Future Urban Mobility Calculator: An electric mobility infrastructure tool

The Future Mobility Calculator (FMC) is an Excel-based tool that helps cities make informed decisions about the future of their mobility and energy systems. Using city-specific demographic data, mobility scenarios, charging patterns and infrastructure, and cost data, the FMC estimates the quantity and cost of infrastructure required as well as related emission reduction and social benefits. The tool relies on local data and uptake scenarios input by the user, but in cases where local data is unavailable, the tool uses default data in its place. The FMC does not provide detailed quantitative analysis for EV uptake and goal setting, local distribution grid impacts from charging, or a rigorous benefits-cost analysis assessment. Therefore, more detailed quantitative analyses will be needed to make robust decisions.

Instructions:

1. Overview tab
    a. The Overview tab describes the following tabs and their content while providing a simple user key. Yellow cells can be manipulated while gray cells cannot.
2. Glossary tab
    a. The Glossary tab provides definitions of terms used throughout the rest of the tool.
3. Sources tab

a. The Sources tab contains links to sources for and/or description to default data used throughout the tool.

4. Initial Data Input tab
    a. The Initial Data Input tab is the first main step for the user to provide city-specific data. This data includes general city information and city electricity information. Based on this, the tool will assign certain characteristics to help source default data for the analysis.

5. City Data, Mobility Data, Charging Data, and Cost Data tabs
    a. Starting in the City Data tab and continuing for the following tabs, information is split between manual input and default input. If no local values are available, the FMC will utilize the default data.
    b. To the far right are information boxes that clarify the requested information for each data section.
    c. Within these tabs, users provide more detailed information on their city, evolving mobility landscape, charging infrastructure, and related costs.

6. Results tab
    a. The Results tab contains three different results dashboards, each broken into different categories with results shown for the Baseline (tool assumes 2020 as baseline), 2035, and 2050.
    b. The Costs Dashboard displays charging infrastructure costs, electricity costs, and vehicle investment costs. The Benefits Dashboard displays social and emission reduction benefits. The Infrastructure Dashboard displays different mobility characteristics as well as results for electricity consumption and chargers required.

7. Yearly Selected Costs and Benefits tab
    a. The Yearly Selected Costs and Benefits tab provides yearly results.

This is an open-source tool, all data input sheets, calculation sheets, default data sheets, etc. can be viewed and edited as needed.

As this is the first version of the tool, please share your feedback and report any issues to Vishant Kothari, vishant.kothari@wri.org. Your insights will help improve the tool development and functionality for future iterations.

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