

Life Cycle Environmental Impact of Houston METRO System – Evaluation of Electric Alternatives Dataset

Dataset available at: <https://doi.org/10.5281/zenodo.4304633>

(This dataset supports report **Life Cycle Environmental Impact of Houston METRO System – Evaluation of Electric Alternatives**, <https://doi.org/10.5281/zenodo.4304631>)

This U.S. Department of Transportation-funded dataset is preserved in the Zenodo Repository (<https://zenodo.org/>), and is available at <https://doi.org/10.5281/zenodo.4304633>

The related final report **Life Cycle Environmental Impact of Houston METRO System – Evaluation of Electric Alternatives**, is available from the National Transportation Library's Digital Repository at <https://rosap.ntl.bts.gov/view/dot/58924>.

Metadata from the Zenodo Repository record:

Title: Life Cycle Environmental Impact of Houston METRO System – Evaluation of Electric Alternatives

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Description: In the Greater Houston Area, mobile sources (on- and off-road vehicles) contribute the highest share of nitrogen oxide (NO_x) emissions and second-highest share of volatile organic (VOC) emissions. The Houston METRO system is a key element in Houston's infrastructure that can be expanded to lower emissions of criteria air pollutants (CAPs) and greenhouse gases (GHGs) and improve regional air quality. Currently, there is no comparative study for relative emissions and environmental impacts between passenger automobiles and METRO routes in Houston. Our research addressed this critical gap and developed environmental life cycle assessment for conventional diesel buses, diesel hybrid buses, and alternative electric buses in Houston using the GREET model. The life cycle GHG emissions of electric buses are slightly lower than the other two types of buses. However, all the other major emissions such as CO, NO_x, PM₁₀, PM_{2.5}, VOCs, SO_x, N₂O, CH₄, black carbon and primary organic carbon associated with electric buses are higher than diesel buses, thus causing higher environmental cost of electric buses than diesel buses. The life cycle costs of buses are very sensitive to future diesel and electricity prices. The results from this project would serve as a guiding framework to evaluate the effects of the decision to expand the METRO system and estimate the contribution of the METRO system in realizing the Greater Houston Area's environmental objectives.

Tran-SET Project: 19PPPVU01

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Dataset description:

This dataset contains 1 file collection described below.

19PPPVU01DATA.zip:

- LCA-LCC Houston buses-diesel price-no annual inflation.xlsx
- LCA-LCC Houston buses-diesel price.xlsx
- LCA-LCC Houston buses.xlsx

File Type Descriptions:

- The .xlsx and .xls file types are Microsoft Excel files, which can be opened with Excel, and other free available software, such as OpenRefine.

National Transportation Library (NTL) Curation Note:

As this dataset is preserved in a repository outside U.S. DOT control, as allowed by the U.S. DOT's Public Access Plan (<https://ntl.bts.gov/public-access>) Section 7.4.2 Data, the NTL staff has performed *NO* additional curation actions on this dataset. NTL staff last accessed this dataset at <https://doi.org/10.5281/zenodo.4304633> on 2022-05-05. If, in the future, you have trouble accessing this dataset at the host repository, please email NTLDataCurator@dot.gov describing your problem. NTL staff will do its best to assist you at that time.