVC equipment.

| <u>Site Number</u> | <u>County</u> | <u>Roadway</u> | <u>Location</u> |
|--------------------|---------------|----------------|--------------------------------|
| L-88 | Harris | US 90 | NE of Houston |
| LX-2026 | Liberty | SH-146 | S of Rye |
| LX-2027 | Hardin | SH-105 | E of Moss Hill |
| LX-2028 | Hardin | US 69 | SE of Kountze |
| M-917 | Fort Bend | SH-6 | SW of Houston |
| M-1038 | Liberty | SH-146 | At SH-105 SE of Livingston |
| M-1040 | Brazoria | SH-35 | At FM-1459 SW of West Columbia |
| M-1155 | Hardin | US-96 | E of Silsbee |
| M-1200 | Fort Bend | IH-10 | W of Harris Co. Line |
| M-1207 | Fort Bend | US-90A | SW of Sugar Land |
| M-1208 | Fort Bend | US-59 | SW of Houston |
| M-1209 | Brazoria | FM-1462 | At SH-36 NW of West Columbia |
| M-1214 | Liberty | FM-1413 | At SH-146 S of Dayton |
| M-1253 | Jefferson | IH-10 | Near Chambers Co. Line |
| MS-3 | Harris | US-290 | NW of Houston |
| M-1320 | Brazoria | SH-288 | S of Houston |

| | | | |
|----------|------------|----------|---------------------------|
| MS-86 | Hardin | FM-92 | N of Silsbee |
| MS-174 | Montgomery | US-59 | N of Humble |
| MS-203 | Brazoria | SH-288 | N of Angleton |
| HP-841 | Galveston | 53rd St. | SE of SH-87 Galveston |
| M-1211 | Harris | SH-35 | S of Houston |
| M-1212 | Harris | SH-146 | N of NASA 1 |
| M-1213 | Harris | SH-330 | E of Houston |
| M-1252 | Galveston | SH-6 | NW of Galveston |
| M-1303 | Jefferson | SH-87 | NE of Port Arthur |
| MA-316 | Harris | IH-45 | N of Houston |
| MS-107 | Harris | SH-146 | SW of Baytown (at tunnel) |
| MS-125 | Harris | IH-10 | E of Houston |
| MS-204 | Galveston | IH-45 | S end of Causeway Blvd. |
| Other(4) | Harris | Local | To be determined |

The sites listed are those where TxDOT conducted vehicle classification counts in 1992. TxDOT counts were made on Monday through Thursday. The 1992 TxDOT counts will be used for estimating weekday VMT mix, for quality control of any TTI conducted AVC counts, and for comparison of weekday VMT mix estimates with Saturday and Sunday VMT mix estimates.

The sites include:

| | |
|------------------------------------|----------|
| Rural Interstates | 2 |
| Rural Other Principal Arterial | 10 |
| Rural Minor Arterial | 1 |
| Rural Major Collector | 4 |
| Rural Minor Collector | 3 |
| Rural Local | 2 |
| Urban Interstate | 3 |
| Urban Other Freeway and Expressway | 2 |
| Urban Other Principal Arterial | 4 |
| Urban Minor Arterial | 1 |
| Urban Collector | 0 |
| Urban Local | <u>2</u> |
| Total | 34 |

- Manual vehicle classification counts will be made during daylight hours from 7 am to 8 pm on one Saturday and on one Sunday during July or August 1993.

3. Automatic vehicle classification (AVC) counts will be made for a minimum of 72 hours to include a Friday, Saturday, and Sunday during July or August. All AVCs will be field checked daily.
4. Vehicle time-of-day counts will be made simultaneously with all manual vehicle classification counts. Vehicle time-of-day counts at manual classification sites will be for a minimum of 72 hours to include a Friday, Saturday, and Sunday during July or August. Counters will be field checked daily.
5. At locations with mainlanes and frontage roads, only the mainlanes will be counted.

Task 1b: Perform vehicle classification counts and associated vehicle counts.

1. Manual classification counts will be made using the standard TxDOT vehicle classifications listed:

Passenger cars
 Trucks Single Unit
 Panel and pickup
 Other 2-axle
 3-axle
 4-axle or more
 Trucks Combination Semi-Trailer
 3-axle
 4-axle
 5-axle
 6-axle or more
 Trucks Combination Semi-Trailer/Trailer
 5-axle
 6-axle
 7-axle or more
 Buses
 Motorcycle

2. The AVC equipment is calibrated to classify vehicles into the standard FHWA 13 vehicle classifications listed:

Motorcycles
 Passenger cars
 Other 2-axle, 4-tire single unit vehicles
 Buses
 2-axle, 6-tire single unit trucks

- 3-axle single unit trucks
- 4- or more axle single unit trucks
- 4- or less axle single trailer trucks
- 5-axle single trailer trucks -- all
- 6- or more axle single trailer trucks
- 5- or less axle multitrailer trucks
- 6-axle multitrailer trucks
- 7- or more axle multitrailer trucks

3. Automated vehicle time-of-day counts will be conducted at the same location as the manual vehicle classification counts using Golden River counters or similar equipment.

Task 1c: Summarize the vehicle mix data.

1. Appropriate edit checks will be performed.
2. The vehicle classification counts will be converted to the eight EPA vehicle classifications listed using the methodology described in 3 below:

EPA Vehicle Classifications

| | |
|-------|---|
| LDGV | light-duty gasoline vehicles; |
| LDGT1 | light-duty gasoline trucks up to 6,000 pounds gross vehicle weight; |
| LDGT2 | light-duty gasoline trucks from 6,001 to 8,500 pounds gross vehicle weight; |
| HDGV | heavy-duty gasoline vehicles over 8,500 pounds gross vehicle weight; |
| LDDT | light-duty diesel trucks; |
| LDDV | light-duty diesel vehicles; |
| HDDV | heavy-duty diesel vehicles over 8,500 pounds gross vehicle weight; and |
| MC | motorcycles. |

3. The vehicle groups will be aggregated into five vehicle groups LDV, LDT, LDGT2, HDV, and MC. These five groups will then be disaggregated into the eight MOBILE5a vehicle groups using the MOBILE5a default values to separate LDV into LDGV and LDDV, LDT into LDGT1 and LDDT, and county-specific HDGV and HDDV vehicle registration data to separate HDV into HDGV and HDDV. The procedures used to group the classification counts are shown below:

Vehicle Classification Groups

| | |
|-------|--|
| LDV | 100% Passenger cars from vehicle classification counts |
| LDGV | 98% LDV (MOBILE5a default) |
| LDDV | 2% LDV (MOBILE5a default) |
| LDT1 | 80% Panel and pickup trucks from vehicle classification counts |
| LDGT1 | 97% LDT1 (MOBILE5a default) |
| LDDT | 3% LDT1 (MOBILE5a default) |
| LDGT2 | 20% Panel and pickup trucks from vehicle classification counts |
| | 20% Other 2-axle from vehicle classification counts |
| HDV | 80% Other 2-axle, plus remaining truck classifications |
| HDGV | % HDV (September 1, 1990, county-specific vehicle registration data) |
| HDDV | % HDV (September 1, 1990, county vehicle registration data) |
| MC | 100% Motorcycles and motor scooters from vehicle classification counts |

Note: The distribution of panel and pickup trucks between LDT1 and LDGT2 and other 2-axle trucks between LDGT2 and HDV is based on the professional judgment of TxDOT traffic data collection staff. TxDOT vehicle classification count procedures do not distinguish between gas and diesel trucks.

The distribution of HDV between HDGV and HDDV is shown below:

1990 County Vehicle Registration Data

| | HDDV | Percent | HDGV | Percent |
|------------|--------|---------|--------|---------|
| Hardin | 159 | 25.9 | 455 | 74.1 |
| Jefferson | 822 | 26.7 | 2,256 | 73.3 |
| Orange | 188 | 23.2 | 622 | 76.8 |
| Harris | 13,369 | 34.6 | 25,318 | 65.4 |
| Montgomery | 642 | 25.9 | 1,839 | 74.1 |
| Liberty | 405 | 31.0 | 901 | 69.0 |
| Chambers | 147 | 23.4 | 481 | 76.6 |
| Galveston | 449 | 25.4 | 1,320 | 74.6 |
| Brazoria | 692 | 24.4 | 2,145 | 75.6 |
| Ft. Bend | 657 | 31.7 | 1,413 | 68.3 |
| Waller | 69 | 13.3 | 449 | 86.7 |

4. The vehicle mix data will be summarized by roadway functional classification. The data will be totaled for each vehicle type before calculating the vehicle distribution by functional classification. The assumption is made that the distribution of VMT by vehicle type is the same as the distribution of the eight vehicle types observed. In addition to an estimate of the VMT mix for each functional classification, an estimate of the VMT mix for all functional classifications will be made. This later estimate will be made by weighting the vehicle classification data by the associated observed traffic volumes. This will allow the MOBILE5a model to be run with a single vehicle VMT mix input or with separate VMT mix inputs.
5. The vehicle classification data also will be used to develop axle factors to be applied to the time-of-day traffic counts described in Task 2 below. The new data will be compared with previous vehicle classification studies to refine axle factors. If supported by the data, separate axle factors for roadways classified as principal arterials, minor arterials, collectors, and local will be developed.

MAJOR TASK 2: Develop Time-of-Day Vehicle Distributions.

Task 2a: Select vehicle count locations and specifications.

1. Finalize locations where time-of-day vehicle counts will be made. The locations chosen will be a subset of the sites where TxDOT conducts annual 24-hour weekday counts as shown on TxDOT's Station Location Maps. The TxDOT 24-hour counts are Monday through Thursday counts and do not include Fridays, Saturdays, or Sundays.
2. Time-of-day vehicle counts will be made at the 40 locations listed.

| <u>Site Number</u> | <u>County</u> | <u>Roadway</u> | <u>Location</u> |
|--------------------|---------------|----------------|--------------------------------|
| H-141 | Brazoria | FM 2917 | E of FM 2403 SE of Alvin |
| H-11 | Fort Bend | FM 359 | W of FM 723 NW of Richmond |
| H-98 | Montgomery | FM 1314 | SE of Conroe on Road to Porter |
| H-60 | Waller | FM 359 | S of FM 529 N of Brookshire |

| | | | |
|-----------|------------------|----------------------|---|
| H-151 | Brazoria | SH 288 | (SH 227) S of FM 521 intersection N of Angleton |
| H-23 | Liberty | US 90 | E of FM 1909 E of Liberty |
| H-122 | Montgomery | US 59 | N of FM 1314 N of Porter |
| H-59 | Fort Bend | SH 36 | S of Rosenberg |
| H-66 | Montgomery | SH 105 | E of FM 1485 E of Conroe near Cut and Shoot |
| H-51 | Liberty | SH 321 | S of FM 686 N of Dayton |
| H-52 | Montgomery | FM 1097 | E of Willis |
| H-66 | Waller | FM 1887 | S of FM 3346 S of Hempstead |
| H-144 | Brazoria | FM 2004 | N of FM 2917 SE of Alvin |
| H-13-B | Galveston Island | Broadway | 32nd and 33rd |
| H-16 | Galveston Island | Seawall Blvd | W of 61st Street |
| H-13D | Galveston Island | 2nd Street | N of Mechanic St. |
| No Site # | Harris | Main Street | Between McKinney and Lamar |
| No Site # | Harris | Preston | Between Louisiana and Milam |
| No Site # | Harris | Lamar | Between Fannin and San Jacinto |
| No Site # | Montgomery | Gosling Road | Between Woodlands Parkway and Lake Woodlands Dr |
| No Site # | Harris | Trailwood Village Dr | S of Kingwood Dr |
| No Site # | Harris | Denmark | Between Hirsch and Glass, NE of US 59 north and IH 610 interchange in Houston |
| No Site # | Harris | Aspen | W of S Rice |
| No Site # | Harris | Newcastle | Between Waring and Staunton in Afton Oaks off Richmond in Houston |

| | | | |
|---------------|-----------|------------------------|---|
| No Site # | Harris | Charleston | E of Scott in S Houston about 1 to 2 miles south of TSU |
| H-100A | Jefferson | IH 10 | Beaumont in Jefferson County |
| H-44 | Orange | IH 10 | Between Vidor and Orange |
| H-29A or H-29 | Jefferson | SH 347 (Stadium) | Port Arthur |
| HP-30 | Jefferson | Phelan | Divided 4-lane west of IH-10 |
| H-3 or 3A | Orange | US 87 | N of FM 3247 at Cypress Bayou |
| H-81 | Jefferson | US 90 | Between Nome and China |
| HP-34 | Jefferson | SH 87 (16th St) | S of US 286 |
| HP-26 | Jefferson | 11th Street | Between Corley and Washington |
| T-15 | Orange | Business 90 (Green St) | Between 8th and 9th |
| H-30A | Hardin | US 287 | Hardin |
| H-109 | Jefferson | SH 105 | E of Bevil Oaks |
| HP-10 | Jefferson | Thomas | Port Arthur |
| HP-52 | Jefferson | Pearl | Between Bowie and Fannin |
| No Site # | Jefferson | New Orleans | Between 10th and 11th |
| H-23 | Orange | FM 105 | Rural |

The sites include:

| | |
|------------------------------------|----------|
| Rural Interstates | 1 |
| Rural Other Principal Arterial | 5 |
| Rural Minor Arterial | 4 |
| Rural Major Collector | 4 |
| Rural Minor Collector | 4 |
| Rural Local | 0 |
| Urban Interstate | 0 |
| Urban Other Freeway and Expressway | 0 |
| Urban Other Principal Arterial | 9 |
| Urban Minor Arterial | 4 |
| Urban Collector | 4 |
| Urban Local | <u>5</u> |
| Total | 40 |

3. All time-of-day vehicle counts will be made for a minimum of 72 hours including a Friday, Saturday, and Sunday during July or August. Counters will be field checked daily.
4. Time-of-day vehicle counts will be recorded in 15 minute time increments.
5. All time-of-day count data will be converted to Central Standard Time.

Task 2b: Conduct the time-of-day vehicle counts specified in Task 2a.

Task 2c: Summarize the time-of-day vehicle count data.

1. Appropriate edit checks will be performed. Counts will be compared to the Roadway Inventory (RI-2T) historical record for that site. Acceptance criteria will be developed. If not accepted, the count will be redone.
2. Axle factors will be developed from the classification counts in Task 1. Separate axle factors will be developed for Thursdays, Fridays, Saturdays, and Sundays. TxDOT's District-level axle factors will also be obtained. The appropriate axle factor will be applied to each count.
3. The time-of-day vehicle counts will be uploaded to computer files and summarized into 24 one-hour counts. (TTI assumes that TACB's UAM modeling will be done on an hourly basis.) The hourly counts will be summarized by day-of-week, by functional classification, and by area type. Hourly distribution factors will be calculated. These hourly distribution factors will be applied to traffic assignment link data as discussed below.

Task 2d: Supplement the time-of-day vehicle count data with historic TTI count data.

1. TTI has performed about 5,300 traffic counts at approximately 1,900 locations primarily in Harris County since September 1989. Most of these are time-of-day counts and many include Saturday and Sunday counts. A high percentage of the counts are on freeway ramps. The counts are axle counts divided by two and do not include truck or seasonal variation correction factors.

2. The TTI vehicle count file will be used to calculate time-of-day vehicle distributions by day-of-week, by functional classification, by area type, and by county for July and August.

Task 2e: Supplement the time-of-day vehicle count data with TxDOT ATR data.

1. TxDOT has 16 ATR stations located within the 11-county area that will be modeled. ATR stations provide hourly counts on a continuous basis 365 days a year. The ATR counts will be obtained for these 16 ATR stations for July and August 1991 and 1992.
2. The ATR counts will be used to calculate time-of-day vehicle distributions by day-of-week and by functional classification by county for July and August.

MAJOR TASK 3: Develop County Vehicle Miles Traveled (VMT) Control Totals.

Task 3a: Estimate 1993 county VMT from HPMS data.

1. HPMS county data for 1986-1992 will be obtained from TxDOT. (HPMS 1992 data are expected to be available by December 1993.)
2. Using the 1986-1992 HPMS data, county VMT will be projected to 1993 using a linear least squares regression model. Local VMT will be treated separately from the other functional classifications. The 1993 HPMS-based VMT estimates will be used for county-level VMT control totals. This task provides for estimating 1993 county HPMS-based VMT control totals for the 62 counties included in the COAST study.

Task 3b: Apply day-of-week and monthly adjustment factors.

1. Using data from TxDOT's "Permanent Automatic Traffic Recorders 1992 Report," factors will be developed for converting HPMS-based average annual daily traffic (AADT) to average annual weekday (Monday through Thursday) travel, average annual Friday travel, average annual Saturday travel, and average annual Sunday travel. Factors will also be developed for converting AADT to July and August ADT. Appropriate automatic traffic recorder (ATR) locations will be selected for each county included in the COAST project area.

2. Using the day-of-week and monthly adjustment factors, county VMT control totals will be converted to July and August, Monday through Thursday, Friday, Saturday, and Sunday VMT control totals.
3. The final 1993 county HPMS-based VMT control totals will be provided to the TACB.
4. The final 1993 county HPMS-based VMT control totals also will be used to develop VMT adjustment factors for the 11 counties for which travel models will be used. These counties are listed below:

Beaumont-Port Arthur Travel Model
 Hardin County (partial)
 Jefferson County
 Orange County

Houston-Galveston Travel Model
 Brazoria County
 Chambers County
 Fort Bend County
 Galveston County
 Harris County
 Liberty County
 Montgomery County
 Waller County

5. The final 1993 HPMS-based VMT control totals will also be used for estimating mobile source emissions for those counties for which travel models will not be used. These counties are listed below:

| | |
|----------|-----------|
| Aransas | Kenedy |
| Austin | Kleberg |
| Bastrop | Lavaca |
| Bee | Lee |
| Bell | Leon |
| Brazos | Live Oak |
| Brooks | Madison |
| Burleson | Matagorda |
| Burnet | Milam |
| Caldwell | Newton |
| Calhoun | Nueces |
| Colorado | Polk |
| De Witt | Robertson |
| Falls | Refugio |

Fayette
Goliad
Gonzales
Grimes
Guadalupe
Hays
Houston
Jackson
Jasper
Jim Wells
Karnes

San Jacinto
San Patricio
Travis
Trinity
Tyler
Victoria
Walker
Washington
Wharton
Williamson
Wilson

MAJOR TASK 4: Modify Mobile Emissions Software to Produce Gridded Emissions Estimates.

- Task 4a: Develop and implement a method for preparing time-of-day diurnal emissions estimates.
- Task 4b: Translate network coordinate data from State Plane Coordinates to UTM Coordinates. This task will be closely coordinated with the TACB and TxDOT staff.
- Task 4c: Modify the mobile emissions software to produce time-of-day gridded emissions.
- Task 4d: Update the software user documentation and transmit the software and documentation to the TACB.

MAJOR TASK 5: Obtain the Traffic Assignment and Network for the Two Regions for 1993.

- Task 5a: Obtain the 1993 Houston-Galveston regional traffic assignment and network from H-GAC.
- Task 5b: Obtain data needed to relate Houston-Galveston link data and zones to grids for gridded emissions estimates.
- Task 5c: Obtain the 1993 Beaumont-Port Arthur regional traffic assignment and network from TxDOT.
(It is assumed that by the time these data are needed that TxDOT will have expanded the regional study to include all of Hardin County.)

Task 5d: Obtain data needed to relate Beaumont-Port Arthur link data and zones to grids for gridded emissions estimates.

MAJOR TASK 6: Prepare 1993 Gridded Mobile Source Emissions for the Houston-Galveston Eight-County Region for a Subject Summer Friday.

Task 6a: Prepare Friday factors and parameters needed to estimate VMT and speed by hour.

1. Set up and apply PREPIN to develop a preliminary estimate of the 24-hour VMT for a subject summer Friday.
 - a. Prepare the 24-hour inputs for the application of PREPIN to factor the AAWT link assignments to represent the subject summer Friday.
 - (1) Prepare the Seasonal Adjustment Factor (i.e., the SEAFAC records) for input to PREPIN using data from Task 3. The SEAFAC data are input by county and area type. It is proposed that the same seasonal adjustment factors employed in Task 3 for the HPMS data also be employed for this application.
 - (2) Prepare the zone-to-county equivalences (i.e., the county EQUALS records) and zone-to-area type equivalences (i.e., the AREA records) for input to PREPIN. These data will be obtained in Task 5.
 - (3) The zonal radii data (obtained in Task 5) will also be an input to PREPIN for estimating intrazonal travel.
 - (4) Prepare the HEADER records and other parameter records needed for the 24-hour application of PREPIN. The speed estimates produced by this application of PREPIN will be ignored. Hence, the Capacity Factors, Freeflow Speed Factors, the Delay Equation Parameters, and the Directional Split Factors will not be input.
 - b. Prepare the JCL for the application of PREPIN to develop the preliminary network-based estimate of the 24-hour VMT for the subject summer Friday.
 - c. Apply the PREPIN program.

2. Prepare scale factors by county to obtain desired county control totals.
 - a. The county scale factor records (i.e., the HPMFAC records) will be prepared by comparing the network-based 24-hour VMT estimates (developed in Step 1a of this task) with the desired 24-hour VMT control totals developed using HPMS data (under Task 3). There are eight counties in the Houston-Galveston study area. Hence, eight sets of HPMFAC records (i.e., one set for each county) will need to be prepared.
 - b. Re-apply the 24-hour PREPIN (using the HPMFAC records prepared in Step 2a) to verify that the scale factors produce the desired 24-hour VMT for the subject summer Friday.
3. Prepare the time-of-day PREPIN inputs to estimate the VMT and speeds for each of the 24 one-hour time periods.
 - a. The time-of-day volume factors by area type and functional classification (prepared in Task 2c) will be prepared for input to PREPIN. These factors specify the portion of the 24-hour travel expected to occur for a given one-hour period. There will be 24 sets of these factors prepared (i.e., a set for each of the 24 one-hour periods).
 - b. The time-of-day directional split estimates by area type and functional classification will be developed under Task 2c. These results will be entered into SPLIT records for input to PREPIN. There will be 24 sets of these factors prepared (i.e., a set for each of the 24 one-hour periods).
 - c. Prepare the hourly Capacity Factors (i.e., the CAPFAC records). These factors are computed for each functional classification and area type. The network data will be processed to determine the average 24-hour capacity per lane for each functional classification within each area type. The factors for each functional classification within each area type will then be computed by dividing the desired hourly capacity per lane by the network's average 24-hour capacity per lane. The same Capacity Factors will be used for each of the 24 one-hour periods. These factors will be used for the Friday, Saturday, and Sunday applications.
 - d. Prepare the Freeflow Speed Factors (i.e., the SPDFAC records). These factors are computed for each functional

classification and area type. The network data will be processed to determine the average 24-hour network input speed for each functional classification within each area type. The factors for each functional classification within each area type will then be computed by dividing the typical freeflow speed (as determined by consultation with the MPO) by the network's average 24-hour input speed. The same Freeflow Speed Factors will be used for each of the 24 one-hour periods. These factors will be used for the Friday, Saturday, and Sunday applications.

- e. Prepare the Delay Equation Parameters (i.e., the DELAY records). These parameters are specified by county and functional classification. The Dallas-Fort Worth speed model basically uses two sets of these parameters, one set for high-capacity facilities and one set for low-capacity facilities. This step essentially specifies which of these two sets of parameters will be used for each functional classification. The same delay equation parameters will be used for each of the 24 one-hour periods. These parameters will be used for the Friday, Saturday, and Sunday applications.
- f. The SEAFAC records (prepared for the 24-hour application in Step 1 of this task) and the HPMFAC records (prepared in Step 2 of this task) will be used for each of the 24 one-hour periods. Also, the same county EQUALS records and area type AREA records are used for all applications in the region.
- g. Prepare the HEADER records and parameter records for each of the 24 one-hour periods.

Task 6b: Prepare the MOBILE5 input data to estimate the emissions factors by hour for a typical Friday.

- 1. Prepare the hourly temperature estimates.
- 2. Prepare data needed for the hourly diurnal estimates.
- 3. Prepare other MOBILE5a inputs as needed using MOBILE5a set-ups and data provided by the TACB.

Task 6c: Prepare the gridded emissions estimates for each of the 24 one-hour periods for a typical Friday.

1. Set up and apply the emissions software for each of the 24 one-hour time periods (i.e., 24 applications of the emissions software).
 - a. Set up the JCL for each of the 24 one-hour applications of the emissions software.
 - b. Perform the 24 applications of the emissions software program for the region for the subject day.

Task 6d: Transmit the 24 data sets containing the gridded mobile source emissions estimates produced by the emissions software applications.

1. Prepare a tape cartridge of the 24 data sets containing the gridded mobile source emissions estimates produced by the emissions software applications. Also, include on the tape cartridge the data sets containing the emissions software set-ups used to produce the gridded mobile source emissions estimates.
2. Prepare a Technical Note describing the data being transmitted.
3. Transmit the Technical Note and tape cartridge to the TACB.

MAJOR TASK 7: Prepare 1993 Gridded Mobile Source Emissions for the Beaumont-Port Arthur Three-County Region for a Subject Summer Friday.

Task 7a: Prepare Friday factors and parameters needed to estimate VMT and speed by hour.

1. Set up and apply PREPIN to develop a preliminary estimate of the 24-hour VMT for a subject summer Friday.
 - a. Prepare the 24-hour inputs for the application of PREPIN to factor the AAWT link assignments to represent the subject summer Friday.
 - (1) Prepare the Seasonal Adjustment Factor (i.e., the SEAFAC records) for input to PREPIN using data from Task 3. The SEAFAC data are input by county and area type. It is proposed that the same seasonal adjustment factors employed in Task 3 for the HPMS data also be employed for this application.

- (2) Prepare the zone-to-county equivalences (i.e., the county EQUALS records) and zone-to-area type equivalences (i.e., the AREA records) for input to PREPIN. These data will be obtained in Task 5.
 - (3) The zonal radii data (obtained in Task 5) will also be an input to PREPIN for estimating intrazonal travel.
 - (4) Prepare the HEADER records and other parameter records needed for the 24-hour application of PREPIN. The speed estimates produced by this application of PREPIN will be ignored. Hence, the Capacity Factors, Freeflow Speed Factors, the Delay Equation Parameters and the Directional Split Factors will not be input.
- b. Prepare the JCL for the application of PREPIN to develop the preliminary network-based estimate of the 24-hour VMT for the subject summer Friday.
 - c. Apply the PREPIN program.
2. Prepare scale factors by county to obtain desired county control totals.
 - a. The county scale factor records (i.e., the HPMFAC records) will be prepared by comparing the network-based 24-hour VMT estimates (developed in Step 1a of this task) with the desired 24-hour VMT control totals developed using HPMS data (under Task 3). There are three counties in the Beaumont-Port Arthur Study Area. Hence, three sets of HPMFAC records (i.e., one set for each county) will need to be prepared.
 - b. Re-apply the 24-hour PREPIN (using the HPMFAC records prepared in Step 2a) to verify that the scale factors produce the desired 24-hour VMT for the subject summer Friday.
 3. Prepare the time-of-day PREPIN inputs to estimate the VMT and speeds for each of the 24 one-hour time periods.
 - a. The time-of-day volume factors by area type and functional classification (prepared in Task 2c) will be prepared for input to PREPIN. These factors specify the portion of the 24-hour travel expected to occur for a given one-hour period. There will be 24 sets of these factors prepared (i.e., a set for each of the 24 one-hour periods).

- b. The time-of-day directional split estimates by area type and functional classification will be developed under Task 2c. These results will be entered into SPLIT records for input to PREPIN. There will be 24 sets of these factors prepared (i.e., a set for each of the 24 one-hour periods).
- c. Prepare the hourly Capacity Factors (i.e., the CAPFAC records). These factors are computed for each functional classification and area type. The network data will be processed to determine the average 24-hour capacity per lane for each functional classification within each area type. The factors for each functional classification within each area type will then be computed by dividing the desired hourly capacity per lane by the network's average 24-hour capacity per lane. The same Capacity Factors will be used for each of the 24 one-hour periods. These factors will be used for the Friday, Saturday, and Sunday applications.
- d. Prepare the Freeflow Speed Factors (i.e., the SPDFAC records). These factors are computed for each functional classification and area type. The network data will be processed to determine the average 24-hour network input speed for each functional classification within each area type. The factors for each functional classification within each area type will then be computed by dividing the typical freeflow speed (as determined by consultation with the MPO) by the network's average 24-hour input speed. The same Freeflow Speed Factors will be used for each of the 24 one-hour periods. These factors will be used for the Friday, Saturday, and Sunday applications.
- e. Prepare the Delay Equation Parameters (i.e., the DELAY records). These parameters are specified by county and functional classification. The Dallas-Fort Worth speed model basically uses two sets of these parameters, one set for high-capacity facilities and one set for low-capacity facilities. This step essentially specifies which of these two sets of parameters will be used for each functional classification. The same delay equation parameters will be used for each of the 24 one-hour periods. These parameters will be used for the Friday, Saturday, and Sunday applications.
- f. The SEAFAC records (prepared for the 24-hour application in Step 1 of this task) and the HPMFAC records (prepared in

Step 2 of this task) will be used for each of the 24 one-hour periods. Also, the same county EQUALS records and area type AREA records are used for all applications in the region.

- g. Prepare the HEADER records and parameter records for each of the 24 one-hour periods.

Task 7b: Prepare the MOBILE5 input data to estimate the emissions factors by hour for a typical Friday.

1. Prepare the hourly temperature estimates.
2. Prepare data needed for the hourly diurnal estimates.
3. Prepare other MOBILE5a inputs as needed using MOBILE5a set-ups and data provided by the TACB.

Task 7c: Prepare the gridded emissions estimates for each of the 24 one-hour periods for a typical Friday.

1. Set up and apply the emissions software for each of the 24 one-hour time periods (i.e., 24 applications of the emissions software).
 - a. Set up the JCL for each of the 24 one-hour applications of the emissions software.
 - b. Perform the 24 applications of the emissions software program for the region for the subject day.

Task 7d: Transmit the 24 data sets containing the gridded mobile source emissions estimates produced by the emissions software applications.

1. Prepare a tape cartridge of the 24 data sets containing the gridded mobile source emissions estimates produced by the emissions software applications. Also, include on the tape cartridge the data sets containing the emissions software set-ups used to produce the gridded mobile source emissions estimates.
2. Prepare a Technical Note describing the data being transmitted.
3. Transmit the Technical Note and tape cartridge to the TACB.

MAJOR TASK 8: Prepare 1993 Gridded Mobile Source Emissions for the Houston-Galveston Eight-County Region for a Subject Summer Saturday.

Task 8a: Prepare Saturday factors and parameters needed to estimate VMT and speed by hour.

1. Set up and apply PREPIN to develop a preliminary estimate of the 24-hour VMT for a subject summer Saturday.
 - a. Prepare the 24-hour inputs for the application of PREPIN to factor the AAWT link assignments to represent the subject summer Saturday.
 - (1) Prepare the Seasonal Adjustment Factor (i.e., the SEAFAC records) for input to PREPIN using data from Task 3. The SEAFAC data are input by county and area type. It is proposed that the same seasonal adjustment factors employed in Task 3 for the HPMS data also be employed for this application.
 - (2) Use the same zone-to-county equivalences (i.e., the county EQUALS records) and zone-to-area type equivalences (i.e., the AREA records) for input to PREPIN that were used for the Saturday applications.
 - (3) The same zonal radii data (obtained in Task 5 and used in Task 6) will also be an input to PREPIN for the estimation of intrazonal travel.
 - (4) Prepare the HEADER records and other parameter records needed for the 24-hour application of PREPIN. The speed estimates produced by this application of PREPIN will be ignored. Hence, the Capacity Factors, Freeflow Speed Factors, the Delay Equation Parameters, and the Directional Split Factors will not be input.
 - b. Prepare the JCL for the application of PREPIN to develop the preliminary network-based estimate of the 24-hour VMT for the subject summer Saturday.
 - c. Apply the PREPIN program.
2. Prepare scale factors by county to obtain desired county control totals.

- a. The county scale factor records (i.e., the HPMFAC records) will be prepared by comparing the network-based 24-hour VMT estimates (developed in Step 1a of this task) with the desired 24-hour VMT control totals developed using HPMS data (under Task 3). There are eight counties in the Houston-Galveston study Area. Hence, eight sets of HPMFAC records (i.e., one set for each county) will need to be prepared.
 - b. Re-apply the 24-hour PREPIN (using the HPMFAC records prepared in Step 2a) to verify that the scale factors produce the desired 24-hour VMT for the subject summer Saturday.
3. Prepare the time-of-day PREPIN inputs to estimate the VMT and speeds for each of the 24 one-hour time periods.
- a. The time-of-day volume factors by area type and functional classification (prepared in Task 2c) will be prepared for input to PREPIN. These factors specify the portion of the 24-hour travel expected to occur for a given one-hour period. There will be 24 sets of these factors prepared (i.e., a set for each of the 24 one-hour periods).
 - b. The time-of-day directional split estimates by area type and functional classification will be developed under Task 2c. These results will be entered into SPLIT records for input to PREPIN. There will be 24 sets of these factors prepared (i.e., a set for each of the 24 one-hour periods).
 - c. Use the same hourly Capacity Factors (i.e., the CAPFAC records), the same Freeflow Speed Factors (i.e., the SPDFAC records), and the same Delay Equation Parameters (i.e., the DELAY records) that were used in Step 6.
 - d. The SEAFAC records (prepared for the 24-hour application in Step 1 of this task) and the HPMFAC records (prepared in Step 2 of this task) will be used for each of the 24 one-hour periods. Also, the same county EQUALS records and area type AREA records are used for all applications in the region.
 - e. Prepare the HEADER records and parameter records for each of the 24 one-hour periods.

Task 8b: Prepare the MOBILE5 input data to estimate the emissions factors by hour for a typical Saturday.

1. Prepare the hourly temperature estimates.
2. Prepare data needed for the hourly diurnal estimates.
3. Prepare other MOBILE5a inputs as needed using MOBILE5a set-ups and data provided by the TACB.

Task 8c: Prepare the gridded emissions estimates for each of the 24 one-hour periods for a typical Saturday.

1. Set up and apply the emissions software for each of the 24 one-hour time periods (i.e., 24 applications of the emissions software).
 - a. Set up the JCL for each of the 24 one-hour applications of the emissions software.
 - b. Perform the 24 applications of the emissions software program for the region for the subject day.

Task 8d: Transmit the 24 data sets containing the gridded mobile source emissions estimates produced by the emissions software applications.

1. Prepare a tape cartridge of the 24 data sets containing the gridded mobile source emissions estimates produced by the emissions software applications. Also, include on the tape cartridge the data sets containing the emissions software set-ups used to produce the gridded mobile source emissions estimates.
2. Prepare a Technical Note describing the data being transmitted.
3. Transmit the Technical Note and tape cartridge to the TACB.

MAJOR TASK 9: Prepare 1993 Gridded Mobile Source Emissions for the Beaumont-Port Arthur Three-County Region for a Subject Summer Saturday.

Task 9a: Prepare Saturday factors and parameters needed to estimate VMT and speed by hour.

1. Set up and apply PREPIN to develop a preliminary estimate of the 24-hour VMT for a subject summer Saturday.

- a. Prepare the 24-hour inputs for the application of PREPIN to factor the AAWT link assignments to represent the subject summer Saturday.
 - (1) Prepare the Seasonal Adjustment Factor (i.e., the SEAFAC records) for input to PREPIN using data from Task 3. The SEAFAC data are input by county and area type. It is proposed that the same seasonal adjustment factors employed in Task 3 for the HPMS data also be employed for this application.
 - (2) Use the same zone-to-county equivalences (i.e., the county EQUALS records) and zone-to-area type equivalences (i.e., the AREA records) for input to PREPIN that were used for the Friday applications.
 - (3) The same zonal radii data (obtained in Task 5 and used in Task 6) will also be an input to PREPIN for estimating intrazonal travel.
 - (4) Prepare the HEADER records and other parameter records needed for the 24-hour application of PREPIN. The speed estimates produced by this application of PREPIN will be ignored. Hence, the Capacity Factors, Freeflow Speed Factors, the Delay Equation Parameters, and the Directional Split Factors will not be input.
 - b. Prepare the JCL for the application of PREPIN to develop the preliminary network-based estimate of the 24-hour VMT for the subject summer Saturday.
 - c. Apply the PREPIN program.
2. Prepare scale factors by county to obtain desired county control totals.
 - a. The county scale factor records (i.e., the HPMFAC records) will be prepared by comparing the network-based 24-hour VMT estimates (developed in Step 1a of this task) with the desired 24-hour VMT control totals developed using HPMS data (under Task 3). There are three counties in the Beaumont-Port Arthur Study Area. Hence, three sets of HPMFAC records (i.e., one set for each county) will need to be prepared.

- b. Re-apply the 24-hour PREPIN (using the HPMFAC records prepared in Step 2a) to verify that the scale factors produce the desired 24-hour VMT for the subject summer Saturday.
 3. Prepare the time-of-day PREPIN inputs to estimate the VMT and speeds for each of the 24 one-hour time periods.
 - a. The time-of-day volume factors by area type and functional classification (prepared in Task 2c) will be prepared for input to PREPIN. These factors specify the portion of the 24-hour travel expected to occur for a given one-hour period. There will be 24 sets of these factors prepared (i.e., a set for each of the 24 one-hour periods).
 - b. The time-of-day directional split estimates by area type and functional classification will be developed under Task 2c. These results will be entered into SPLIT records for input to PREPIN. There will be 24 sets of these factors prepared (i.e., a set for each of the 24 one-hour periods).
 - c. Use the same hourly Capacity Factors (i.e., the CAPFAC records), the same Freeflow Speed Factors (i.e., the SPDFAC records), and the same Delay Equation Parameters (i.e., the DELAY records) that were used in Step 6.
 - d. The SEAFAC records (prepared for the 24-hour application in Step 1 of this task) and the HPMFAC records (prepared in Step 2 of this task) will be used for each of the 24 one-hour periods. Also, the same county EQUALS records and area type AREA records are used for all applications in the region.
 - e. Prepare the HEADER records and parameter records for each of the 24 one-hour periods.

Task 9b: Prepare the MOBILE5 input data to estimate the emissions factors by hour for a typical Saturday.

1. Prepare the hourly temperature estimates.
2. Prepare data needed for the hourly diurnal estimates.
3. Prepare other MOBILE5a inputs as needed using MOBILE5a set-ups and data provided by the TACB.

Task 9c: Prepare the gridded emissions estimates for each of the 24 one-hour periods for a typical Saturday.

1. Set up and apply the emissions software for each of the 24 one-hour time periods (i.e., 24 applications of the emissions software).
 - a. Set up the JCL for each of the 24 one-hour applications of the emissions software.
 - b. Perform the 24 applications of the emissions software program for the region for the subject day.

Task 9d: Transmit the 24 data sets containing the gridded mobile source emissions estimates produced by the emissions software applications.

1. Prepare a tape cartridge of the 24 data sets containing the gridded mobile source emissions estimates produced by the emissions software applications. Also, include on the tape cartridge the data sets containing the emissions software set-ups used to produce the gridded mobile source emissions estimates.
2. Prepare a Technical Note describing the data being transmitted.
3. Transmit the Technical Note and tape cartridge to the TACB.

MAJOR TASK 10: Prepare 1993 Gridded Mobile Source Emissions for the Houston-Galveston Eight-County Region for a Subject Summer Sunday.

Task 10a: Prepare Sunday factors and parameters needed to estimate VMT and speed by hour.

1. Set up and apply PREPIN to develop a preliminary estimate of the 24-hour VMT for a subject summer Sunday.
 - a. Prepare the 24-hour inputs for the application of PREPIN to factor the AAWT link assignments to represent the subject summer Sunday.
 - (1) Prepare the Seasonal Adjustment Factor (i.e., the SEAFAC records) for input to PREPIN using data from Task 3. The SEAFAC data are input by county and area type. It is proposed that the same seasonal

adjustment factors employed in Task 3 for the HPMS data also be employed for this application.

- (2) Use the same zone-to-county equivalences (i.e., the county EQUALS records) and zone-to-area type equivalences (i.e., the AREA records) for input to PREPIN that were used for the Sunday applications.
 - (3) The same zonal radii data (obtained in Task 5 and used in Task 6) will also be an input to PREPIN for estimating intrazonal travel.
 - (4) Prepare the HEADER records and other parameter records needed for the 24-hour application of PREPIN. The speed estimates produced by this application of PREPIN will be ignored. Hence, the Capacity Factors, Freeflow Speed Factors, the Delay Equation Parameters, and the Directional Split Factors will not be input.
- b. Prepare the JCL for the application of PREPIN to develop the preliminary network-based estimate of the 24-hour VMT for the subject summer Sunday.
 - c. Apply the PREPIN program.
2. Prepare scale factors by county to obtain desired county control totals.
 - a. The county scale factor records (i.e., the HPMFAC records) will be prepared by comparing the network-based 24-hour VMT estimates (developed in Step 1a of this task) with the desired 24-hour VMT control totals developed using HPMS data (under Task 3). There are eight counties in the Houston-Galveston study Area. Hence, eight sets of HPMFAC records (i.e., one set for each county) will need to be prepared.
 - b. Re-apply the 24-hour PREPIN (using the HPMFAC records prepared in Step 2a) to verify that the scale factors produce the desired 24-hour VMT for the subject summer Sunday.
 3. Prepare the time-of-day PREPIN inputs to estimate the VMT and speeds for each of the 24 one-hour time periods.
 - a. The time-of-day volume factors by area type and functional classification (prepared in Task 2c) will be prepared for input

to PREPIN. These factors specify the portion of the 24-hour travel expected to occur for a given one-hour period. There will be 24 sets of these factors prepared (i.e., a set for each of the 24 one-hour periods).

- b. The time-of-day directional split estimates by area type and functional classification will be developed under Task 2c. These results will be entered into SPLIT records for input to PREPIN. There will be 24 sets of these factors prepared (i.e., a set for each of the 24 one-hour periods).
- c. Use the same hourly Capacity Factors (i.e., the CAPFAC records), the same Freeflow Speed Factors (i.e., the SPDFAC records), and the same Delay Equation Parameters (i.e., the DELAY records) that were used in Step 6.
- d. The SEAFAC records (prepared for the 24-hour application in Step 1 of this task) and the HPMFAC records (prepared in Step 2 of this task) will be used for each of the 24 one-hour periods. Also, the same county EQUALS records and area type AREA records are used for all applications in the region.
- e. Prepare the HEADER records and parameter records for each of the 24 one-hour periods.

Task 10b: Prepare the MOBILE5 input data to estimate the emissions factors by hour for a typical Sunday.

1. Prepare the hourly temperature estimates.
2. Prepare data needed for the hourly diurnal estimates.
3. Prepare other MOBILE5a inputs as needed using MOBILE5a set-ups and data provided by the TACB.

Task 10c: Prepare the gridded emissions estimates for each of the 24 one-hour periods for a typical Sunday.

1. Set up and apply the emissions software for each of the 24 one-hour time periods (i.e., 24 applications of the emissions software).
 - a. Set up the JCL for each of the 24 one-hour applications of the emissions software.

- b. Perform the 24 applications of the emissions software program for the region for the subject day.

Task 10d: **Transmit the 24 data sets containing the gridded mobile source emissions estimates produced by the emissions software applications.**

1. Prepare a tape cartridge of the 24 data sets containing the gridded mobile source emissions estimates produced by the emissions software applications. Also, include on the tape cartridge the data sets containing the emissions software set-ups used to produced the gridded mobile source emissions estimates.
2. Prepare a Technical Note describing the data being transmitted.
3. Transmit the Technical Note and tape cartridge to the TACB.

MAJOR TASK 11: Prepare 1993 Gridded Mobile Source Emissions for the Beaumont-Port Arthur Three-County Region for a Subject Summer Sunday.

Task 11a: **Prepare Sunday factors and parameters needed to estimate VMT and speed by hour.**

1. Set up and apply PREPIN to develop a preliminary estimate of the 24-hour VMT for a subject summer Sunday.
 - a. Prepare the 24-hour inputs for the application of PREPIN to factor the AAWT link assignments to represent the subject summer Sunday.
 - (1) Prepare the Seasonal Adjustment Factor (i.e., the SEAFAC records) for input to PREPIN using data from Task 3. The SEAFAC data are input by county and area type. It is proposed that the same seasonal adjustment factors employed in Task 3 for the HPMS data also be employed for this application.
 - (2) Use the same zone-to-county equivalences (i.e., the county EQUALS records) and zone-to-area type equivalences (i.e., the AREA records) for input to PREPIN that were used for the Sunday applications.

- (3) The same zonal radii data (obtained in Task 5 and used in Task 6) will also be an input to PREPIN for estimating intrazonal travel.
 - (4) Prepare the HEADER records and other parameter records needed for the 24-hour application of PREPIN. The speed estimates produced by this application of PREPIN will be ignored. Hence, the Capacity Factors, Freeflow Speed Factors, the Delay Equation Parameters, and the Directional Split Factors will not be input.
 - b. Prepare the JCL for the application of PREPIN to develop the preliminary network-based estimate of the 24-hour VMT for the subject summer Sunday.
 - c. Apply the PREPIN program.
- 2. Prepare scale factors by county to obtain desired county control totals.
 - a. The county scale factor records (i.e., the HPMFAC records) will be prepared by comparing the network-based 24-hour VMT estimates (developed in Step 1a of this task) with the desired 24-hour VMT control totals developed using HPMS data (under Task 3). There are three counties in the Beaumont-Port Arthur Study Area. Hence, three sets of HPMFAC records (i.e., one set for each county) will need to be prepared.
 - b. Re-apply the 24-hour PREPIN (using the HPMFAC records prepared in Step 2a) to verify that the scale factors produce the desired 24-hour VMT for the subject summer Sunday.
- 3. Prepare the time-of-day PREPIN inputs to estimate the VMT and speeds for each of the 24 one-hour time periods.
 - a. The time-of-day volume factors by area type and functional classification (prepared in Task 2c) will be prepared for input to PREPIN. These factors specify the portion of the 24-hour travel expected to occur for a given one-hour period. There will be 24 sets of these factors prepared (i.e., a set for each of the 24 one-hour periods).
 - b. The time-of-day directional split estimates by area type and functional classification will be developed under Task 2c. These results will be entered into SPLIT records for input to

PREPIN. There will be 24 sets of these factors prepared (i.e., a set for each of the 24 one-hour periods).

- c. Use the same hourly Capacity Factors (i.e., the CAPFAC records), the same Freeflow Speed Factors (i.e., the SPDFAC records), and the same Delay Equation Parameters (i.e., the DELAY records) that were used in Step 6.
- d. The SEAFAC records (prepared for the 24-hour application in Step 1 of this task) and the HPMFAC records (prepared in Step 2 of this task) will be used for each of the 24 one-hour periods. Also, the same county EQUALS records and area type AREA records are used for all applications in the region.
- e. Prepare the HEADER records and parameter records for each of the 24 one-hour periods.

Task 11b: Prepare the MOBILE5 input data to estimate the emissions factors by hour for a typical Sunday.

1. Prepare the hourly temperature estimates.
2. Prepare data needed for the hourly diurnal estimates.
3. Prepare other MOBILE5a inputs as needed using MOBILE5a set-ups and data provided by the TACB.

Task 11c: Prepare the gridded emissions estimates for each of the 24 one-hour periods for a typical Sunday.

1. Set up and apply the emissions software for each of the 24 one-hour time periods (i.e., 24 applications of the emissions software).
 - a. Set up the JCL for each of the 24 one-hour applications of the emissions software.
 - b. Perform the 24 applications of the emissions software program for the region for the subject day.

Task 11d: Transmit the 24 data sets containing the gridded mobile source emissions estimates produced by the emissions software applications.

1. Prepare a tape cartridge of the 24 data sets containing the gridded mobile source emissions estimates produced by the emissions software

applications. Also, include on the tape cartridge the data sets containing the emissions software set-ups used to produce the gridded mobile source emissions estimates.

2. Prepare a Technical Note describing the data being transmitted.
3. Transmit the Technical Note and tape cartridge to the TACB.

MAJOR TASK 12: Prepare Gridded Mobile Source Emissions for Non-Modeled Counties.

Task 12a: Estimate county 24-hour mobile source emissions for the 50 perimeter counties.

1. Factor the 1993 HPMS VMT projections for each county to represent a typical Friday, Saturday, and Sunday for July through August.
2. Assign typical 24-hour rural and urban speeds by functional classification for each county. This will be done by comparing the characteristics of each county with the characteristics of the modeled counties and by professional judgment. The same typical speeds by functional classification will be assumed regardless of the day of week.
3. Prepare the MOBILE5a input data for each county for input to POLFAC.
4. Apply PREPIN, POLFAC, and IMPSUM to each county. For application of PREPIN, each rural and urban functional classification will be treated as a link with an associated speed and VMT. For application of POLFAC, a single 24-hour run will be made for each rural and urban functional classification. The 24-hour county mobile source emissions will be calculated using IMPSUM, the emissions factors from POLFAC, and the VMT from PREPIN.

Task 12b: Obtain TIGER files from U.S. Department of Commerce.

1. TIGER files will be obtained for each county included in the COAST study for which they are available; they will be implemented on a GIS system. The COAST study grid system will be superimposed on the TIGER files.

Task 12c: Estimate lane miles by grid square for counties with TIGER files.

1. From the TIGER files, the center line miles in each county and within each grid square will be estimated. The center line miles in each grid will be divided by the center line miles in the county to get the proportion of center line miles in each grid. That proportion of total county emissions will be assigned to that grid cell.

Task 12d: Estimate center line miles by grid square for counties without TIGER files.

1. For counties without TIGER files, the area of the grid will be divided by area of the county. That proportion of total county emissions will be assigned to that grid cell.

Task 12e: Estimate emissions for 24 one-hour time periods.

1. The emissions by 24 one-hour time periods will be estimated by one of two methods. The distribution of 24-hour emissions will be based on the distribution of 24-hour emissions for a modeled county with similar characteristics. Or, the distribution of 24-hour emissions will be based on the distribution of 24-hour VMT for a similar modeled county. A decision on which method to apply will be made in consultation with the TACB.
2. Apply the proportions of emissions by grid and 24 one-hour distributions of emissions to each of the 50 perimeter counties.
3. Provide the TACB with a file containing emissions by hour by grid by day and by county for the 50 perimeter counties.