South Jersey Transportation Planning Organization

Date: Monday, October 17, 2022 / Updated Friday, October 28, 2022 / Updated Friday, November 4, 2022

To: Recipients

Re: Air Quality Post Processor Development
Questions and Answers

Q1. **Why does SJTPO need a post-processor?**

A1. A post-processor is needed because the output from SJTPO's travel demand model is not in a format that can be readily input into EPA's MOVES emissions model. Volume and speed are two of several main outputs from the South Jersey Travel Demand Model (SJTDM). This data is produced in peak periods that extend several hours (i.e., 3:30-6:00 PM). MOVES needs a specific apportionment of that peak period volume and speed for each hour in the entire 24-hour period.

Additionally, the SJTDM has three vehicle types: automobiles, commercial vehicles, and trucks, while MOVES has 13 specific vehicle types, known as the source type population. Other adjustments are necessary. For example, the vehicle miles traveled (VMT) data produced from a regional network-based travel demand model must be adjusted to match the Federal Highway Performance Monitoring System (HPMS) VMT data.

The above noted includes a few significant adjustments that must be made before outputs from a regional travel demand model can be fed into the MOVES emissions model. However, there are still more not explicitly listed here.

Q2. **The schedule for the proposal submittals is very tight. Is there any way you can extend the deadline for the proposal submittal? Similarly, the schedule for the deliverables (of the post-processor) seems tight. We also wanted to know if this schedule was flexible.**

A2. In light of the question, SJTPO has extended the proposal deadline by one week. The proposal due date for digital submission is now Tuesday, November 8, 2022. The physical submission is now due Tuesday, November 15, 2022.

Concerning the project schedule of the technical effort, SJTPO anticipates using the new post-processor to run the conformity analysis for the upcoming Transportation Improvement Program (TIP) for Federal Fiscal Year (FFY) 2024. Typically, the conformity analysis is done starting in mid-May and extends into mid-June, with the conformity analysis requiring no less than one to one-and-a-half months to complete. To adhere to this deadline, the new post-processor must be ready to use no later than early-June, with QA/QC and additional tweaks possible in June.

If the project delivery schedule outlined in the RFP is a significant deterrent to submitting a proposal, consultants should make this known in their response. The consultants should offer a revised schedule that would still accomplish the desired result of using the new post-processor for the upcoming TIP cycle.

South Jersey Transportation Planning Organization

Date:	Monday, October 17, 2022 / Updated Friday, October 28, 2022 / Updated, Friday, November 4, 2022
Re:	Air Quality Post Processor Development Questions and Answers

Q3. **The RFP refers to specific computer software such as CUBE and MOVES 3. Must the proposer be knowledgeable and/or have experience using these software packages?**

A3. As stated in the RFP, the post-processor is to perform the following functions:
1. "Extract" output from one data source, which in this case, is SJTPO's travel demand model
2. "Transform" the model output by reformatting the data or "disaggregating" the dataset (converting data covering a span of a few hours (i.e., "peak period data")) to hourly data
3. Ensuring the "transformed" data is ready to be "loaded" into another model

SJTPO staff believes the "Extract-Transform-Load" function would best accomplish the objectives of this post-processor. However, as implied in the RFP, SJTPO staff is not recommending a specific approach.

The proposer should, at a minimum, be comfortable with using, analyzing, and formatting large datasets. SJTPO staff also recommends proficiency in Microsoft Excel and Microsoft Access, as many of the MOVES files are in Excel, or at least can be converted to an Excel file or .csv file, as well as MySQL, as many of the MOVES databases are in MySQL.

Regarding knowledge of the specific software packages, SJTPO staff believes it would be beneficial for any proposer to at least *be familiar* with one or both types of packages. It is not essential to complete this task. Even though CUBE is not an open-source software package, SJTPO staff is willing to give any successful proposer a demonstration of how the CUBE travel demand model works. The EPA MOVES emissions model is publicly available and open-source, and the link is embedded in the RFP. SJTPO staff can assist in providing, analyzing, and reformatting files directly output from the travel demand model and inputs that go into the MOVES emissions model.

Q4. **Can you give an example of open-source or non-proprietary software in which this post-processor could run?**

A4: SJTPO staff is flexible as to the post-processor and will consider all feasible options so long as they are non-proprietary and do not require the purchase of a specialized license that is not open-source. Examples may include but are not limited to Microsoft Excel or Access.

Q5. **Can the post-processor application be deployed too and ran on Azure Cloud services or AWS services, or does it need to be installed on a private server (not on the cloud)?**

A5: While the current post-processor is installed on an employee's workstation, SJTPO staff yields to the recommendation of the software developer if they think an alternative setup and deployment of the non-proprietary post-processor, as suggested in the question, would be advisable.

Q6. **If the post-processor needs to be deployed to a private server, can you run either Windows/Ubuntu?**

A6: As noted in the response to Question 5, SJTPO staff yields to the recommendation of the software developer as to the optimal platform on which the non-proprietary post-processor can be run. The servers at SJTPO all run Windows.

Date:	Monday, October 17, 2022 / Updated Friday, October 28, 2022 / Updated, Friday, November 4, 2022
Re:	Air Quality Post Processor Development
	Questions and Answers

Q7. **Can the post-processor be deployed as a desktop application?**

A7: The post-processor developed as part of this technical effort can be deployed as a desktop application. SJTPO staff's only requirement is that post-processor be non-proprietary. The current post-processor is deployed as a desktop application.

Q8. **Can you confirm this diagram looks correct based on the requirements sent?**
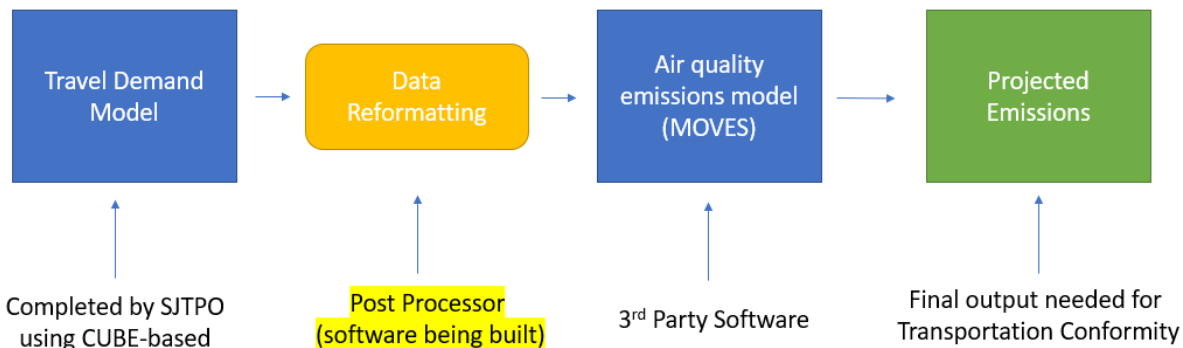
A8: The diagram as drawn in an accurate depiction. However, the following edits, in bold and underlined font, should be noted. Under Travel Demand Model, "Completed by SJTPO using CUBE-based **model**." Under Air quality emissions model (MOVES)-3rd Party Software. **Publicly available at: www.epa.gov/moves/latest-version-motor-vehicle-emission-simulator-moves#do**.

Q9. **Are there other outputs from "Travel Demand Model" other than CUBE-based priority file formats? Does any of the following apply?**
- **A flat file (csv, excel etc.),**
- **Stores data inside of a SQL database,**
- **Has APIs that can be used to consume data, and**
- **No output, manual entry will be required.**

A9: The South Jersey Travel Demand Model (SJTDM) has output .dbf files as well as .PRN files. Data from the SJTDM is not stored inside of a SQL database. Similarly, the SJTDM does not have APIs. While most of the data likely to be utilized in the post-processor are contained in the xxLOADED.NET files, which are standard CUBE outputs, it is possible that some of the data output from the SJTDM (e.g. Vehicle-Miles Traveled (VMT), speeds, etc.), and loaded into the post-processor will have to be manually entered.

Q10. **Is there a desired method of sending data to MOVES?**

A10: While there is no desired method of sending data to MOVES, it is SJTPO's hope that the newly developed non-proprietary post-processor will be able to be run without any additional specialized software programs and/or applications required.

Date:	Monday, October 17, 2022 / Updated Friday, October 28, 2022 / Updated, Friday, November 4, 2022
Re:	Air Quality Post Processor Development
	Questions and Answers

Q11. **Are there APIs that MOVES has that you're aware of?**

A11: ~~Response to this question shall be provided after consultation with EPA.~~ MOVES does not have its own Application Programming Interface (API). Input data is created, MOVES is run, and output data is generated.

Q12. **Would it be acceptable for users to upload a file to MOVES after post processor completes?**

A12: It is acceptable for the end user to upload a file into MOVES after the newly developed non-proprietary post-processor completes.

Q13. **Will the "Post Processor" need to remember the past processed data sets? For example, would you need to download another copy of the transformed data without importing from "Travel Demand Model" from a past date?**

A13: It is possible that the post-processor will need to remember past processed data sets. However, the end user will be responsible for being well-organized and maintaining a file directory, which will contain all the results of any previous runs.

Q14. **Will the "Post Processor" need to contain any reporting functionality on the data being processed?**

A14: While reporting functionality of the data processed would likely be helpful, this is not required. SJTPO requires only that the main output is the "projected emissions," as reported by MOVES.

Q15. **Will the "Post Processor" need to run on a scheduled interval or will manually be ran by user intervention?**

A15: It is envisioned that the developed non-proprietary post-processor will run manually with user intervention, as that is consistent with how the current post-processor is run.

Q16. **Will the "Post Processor" need the ability to create mathematical calculations or perform conditional logic based on input data. For example, input value A multiplied by input value B outputs new value inserted into MOVES, or input value A is greater than the number 10 which translate to true or false input into MOVES.**

A16: There might be some calculations necessary (e.g. converting peak period data to peak hour data). Similar calculations may be required for speed data. Conversion of peak period traffic volumes to peak hour volumes as well as other types of data, can be done through the application of specialized factors that SJTPO can provide. The specialized factors distribute daily values into 24 1-hour fractions. Three examples of these files that would be most pertinent to this process include:

1. Average Speed Distribution – *avgSpeedDistribution.csv*
2. Hour VMT Fraction – *hourVmtFraction.csv*
3. Road Type Distribution – *roadTypeDistribution.csv*

Date:	Monday, October 17, 2022 / Updated Friday, October 28, 2022 / Updated, Friday, November 4, 2022
Re:	Air Quality Post Processor Development Questions and Answers

All are included as part of the sample MOVES Input files that are listed under the "Available Resources" section of the RFP.

Q17. **In regards of allowing SJTPO to handle for new transformations, will the "Post Processor" need to give SJTPO users the ability to create mathematical calculations or conditional logic from an interface or strictly taking data and changing the structure and format for MOVES. (See example above)?**

A17: The latter part of this clause "strictly taking data and changing the structure and format for MOVES" is the minimum requirement for the post-processor, but if the post processor could provide users the ability to create mathematical calculations or conditional logic from an interface, that would be a desirable feature.