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DIESEL CONSTRUCTION EQUIPMENT DATABASE AND NOx CONTROL TECHNOLOGY EVALUATION FOR GREATER HOUSTON

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The Houston-Galveston-Brazoria region of Texas has been designated by the US EPA as a severe nonattainment area for ozone. To facilitate meeting the emission reduction targets of the region, the State of Texas contracted Eastern Research Group (ERG) and Emisstar LLC to develop a first of its kind *Strategic Technology Assessment* which has produced an interactive tool designed to predict NOx emission reductions in the region. A database containing highly specific nonroad construction equipment and engine information has been developed for the Greater Houston area, incorporating a level of detail that provides a mechanism for the assessment of emission control reductions at the equipment/engine manufacturer and model level. Married to this database of over 40 construction equipment types are 17 NOx and PM reduction control technologies and technology combinations. The database and resultant predicative model estimates emissions reductions for a myriad of specific combinations of equipment type, operating profile, exhaust gas temperature distribution and control technology. It represents the first of its kind in the level of detail, number of engine types, range of operator categories, and the breadth and depth of included control technologies.

The model has been developed for the calculation of uncontrolled and controlled emissions to aid both air quality planners and technology vendors alike. Towards this end, it incorporates a Graphical User Interface, or "GUI" comprised of two key components: 1) a Regulatory Calculator designed to assist environmental professionals in evaluating the potential impact of specific equipment and control technology combinations on NOx reduction targets; 2) a Vendor Data Lookup Interface, designed to assist control technology manufacturers in evaluating the market potential of specific emission control technologies on specific equipment types and makes.

The ramifications of the database and predictive model are not limited to Texas. Through continued development encompassing database refinement, expansion into other sectors such as locomotive and marine, and increasing the number and type of equipment/engine parametric datasets as well as emission control technologies, Emisstar and ERG seek to transform this work product into a tool applicable for other US regions, eventually encompassing the entirely of the United States and resulting in a national database/predictive model.