AQRP Monthly Technical Report

PROJECT TITLE	Emission Inventory Development and Projections for the Transforming Mexican Energy Sector	PROJECT #	19-023
PROJECT PARTICIPANTS	The University of Texas at Austin (UT Austin) Ramboll	DATE SUBMITTED	1/8/2018
REPORTING PERIOD	From: 12/1/2018 To: 12/31/2018	REPORT #	3

A Financial Status Report (FSR) and Invoice will be submitted separately from each of the Project Participants reflecting charges for this Reporting Period. I understand that the FSR and Invoice are due to the AQRP by the 15th of the month following the reporting period shown above.

Detailed Accomplishments by Task

Task 1. Base Year Emission Inventory Estimates
An initial emission inventory for on-shore oil and gas drilling and producing well sites has been developed for the Burgos and Sabinas Basins in northern Mexico for the 2016 base year. Activity surrogates obtained from Mexico's National Hydrocarbons Information Center (CNIH) and IHS Markit databases were applied by source classification code (SCC) and included, for example, well counts, production levels, and spud counts. Initial emission factors were developed based on 2014 National Emission Inventory (NEI) data by SCC and county and Western Gulf Basin oil and gas activity data from the Environmental Protection Agency's (EPA's) Oil and Gas Tool v. 1.5 or v.2. These preliminary emissions estimates for the Burgos and Sabinas Basins do not yet account for differences in emissions controls between the United States and Mexico.

Extensive spatial comparisons have been made between the 2016 CNIH data for off-shore oil and gas well sites with off-shore data for Mexico in the EPA's 2011 air emissions modeling platform. A significant difference is that the CNIH data has substantially greater spatial resolution (i.e., density of point sources) suggesting that it includes individual wells, in contrast to the EPA inventory data that are generally indicative of a production complex and not wells. The team is continuing to work on developing an initial approach to estimate base year emissions from off-shore oil and gas platforms. It should be noted that off-shore production in Mexico has been occurring in shallow waters with deep water resources still under development.

For the midstream sector, natural gas processing plants identified in the IHS Markit 2016 data and the 2008 Mexican NEI utilized by the EPA in its future year projections showed relatively better agreement. Of the eleven active plants identified by IHS Markit, only three did not appear in the EPA data. This suggests that projections of emissions estimates based on 2016 IHS data may be feasible for many of the natural gas processing plants in the EPA inventories.

The IHS Markit database identified many natural gas compressor stations than do not seem to appear in the NEI. A hypothesis is that the IHS data are capturing not only large compressor stations along major trunk lines but also smaller compressor stations both in-field and along pipelines. Data overlays of the compressor stations with the pipeline network are being created.

Dr. McDonald-Buller gave an invited talk (*Emission Inventory Development and Projections for the Transforming Mexican Energy Sector*) at the American Geophysical Union (AGU) fall meeting, session A045: Emissions of atmospheric pollutants from oil, gas, and coal operations, on December 12, 2018. A copy of the presentation is attached.

Task 2. Mexico Bid Rounds and Future Projection Scenarios
The early effects of Mexico's presidential administration transition on the upstream sector, in particular the hydrocarbon bid rounds, as well as on-shore and off-shore discoveries that have occurred since the enactment of energy reforms, are being tracked.

Preliminary Analysis
As above.

Data Collected
As above.

Identify Problems or Issues Encountered and Proposed Solutions or Adjustments
None.

Goals and Anticipated Issues for the Succeeding Reporting Period
The team will continue to refine the on-shore oil and gas production and drilling well site inventories for the Burgos and Sabinas Basins as well as initiate similar development for other on-shore basins. We will continue to work to establish an approach for estimating emissions from off-shore drilling and production activities. Analyses of the locations of natural gas compressor stations identified in the IHS Markit data with the pipeline network and on-shore production fields will be conducted. The team will also start to apply Mexico's National Electric System Development Program (PRODESEN) 2017 report and datasets to identify active electric generating units (EGUs) for 2016 and conduct comparisons with NEI and IHS Markit data.

Detailed Analysis of the Progress of the Task Order to Date
The project is proceeding as planned.

Do you have any publications related to this project currently under development? If so, please provide a working title, and the journals you plan to submit to.

___Yes   __X_No

Do you have any publications related to this project currently under review by a journal? If so, what is the working title and the journal name? Have you sent a copy of the article to your AQRP Project Manager and your TCEQ Liaison?

___Yes   _X__No

Do you have any bibliographic publications related to this project that have been published? If so, please list the reference information. List all items for the lifetime of the project.

___Yes   __X_No

Do you have any presentations related to this project currently under development? If so, please provide working title, and the conference you plan to present it (this does not include presentations for the AQRP Workshop).
__X_Yes   __No
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Do you have any presentations related to this project that have been published? If so, please list reference information. List all items for the lifetime of the project.

___Yes   _X__No

Submitted to AQRP by

Elena McDonald-Buller