

2021 Transportation Conformity

Appendix 12.15

Interagency Consultation Process

Interagency Consultation Partners

October 30, 2019

10:30 a.m. – 12:00 p.m.

Agenda

Join Webex meeting

<https://alamoareampo.my.webex.com/alamoareampo.my/j.php?MTID=mf9f6b610e4d6f3d6bd5f6c0f174b4679>

Meeting number: 625 127 166 | Password: V5tpYamP

Phone: +1-510-338-9438 | Access code: 625 127 166

1. **Introductions** (*All partners - 5 minutes*)
2. **Discussion on conformity necessity** (*All partners - 45 minutes*)
 - a. Do the expected project changes necessitate a full MOVES emissions analysis for the FY 2021-2024 TIP update? (See attachment “FY 2021-2024 TIP-MTP Review 10-24-19”)
3. **Walk through pre-analysis consensus plan** (*All partners - 15 minutes*)
4. **Lessons learned from AAMPO’s 2019 transportation conformity** (*FHWA, TxDOT, MPO - 15 min*)
5. **Next steps** (*FHWA, TxDOT, MPO - 10 min*)

Interagency Consultation Partner Meeting

October 30, 2019 | 10:30 a.m. – 12:00 p.m.

WebEx

1. Participants:

Allison Blazosky (AAMPO), Jeanne Geiger (AAMPO), Sid Martinez (AAMPO), Travis Nedrich (AAMPO), Mark Mosely (TxDOT), Tim Mulry (VIA Metropolitan Transit)

Via Phone: Jose Campos (FHWA), Farideh Dassi (TxDOT), Zack Graham (AAMPO), Barbara Maley (FHWA), Mary McGarry-Barber (TCEQ), Laura Norton (TxDOT), Dennis Perkinson (TTI), Jeff Riley (EPA), Darcie Schipull (TxDOT), Aaron Slevin (TCEQ), Greg Wood (FHWA), and Jamie Zech (TCEQ)

2. Discussion on conformity necessity:

In advance of the call, AAMPO provided a draft pre-analysis consensus document and short list of project changes that would need to occur with the approval of AAMPO's FY 2021-2024 TIP in the spring of 2020. It was known that changes to these projects would affect the network for which AAMPO's first transportation conformity determination had just been granted in September 2019, and AAMPO requested direction from the IAC partners on the degree to which this would require re-analysis of regional emissions.

Based on the discussion, the project changes were substantial enough to require beginning a new transportation conformity analysis. AAMPO and TxDOT San Antonio District staff thus decided to move forward with a more comprehensive list of District-led project changes during the FY 2021-2024 TIP as transportation conformity analysis was necessary.

3. Walk through pre-analysis consensus plan

AAMPO then turned to reviewing the draft pre-analysis consensus plan. The committee advised AAMPO to revisit the schedule proposed in Part 1 so that a transportation conformity determination may be made well enough in advance of FHWA's review of the FY 2021-2024 Statewide Transportation Improvement Program.

The committee also confirmed that AAMPO would no longer need to analyze 2024 as a network year. Consensus was given by TxDOT, EPA and FHWA for the base year (2017) and three analysis year networks (2025, 2035 and 2045).

TCEQ and FHWA inquired about the latest available demographics (confirmed), a seasonal factor, ATR factors and vehicle classification counts (confirmed). TTI will review and, where available, update the PCAP with latest available data to be used in analysis.

AAMPO pointed out that, while its travel demand model covers a five-county area, AAMPO would ask TTI to produce county-scale emissions results for the nonattainment area county (Bexar) only. The committee agreed and suggested removing references to the other counties to be consistent.

4. Lessons learned from AAMPO's 2019 transportation conformity

AAMPO stated its appreciation of the time and help given by the IAC partners in its previous conformity determination. The value of the link listing was discussed. FHWA is open to bypassing the link listing should further discussion with TxDOT TPP (Laura) and FHWA move that direction.

Interagency Consultation Partners

February 3, 2020

10:00 a.m. – 11:30 a.m.

Agenda

Join Webex meeting

<https://alamoareampo.my.webex.com/alamoareampo.my/j.php?MTID=maa9cdec368a018cdce3bffa92e6ed00f>

Password: YTdw2FHvW47

Join by phone

+1-510-338-9438 USA Toll

Access code: 627 584 350

1. **Introductions** (*All partners - 5 minutes*)
2. **Consensus on documentation** (*All partners - 5 minutes*)
 - a. 10/30/19 Meeting Summary
 - b. Pre-Analysis Consensus Plan (solicited via email 12/13/19)
3. **Findings from Emissions Analysis** (*All partners - 15 minutes*)
4. **Discussion of inclusion of link listing** (*All partners - 20 minutes*)
5. **Next steps** (*FHWA, TxDOT, MPO - 20 min*)

Interagency Consultation Partner Meeting

February 3, 2020 | 10:00 a.m. – 10:30 a.m.

WebEx

1. Participants:

Allison Blazosky (AAMPO), Jeanne Geiger (AAMPO), Zack Graham (AAMPO), Travis Nedrich (AAMPO)

Via Phone: Kris Knoll (TxDOT), Barbara Maley (FHWA), Mark Mosely (TxDOT), Laura Norton (TxDOT), Nick Page (TxDOT), Dennis Perkinson (TTI), Jeff Riley (EPA), Darcie Schipull (TxDOT), Aaron Slevin (TCEQ), Janie Temple (TxDOT), Tim Wood (TxDOT) and Jamie Zech (TCEQ)

2. Consensus on documentation:

AAMPO confirmed that consensus had been reached via email to IAC Partners on December 13, 2019 of modifications made to the Pre-Analysis Consensus Plan as a result of the October 2019 IAC Partner phone call.

3. Findings from emissions analysis:

AAMPO presented the emissions estimates received on January 17, 2020 from the Texas A&M Transportation Institute. Results of the MOVES 2014a runs indicate that emissions from planned transportation projects are estimated to be better in each analysis year than emissions for the base year of 2017 (no-greater-than-baseline year interim emissions test).

4. Link listing discussion:

A link listing is intended to verify assumptions documented in the MTP. AAMPO staff requested feedback about whether the link list table AAMPO is able to provide was effective for this purpose. (As links are changed or added to reflect future transportation networks, links are assigned new IDs and do not necessarily remain consistent across all analysis years.)¹ TxDOT Transportation Planning & Programming staff indicated that the list is important for their review and were not ready to bypass it. FHWA indicated being willing to substitute an alternative. TxDOT will discuss with other reviewers before giving a firm decision in the coming week.

5. Next Steps

AAMPO will post the draft Transportation Conformity Document on the MPO's website (www.alamoareampo.org/airquality/conformity) in advance of February 14, 2020, the opening of the public comment period. A local determination of conformity is scheduled by the Transportation Policy Board for April 27, 2020. FHWA reiterated that the number of reviewer comments and corresponding response time will determine the pace of review.

¹ Since the call took place, AAMPO has begun developing a more visual replacement for the link listing to propose.

Interagency Consultation Partners

November 17, 2020

9:00 a.m. – 9:45 a.m.

Agenda

Join Webex meeting

<https://alamoareampo.webex.com/alamoareampo/j.php?MTID=m42cfc7c4c9bb13777b9cc85495fe2532>

Password: IAC11172020

Join by phone

1-408-418-9388 (USA Toll) | 1-844-992-4726 (USA Toll Free)

Access code: 146 060 5087

1. **Introductions** (*All partners - 2 minutes*)
2. **Update on 2020 Conformity Determination** (*All partners - 30 minutes*)
 - a. Outline of outstanding tasks related to comment/response matrix
 - b. Outline of FY 2021 UTP fiscal constraint impact on AAMPO's 2020 Transportation Conformity
 - c. Discussion of current planning assumptions, specifically for motor vehicle registration data
 - d. Discussion of impact if planning assumptions have changed
3. **Next steps** (*AAMPO, FHWA, TxDOT, TTI - 10 min*)

Interagency Consultation Partner Meeting

November 17, 2020 | 9:00 a.m. – 9:45 a.m.

WebEx

1. Participants:

Allison Blazosky (AAMPO), Jeanne Geiger (AAMPO), Clifton Hall (AAMPO), Sid Martinez (AAMPO), Travis Nedrich (AAMPO)

Via Phone: Andrew Birt (TTI), Jose Campos (FHWA), Farideh Dassi (TxDOT), Zack Graham (AAMPO), Kris Knoll (TxDOT SAT), Barbara Maley (FHWA), Mary McGarry-Barber (TCEQ), Mark Mosely (TxDOT SAT), Laura Norton (TxDOT), Nick Page (TxDOT), Dennis Perkinson (TTI), Michael Regan (TCEQ), Clayton Ripps (TxDOT SAT), Darcie Schipull (TxDOT SAT), Aaron Slevin (TCEQ), Janie Temple (TxDOT), and Madhu Venugopal (TTI).

2. Update on 2020 Conformity Determination

AAMPO outlined the status of the Partners' comments and the agency's responses to-date on its new FY 2021-2024 TIP and MTP update. Two projects have been identified for revision in AAMPO's networks, necessitating an emissions run. Concurrent with Partner review, TxDOT identified a financial constraint issue at the state level. For the AAMPO study area, this impacts five projects in the FY 2021-2024 under review that would need to move from their current network year to a later one. AAMPO, working with the TxDOT San Antonio District, is updating deliverables associated with this transportation conformity determination to meet an extended timeframe for FY 2021-2024 TIP/STIP approval.

3. Next Steps:

Guidance was sought on whether the five projects could be incorporated into the present review of AAMPO's conformity determination or need to be considered as a new conformity. IAC Partners agreed that a revised Pre-Analysis Consensus Plan should be submitted, with specific changes identified, including most recent available motor vehicle registration data. AAMPO will provide updated networks to TTI, which has been approved to re-run the emissions analysis. AAMPO will also publicly share new documentation of the conformity analysis and follow the public participation process outlined in its Public Participation Plan.

With action by the Texas Transportation Commission on the TIP/STIP scheduled for March 2021, tasks are on track to attain local approval of the new FY 2021-2024 TIP and MTP update from AAMPO's Transportation Policy Board at its January 25, 2021 meeting.

Sensitivity Analysis Documentation for Interagency Consultation Partner Meeting September 24, 2021

1. Participants:

Allison Blazosky (AAMPO), Clifton Hall (AAMPO), Sonia Jimenez (AAMPO), and Travis Nedrich (AAMPO)

Via Phone: Jonathan Bean - *partial* (TxDOT SAT); Jose Campos (FHWA), Barbara Maley (FHWA), Nick Page (TxDOT TPP)

2. Sensitivity Analysis

In order to understand the sensitivity of NO_x and VOC emissions to modeling revisions necessitated by the comment and review process, interagency consultation partners asked AAMPO to compare percent change in Assigned VMT and tons per day of NO_x and VOC resulting from three different travel demand model runs: December 2020, July 2021 and September 2021.

This “sensitivity” analysis documents that a substantial percent change in tons per day of NO_x (109%) and/or VOC (51%) would be necessary to result in failing the baseline year test for conformity.

It also documents the magnitude of change that modeling revisions (and corresponding revisions in assigned VMT) have or could have on emissions:

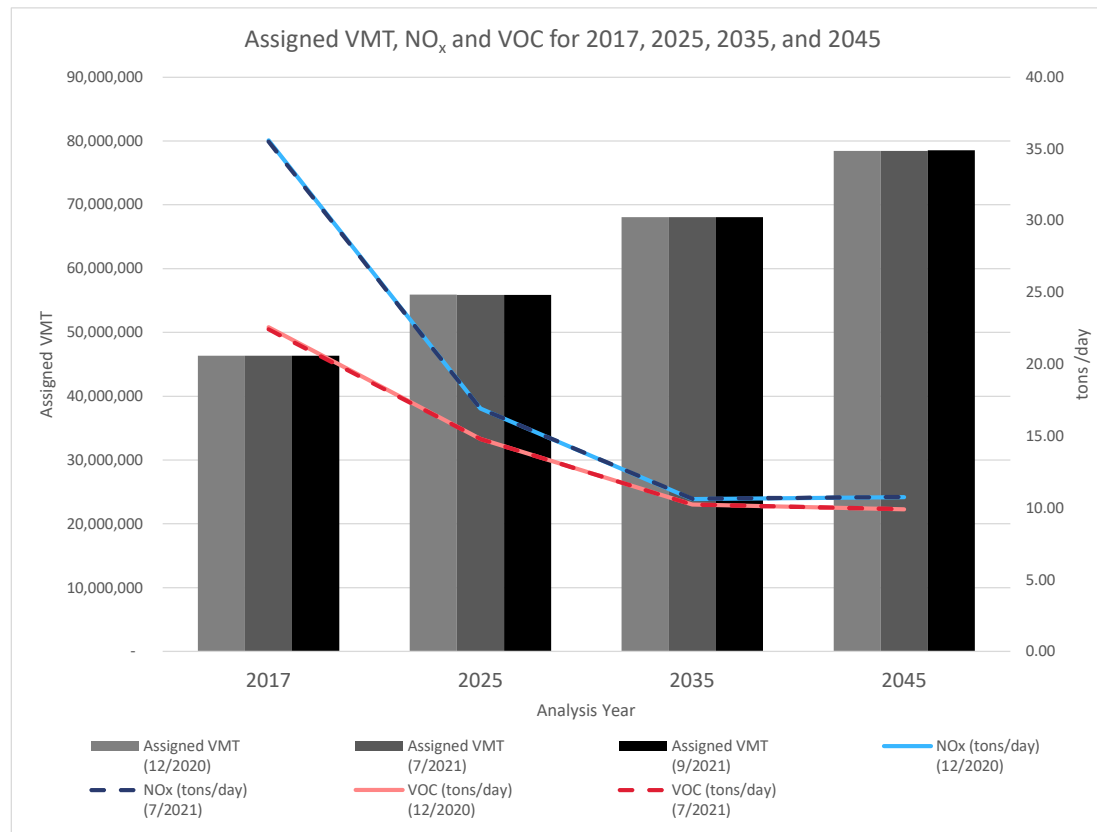
- When modeling revisions were made in July 2021, Assigned VMT changed from December 2020 just 0.09%, resulting in an estimated change to tons per day of NO_x and VOC of, at most, 0.19% and 0.1%, respectively. The analysis supports a finding of relatively small changes in assigned VMT results in small changes in emissions.
- When modeling revisions were made in September 2021, Assigned VMT changed from July 2021 just 0.15%. A full MOVES reanalysis was not performed to identify the estimated effect on emissions, as the change in assigned VMT is similar to the change calculated for July 2021 vs. December 2020 and still well below even a change of 1%. It is expected the relatively small change in assigned VMT (0.15%) would result in minimal changes to previously calculated emissions (July 2021).

By performing the analysis, AAMPO demonstrated the sensitivity of estimated emissions to the modeling revisions made in July 2021 and September 2021. Table “Sensitivity Analysis (9/24/2021)” on the next page illustrates the process.

Note: The July 2021 MOVES reanalysis was triggered by modeling revisions to 2017 and 2025 networks. Though Assigned VMT does not change in 2035 or 2045, the table reflects slight changes to estimated emissions in 2035 and 2045. This is because the 2017 network is used as a base year for projecting hotelling activities, and changes to travel patterns in 2017 can theoretically affect the emissions for each future analysis year. The TTI team thus reanalyzed and provided emissions for the baseline year and all network years (2017, 2025, 2035 and 2045).

Sensitivity Analysis (9/27/2021)

Year	December 2020 Emissions Analysis			July 2021 Emissions Analysis			% Change (July 2021 vs December 2020)			September 2021 TDM Run	% VMT Change	% Emissions Increase Necessary to Affect Baseline Year Test	
	Assigned VMT (12/2020)	NO _x (tons/day) (12/2020)	VOC (tons/day) (12/2020)	Assigned VMT (7/2021)	NO _x (tons/day) (7/2021)	VOC (tons/day) (7/2021)	Assigned VMT	NO _x (tons/day)	VOC (tons/day)	Assigned VMT (9/2021)	September 2021 vs July 2021	NO _x (tons/day)	VOC (tons/day)
2017	46,351,932	35.60	22.58	46,334,592	35.51	22.44	-0.04%	-0.25%	-0.62%	46,343,257	0.02%	-	-
2025	55,942,338	16.92	14.81	55,891,727	16.93	14.81	-0.09%	0.06%	0.00%	55,882,836	-0.02%	109.75%	51.52%
2035	68,081,789	10.62	10.24	68,081,789	10.64	10.24	0.00%	0.19%	0.00%	68,067,954	-0.02%	233.74%	119.14%
2045	78,443,256	10.74	9.90	78,443,256	10.76	9.91	0.00%	0.19%	0.10%	78,557,503	0.15%	230.02%	126.44%
Maximum Absolute % Change =							0.09%	0.25%	0.62%	-	0.15%		



Transportation Conformity Pre-Analysis Consensus Plan

ALAMO AREA METROPOLITAN PLANNING ORGANIZATION



Consensus by: *Date:*

EPA *December 8, 2020*

FHWA/FTA *December 4, 2020*

TCEQ *December 2, 2020*

TxDOT *December 7, 2020*

1. Reason for the Transportation Conformity Regional Emissions Analysis (§93.104) Beginning 10/30/2019

Table 1: Explanation

	New Metropolitan Transportation Plan (demographics, horizon year, etc.)
X	Modify Existing Metropolitan Transportation Plan (interim year adjustments)
X	New or Amended Transportation Improvement Program
	State Implementation Plan (SIP) Requirement
	Newly Designated Nonattainment Area
	Other

The Alamo Area MPO (AAMPO) is developing a new TIP for FY 2021-2024. Local approval was originally scheduled for **April 2020 in order for the TIP to be enacted in FY 2021**. Below are important target dates proposed to meet that deadline:

- Early December 2019** – internal staff deadline to complete all model runs
- December 13, 2019** – AAMPO transmits travel demand model output to TTI for MOVES analysis
- January 27, 2020** – TTI transmits MOVES summary table and supporting files to AAMPO
- February 14, 2020** – 30-day public comment period, including transportation conformity public meeting
- March 23, 2020** – presentation to AAMPO Transportation Policy Board (TPB) of conformity document and FY 2021-2024 TIP/Mobility 2045
- April 27, 2020** – concurrent action by AAMPO TPB to approve conformity document and FY 2021-2024 TIP/Mobility 2045
- May - July, 2020** – comment and response period between interagency consultation partners

In Fall 2020, TxDOT identified a financial constraint issue at the state level. MPOs and TxDOT Districts worked together to adjust projects in order to financially constrain their TIPs/STIP. AAMPO suspended the FY 2020 Regional Transportation Conformity, notifying IAC Partners on November 20, 2020. AAMPO is updating deliverables for FY 2021 TIP/STIP approval to meet this expanded timeframe:

- December 14, 2020** – presentation to AAMPO Transportation Policy Board (TPB) of conformity document and FY 2021-2024 TIP/Mobility 2045
- December 14, 2020** – January 12, 2021 – 30-day public comment period, including transportation conformity virtual public meeting
- January 25, 2021** – concurrent action by AAMPO TPB to approve conformity document and FY 2021-2024 TIP/Mobility 2045
- June 2021** – deadline for inclusion in STIP

Here is a link to the [federal transportation conformity rule](#).

2. Planning Detail (§93.110)

Table 2: Metropolitan Transportation Plan/Transportation Improvement Program

Plan or Programs	Years Covered
Mobility 2045	2019-2045
Transportation Improvement Program	2021-2024

Table 3: State Implementation Plan

SIP Element	Description
Title of Applicable SIP(s)	n/a
Motor Vehicle Emissions Budgets	n/a
Transportation Control Measures	n/a

Table 4: Conformity Analysis Years

Requirement	Year
Conformity Baseline Year	2017
Attainment Year	2021 (not a required analysis year)
First Analysis Year ¹	2025
Intermediate Analysis Year(s) ²	2035
Last Year of Transportation Plan (MTP/RTP)	2045
Interpolation Years	n/a
Other	

¹ Per 40 CFR 93.119(g)(1), the first analysis year cannot be more than five years beyond the year in which the conformity determination is being made.

² Per 40 CFR 93.119(g)(1), analysis years cannot be more than 10 years apart.

Table 5: Demographics Used in Conformity Analysis

Data Element	Detail and Source of Data
Population	Texas Demographic Center 2015 population projections
Employment	MPO staff-generated model
Socio-economic	<p>Model-generated from an estimate of median income at the TAZ level. For the 2010 base year, the median household income figure was taken from the latest available census data which was 2006-2010. Where the census geography lined up with the TAZ geography, the census figure was used. However, where there was overlap with other geography, a weighted average income was calculated from the median values of the different geographic area(s). For the 2040 forecast, a median household income growth figure was derived from an analysis of 25 year trends in Bexar County. Household income estimates from the 1980-2000 decennial census were adjusted for inflation to 2005 dollars using the Consumer Price Index and compared to the ACS data. A trend line was established and a growth percentage calculated and applied to the incomes for 2040. Socioeconomic data has been extrapolated out to 2045.</p>
Other	

3. Activity Detail

- Land-Use Model Used

TELUM is an evolution of the DRAM (Disaggregated Residential Allocation Model) and EMPAL (Employment Allocation Model) package and combines employment, residence location, transportation networks, and land consumption in a single comprehensive package embedded in a Geographic Information Systems (GIS) environment.

The model allocates the total growth in employment, households, and land use for an area into its sub-regional component zones. This allocation is made possible by using regional trends, transportation facility descriptions, and data on current location of employment and households. The required data for the TELUM model runs include current census of population and employment by place of work, total future population and employment, travel times between zones and current land use information. The forecasts are done in five-year increments with one forecast becoming input to the next five-year forecast.

One of the integral components of the TELUM forecasting process is land use. This model incorporates a connection between land use and the transportation system. In order to develop this data as input into the model, staff acquired a computerized parcel file and database files from each county's appraisal districts. The files were processed to assign the land use designated on each parcel in each county. The land use in each of the counties was then checked manually using the most current aerial photos. Finally, in Comal, Guadalupe, and Kendall, maps were sent to the appropriate offices for local review. In the case of Wilson, a meeting was held where city and county staff assembled and marked up the map in one afternoon.

Table 6: Travel Demand Model

Model Factor	Detail and Methodology
Model Validation Year	2015
Software	SAMM 4.1 and TransCAD 8.0
Mode Split/Mode Choice	Typical nested logit model that is FTA compliant (calibrated and validated to 2015 by Cambridge Systematics (CS))
Vehicle Miles Travel (VMT) Adjustments (HPMS FACTOR)	<p>For the future years, TTI produces a regional HPMS adjustment factor (0.93566904) used to adjust total VMT (TDM assignment VMT plus intrazonal VMT estimate) for consistency with HPMS for each future analysis year TDM. Specifically, TTI will convert Bexar, Comal, Guadalupe, Kendall, Wilson Counties 2015 HPMS annual average daily traffic (AADT) VMT to ANSWT VMT, using an automatic traffic recorder (ATR)-based factor (1.04287). This factor is developed using county-specific total VMT from the 2015 travel model validation; the 2015 county-level HPMS AADT VMT reported by TxDOT; and 2015 ATR data.</p>
Seasonal Correction Factor	<p>TTI produces seasonal, day-of-week, factors by TxDOT district for use with district-counties using multi-year (2010-2019) ATR data. TTI will produce the TxDOT San Antonio District factor (1.02751) to convert TDM VMT and volumes from ANSWT to ASWT (average summer weekday traffic - June through August, Monday through Friday).</p>

Hourly Distribution Factors	<p>CS will provide volumes and speeds for each of the four time periods within the model:</p> <table border="1" data-bbox="672 222 1333 493"> <thead> <tr> <th>Time Period</th> <th>Time Period Desc.</th> <th>VMT</th> <th>% Share of VMT</th> </tr> </thead> <tbody> <tr> <td>AM Peak</td> <td>6a-9a</td> <td>11,185,360</td> <td>18.7%</td> </tr> <tr> <td>Mid-day</td> <td>9a-3p</td> <td>18,258,125</td> <td>31.1%</td> </tr> <tr> <td>PM Peak</td> <td>3p-7p</td> <td>18,608,812</td> <td>30.5%</td> </tr> <tr> <td>Night-time</td> <td>7p-6a</td> <td>11,798,005</td> <td>19.7%</td> </tr> </tbody> </table> <p>TTI then produces seasonal weekday, hourly factors for allocating VMT and volumes within TDM time periods to each hour of the day, using the multi- year (2010-2019), June through August, Monday through Friday, hourly ATR data for the TDM five-county region. The ATR-based hourly factors in each TDM time period are normalized and shown below:</p> <table border="1" data-bbox="873 863 1143 1549"> <thead> <tr> <th>Episode Hour</th> <th>Factor</th> </tr> </thead> <tbody> <tr><td>Sum_Hr01</td><td>0.010078</td></tr> <tr><td>Sum_Hr02</td><td>0.006858</td></tr> <tr><td>Sum_Hr03</td><td>0.005984</td></tr> <tr><td>Sum_Hr04</td><td>0.006148</td></tr> <tr><td>Sum_Hr05</td><td>0.009542</td></tr> <tr><td>Sum_Hr06</td><td>0.022120</td></tr> <tr><td>Sum_Hr07</td><td>0.050337</td></tr> <tr><td>Sum_Hr08</td><td>0.067680</td></tr> <tr><td>Sum_Hr09</td><td>0.058840</td></tr> <tr><td>Sum_Hr10</td><td>0.049597</td></tr> <tr><td>Sum_Hr11</td><td>0.048710</td></tr> <tr><td>Sum_Hr12</td><td>0.051878</td></tr> <tr><td>Sum_Hr13</td><td>0.054587</td></tr> <tr><td>Sum_Hr14</td><td>0.056274</td></tr> <tr><td>Sum_Hr15</td><td>0.059655</td></tr> <tr><td>Sum_Hr16</td><td>0.067927</td></tr> <tr><td>Sum_Hr17</td><td>0.076002</td></tr> <tr><td>Sum_Hr18</td><td>0.078561</td></tr> <tr><td>Sum_Hr19</td><td>0.062371</td></tr> <tr><td>Sum_Hr20</td><td>0.045318</td></tr> <tr><td>Sum_Hr21</td><td>0.036621</td></tr> <tr><td>Sum_Hr22</td><td>0.032143</td></tr> <tr><td>Sum_Hr23</td><td>0.025226</td></tr> <tr><td>Sum_Hr24</td><td>0.017544</td></tr> </tbody> </table>	Time Period	Time Period Desc.	VMT	% Share of VMT	AM Peak	6a-9a	11,185,360	18.7%	Mid-day	9a-3p	18,258,125	31.1%	PM Peak	3p-7p	18,608,812	30.5%	Night-time	7p-6a	11,798,005	19.7%	Episode Hour	Factor	Sum_Hr01	0.010078	Sum_Hr02	0.006858	Sum_Hr03	0.005984	Sum_Hr04	0.006148	Sum_Hr05	0.009542	Sum_Hr06	0.022120	Sum_Hr07	0.050337	Sum_Hr08	0.067680	Sum_Hr09	0.058840	Sum_Hr10	0.049597	Sum_Hr11	0.048710	Sum_Hr12	0.051878	Sum_Hr13	0.054587	Sum_Hr14	0.056274	Sum_Hr15	0.059655	Sum_Hr16	0.067927	Sum_Hr17	0.076002	Sum_Hr18	0.078561	Sum_Hr19	0.062371	Sum_Hr20	0.045318	Sum_Hr21	0.036621	Sum_Hr22	0.032143	Sum_Hr23	0.025226	Sum_Hr24	0.017544
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Counties Covered by Model	Bexar, Comal, Guadalupe, Kendall and Wilson																																																																						
Other																																																																							

Table 7: Projects

Project Element	Description
Regionally Significant Definition	<p>All Regionally Significant roads can be viewed at: http://www.alamoareampo.org/imap/ <i>(check “on” the layer titled “Regionally Significant Roads”)</i> and include:</p> <ul style="list-style-type: none"> • Those facilities federally functionally classified as interstate freeways, other freeways or expressways • Those facilities federally functionally classified as principal arterials • Roadways and intermodal connectors included in the federally adopted National Highway System • Roads designated as SH or US routes • Community connections that provide direct, continuously signed connections between nearby or adjacent census defined urbanized areas, urban clusters and population centers with more than 5,000 people • Roadways between activity centers that serve as primary regional connectors to an otherwise unserved regional activity center • Extensions of Regionally Significant Roadways to connect non-connecting termini <p>While not mapped because none currently exist, the AAMPO’s regionally Significant Roadways definition also includes the following:</p> <ul style="list-style-type: none"> • Fixed guideway transit facilities that offer an alternative to regional highway travel • Tollways as documented in the Metropolitan Transportation Plan • Grade-separated interchange projects on Regionally Significant Roadways where no access existed previously
Capacity Changes	Refer to 2021-2024 TIP and Mobility 2045

CMAQ Projects	Refer to 2021-2024 TIP and Mobility 2045
Non-Federal Projects	Refer to 2021-2024 TIP and Mobility 2045
Exempt Projects	Refer to 2021-2024 TIP and Mobility 2045
Other	

4. Emissions Detail (MOVES Emission Factor Model Information)

- Development of Emission Factors:

While the travel demand model covers a five-county area, TTI will produce county scale emission rates for Bexar County, the only county designated nonattainment.

Emission Model Version:	MOVES2014b
Analysis Year Runs:	2017 baseline year; 2025, 2035 and 2045 analysis years.
Time Periods:	Hourly, average summer weekday.
Pollutants Reported:	Volatile Organic Compounds (VOC), Oxides of Nitrogen (NOx).
Functional Class:	The four MOVES road types – rural and urban, restricted and unrestricted access; and the MOVES off-network category.
VMT Mix:	Using latest available VMT mix. TTI estimated San Antonio TxDOT District, four-period time-of-day, weekday VMT mixes, for conventional gasoline and diesel-powered MOVES source use types (SUT), by the four MOVES road types, for use with historical and future analysis years. The methodology is described in MOVES Source Use Type and VMT Mix for Conformity Analysis (TTI, October 2017). (Note - VMT mix is used external to MOVES in link-level emissions calculations.)
Speed:	TTI will use the MOVES county scale/emission rates mode to model urban and rural, restricted and unrestricted access road type emissions factors for each of the 16 speed bin average speeds (i.e., 2.5 miles-per-hour (mph) and 5 mph through 75 mph, at 5 mph increments) for rates lookup tables.
Vehicle Registration:	Latest available 2018 EOY registration data (for age distributions) will be used for the 2017 baseline and all future years.

- MOVES2014 inputs:

Table 8: MOVES2014 Modeled Pollutants

Command	Function/Description	Input Parameter Source/Value
Pollutant	Defines the basic set of pollutants to report.	VOC, NOx (required). (Additional pollutants may be included in the runs.)

Table 9: MOVES2014 External Conditions

Command	Function/Description	Input Parameter Values	Description
MOVES Model Version	Identifies the model version to be utilized for the analysis.	MOVES2014 b	Latest and final MOVES2014 series version, released August 2018
Calendar Year	Identifies calendar year for which emissions factors are to be calculated. (Required to run model)	2017, 2025, 2035, and 2045	<i>Baseline year and plan forecast years</i>
Evaluation Month	Provides option of calculating emissions factors for each month of the calendar year	7 (July)	Month of July is used to represent the summer season.

Table 12: MOVES2014 Input Parameters and Source

Input Parameter Name	Description	Source
Source Type Population	<p>Input the number of vehicles in the geographic modeling domain for each SUT.</p> <p>(MOVES sourcetypeyear table.)</p>	<p>MOVES defaults for rates runs.</p> <p>TTI estimates local gasoline and diesel-powered source type populations by analysis year for use external to MOVES in the estimation of county level vehicle starts and source-hours-parked activity, needed in the external emissions calculations, per TTI's rates-per-activity, TDM-based method. Populations by SUT and fuel type are a function of Texas Department of Motor Vehicles (TxDMV) vehicle registration data (2018 is latest available) and VMT mix, and in the case of future years, population scaling factors.</p>
Source Type Age Distribution	<p>Input that provides the distribution of vehicle counts by age for each calendar year and MOVES source type. TXDMV registration data is used to estimate the age distributions of vehicle types up to 31 years. The distribution of age fractions should sum up to 1.0 for all vehicle types for each analysis year.</p> <p>(MOVES sourcetypeagedistribution table.)</p>	<p>TTI develops age distributions using TxDMV analysis year-specific vehicle registration data aggregated at the county level for all vehicle classes except short-haul source-types, which use the regional aggregation (five TDM counties), and the long-haul source-types, which use the statewide level. All source type age distributions are estimated using the TxDMV data except for refuse trucks, motor homes, and buses which use MOVES defaults for the year of the local data. Latest available 2018 EOY registration data (for age distributions) will be used for the 2017 baseline and all future years.</p>
Vehicle Type VMT	<p>Input county-specific VMT distributed to 5 HPMS vehicle types (by MOVES "HPMSVtypeID").</p> <p>(MOVES hpmsvtypeyear table.)</p>	<p>MOVES defaults for rates runs.</p> <p>Local activity estimates are applied in the link-based emissions calculations external to MOVES.</p>

Average Speed Distribution	<p>Input average speed fractions into 16 speed bins, by SUT, road type, hour, day-type. The sum of each speed distribution over the 16 speed bins by SUT, road type, hour, day-type is 1.0.</p> <p>(MOVES avgspreedistribution table.)</p>	<p>MOVES defaults for rates runs.</p> <p>Local activity estimates are applied in the link-based emissions calculations external to MOVES.</p>
Road Type Distribution (VMT Fractions)	<p>Input county specific VMT by road type. VMT fractions are distributed between the road types and must sum to 1.0 for each SUT.</p> <p>(MOVES roadtypedistribution table.)</p>	<p>MOVES defaults for rates runs.</p> <p>Local activity estimates are applied in the link-based emissions calculations external to MOVES.</p>
Ramp Fraction	<p>Input county specific fraction of ramp driving time on rural and urban restricted roadway types.</p> <p>(MOVES roadtype table.)</p>	<p>Ramp fractions are set to zero. The restricted access roadway type emission rates output will be 100% restricted access roadway type, exclusive of ramps, which are processed separately. TTI's external link-level emissions calculation procedure applies MOVES un-restricted access roadway type emission rates to individual network links coded as ramps. (Separate ramp roadway type emission rates output is not available from MOVES.)</p>
Fuel Supply	<p>Input to assign existing fuels to counties, months, and years, and to assign the associated market share for each fuel type.</p> <p>(MOVES fuelsupply table.)</p>	<p>For each analysis year and season, the fuel supply will consist of one conventional gasoline formulation and one conventional diesel formulation. See Table 13.a.</p>

Meteorology	County specific data on temperature and humidity. (MOVES zonemonthhour table.)	Average June through August, hourly temperature and hourly relative humidity inputs for each county (produced by TCEQ for inventory development using 2017 weather station data) for all analysis years. See Table 14.
Fuel Formulation	Input county specific fuel properties in the MOVES database. (MOVES fuelformulation table.)	Local fuel formulations based on TCEQ 2017 summer fuel survey data for 2017, and latest local survey data (TCEQ 2020 summer fuel survey), with some adjustments to particular future year values made for consistency with future year “expected” values (regulatory standards). See Table 13b.
I/M Coverage	Input I/M coverage record for each combination of pollutants, process, county, fuel type, regulatory class and model year are specified using this input. (MOVES imcoverage table.)	No I/M program to be modeled since none is required in the San Antonio region.
Fuel Engine Fraction / Diesel Fraction	Input fuel engine fractions (i.e. Gasoline vs. Diesel Engines types in the vehicle population) for all vehicle types. (MOVES avft table.)	Locality-Specific/MOVES default. TTI develops the evaluation year-specific local gasoline/diesel fractions for the MOVES single unit and combination truck SUTs using the TxDMV registration data, for each analysis year, aggregated to the statewide level. MOVES defaults are used for the other SUTs, except alternative fuel fractions are dropped and the default gasoline/diesel fractions are renormalized.

Table 13.a: MOVES2014 Fuel Supply

Fuel Formulation ID	Market Share	Market Share CV ³
17702, 19702	1.0	\N
30637, 30011	1.0	\N

³ Market Share CV – the coefficient variation of the market share (“\N” is “null”, or not used).

Table 13.b: MOVES2014 Fuel Properties

Fuel Type	Summer 2017 ¹		Summer Future Years ¹	
	Gas E	Diesel	Gas E	Diesel
Fuel Formulation ID	17702	30637	19702	30011
Fuel Subtype ID	12	20	12	20
RVP	7.54	0	7.80	0
Sulfur Level	21.28	6.37	10.00	11.00
ETOH Volume	9.66	0	9.56	0
MTBE Volume	0	0	0	0
ETBE Volume	0	0	0	0
TAME Volume	0	0	0	0
Aromatic Content	25.35	0	22.22	0
Olefin Content	8.33	0	8.69	0
Benzene Content	0.76	0	0.61	0
e200	49.45	0	49.64	0
e300	82.68	0	84.60	0
Vol to Wt Percent Oxy²	0.3653	0	0.3653	0
BioDieselEster Volume²	\N	\N	\N	\N
Cetane Index²	\N	\N	\N	\N
PAH Content	\N	\N	\N	\N
T50	203.73	0	202.53	0
T90	327.68	0	319.75	0

¹ TTI produced the gasoline formulations based on TCEQ's summer 2017 and summer 2020 statewide fuel (gasoline and diesel) survey data. The gasoline formulations are by Texas fuel regions; diesel is statewide. Gas E is the east Texas formulation based on samples from "state 7.8 RVP limit" counties. Summer 2017 gasoline formulations are actuals using the 2017 survey data. Future Years formulations are summer 2020 actuals (latest local survey-based estimates), except with RVP, sulfur level, and benzene content set equal to the MOVES defaults (i.e., expected future year values consistent with the pertinent regulatory standards). Bexar County falls under Gas E. Diesel sulfur for 2017 is the statewide actual average based on TCEQ's summer 2017 fuel survey data; and for Future Years diesel sulfur is set to the expected level (i.e., within the ultra low sulfur diesel average annual standard and consistent with the maximum observed values from the last four TCEQ statewide surveys).

² "\N" is "null" value, or not used.

Table 14: MOVES2014 Hourly Meteorological Data

Hours	Temperature ¹	Relative Humidity ¹
	County Code ²	County Code ²
	029	029
12:00 a.m.	78.99	77.90
1:00 a.m.	77.82	81.39
2:00 a.m.	76.91	84.04
3:00 a.m.	76.21	85.87
4:00 a.m.	75.69	87.13
5:00 a.m.	75.26	88.00
6:00 a.m.	74.88	88.78
7:00 a.m.	75.43	87.31
8:00 a.m.	77.66	81.44
9:00 a.m.	80.33	72.68
10:00 a.m.	82.98	64.24
11:00 a.m.	85.47	57.70
12:00 p.m.	87.72	52.12
1:00 p.m.	89.53	48.18
2:00 p.m.	91.03	44.94
3:00 p.m.	92.13	43.00
4:00 p.m.	92.60	42.18
5:00 p.m.	92.48	42.81
6:00 p.m.	91.50	44.95
7:00 p.m.	89.54	50.16
8:00 p.m.	86.61	56.89
9:00 p.m.	84.11	62.97
10:00 p.m.	82.12	68.75
11:00 p.m.	80.42	73.82

¹ June through August 2017 averages (TCEQ, <ftp://amdaftp.tceq.texas.gov/pub/EI/onroad/met/>).

² Counties by (Texas) FIPS code: Bexar (029).

Table 15: MOVES2014 I/M Descriptive Inputs for Subject Counties¹

I/M Program ID¹	n/a	n/a	n/a	n/a	n/a	n/a
Pollutant Process ID	n/a	n/a	n/a	n/a	n/a	n/a
Source Use Type	n/a	n/a	n/a	n/a	n/a	n/a
Begin Model Year¹	n/a	n/a	n/a	n/a	n/a	n/a
End Model Year²	n/a	n/a	n/a	n/a	n/a	n/a
Inspect Freq	n/a	n/a	n/a	n/a	n/a	n/a
Test Standards Description	n/a	n/a	n/a	n/a	n/a	n/a
Test Standards ID	n/a	n/a	n/a	n/a	n/a	n/a
I/M Compliance	n/a					n/a
¹ The I/M Program is not applicable to Bexar County. No I/M Program will be modeled.						

Table 16: MOVES2014 Emissions Factor Post-Processing to Be Performed by County and Year

Strategy and Post-Processing ¹ Result	Analysis Year	Counties
Texas Low Emission Diesel Fuel (TxLED)	All years	Bexar
¹ TTI will perform the post-processing using TxLED factors updated (according to the TCEQ procedure) using the 2018 EOY registration data (age distributions) for all years.		

Table 17: Emissions Controls Used for Conformity Credit¹

Emission Reduction Strategy and Years Covered	Modeling or Post-Processing Approach	Analysis Year
Texas Emission Reduction Plan	n/a	n/a
Intersection Improvements	n/a	n/a
Transit Service	n/a	n/a
High Occupancy Vehicle / Managed Lanes	n/a	n/a
Park-n-Ride Lots	n/a	n/a
Vanpools	n/a	n/a
Grade Separations	n/a	n/a
Traffic Signal Improvements	n/a	n/a
Intelligent Transportation Systems	n/a	n/a
Clean Vehicle Commitments	n/a	n/a
Bicycle/Pedestrian Facilities	n/a	n/a
Employer Trip Reduction Programs	n/a	n/a
Vehicle Retirement Program	n/a	n/a
Sustainable Development	n/a	n/a
Public Education/ Ozone Season Fare Reduction	n/a	n/a
¹ MOVES results do not indicate that emissions controls are necessary, so no modeling or post-processing approaches are used for transportation conformity credit in Bexar County.		