Press Release

Planning tool to facilitate e-bus adoption

Immediate Release

Bengaluru: 22 December 2021

With the impetus provided by phase I and II of the Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles (FAME) scheme, many state transport undertakings (STUs) have started deploying electric buses (e-buses) in their fleet. However, there are considerable challenges that fleet operators face in doing so. The switch from traditional to e-buses involves a major transition to a not-yet-familiar area, mandating new technology considerations (for charging e-buses), as well as robust planning (to deal with the dynamic and complex operations of e-buses). A seamless transition to public e-mobility, thus, has two main requirements: an efficient charging infrastructure and a robust planning process.

In this context, the Center for Study of Science, Technology and Policy (CSTEP) has developed a web-based planning tool 'E-DEPOT' (E-bus Depot Planning and Operations Tool) to help STUs and electricity distribution companies (DISCOMs) in taking sound decisions regarding the deployment of e-buses. The tool provides multi-level analysis (at the schedule, depot, and operations level), with specific outputs at each level to guide the planning specific to that level.

E-DEPOT checks the feasibility of schedules (buses on a specific route) for deploying e-buses, estimates the charging requirements at the depots, assesses the resultant electricity requirements, and estimates the associated costs. To perform this analysis, certain inputs are required from the user, primarily, the details of depots and schedules considered for electrification.

Thus, E-DEPOT provides a platform to fleet owners for comparing the viability of various deployment scenarios, helping them take better decisions. With the relevant inputs, this generic tool can formulate charging plans for different Indian cities.

The working and functions of the tool have been demonstrated using representative data from an STU and the findings are presented in a report that can be accessed here.

In the same regard, CSTEP conducted a study on e-bus charging technology solutions. The study analysed charging technologies alternative to plug-in charging— battery swapping, opportunity charging, and battery-assisted trolleybus systems —to assess their technical feasibility for deployment in Bengaluru. The analysis concluded that a combination of charging technologies may have to be used for converting a large fleet of traditional fuel-based buses to e-buses. It also noted that the feasibility of employing a specific technology is largely determined by the characteristics of public transit operations, route characteristics, power infrastructure, and the nature of investments, which are not the same for all cities/states. As such, for a successful transition to public e-mobility, customised action plans should be prepared by cities/states, taking into account the characteristics discussed in the study.

The framework and the tool developed by CSTEP can be easily adopted across the country. With a significant potential for replication and scale-up, they can help smoothen as well as accelerate India's transition to clean public mobility.

The full report on e-bus charging technology options is available here.

For more details and interviews with researchers, please write to us at cpe@cstep.in

About CSTEP:

Headquartered in Bengaluru, the Center for Study of Science, Technology and Policy (CSTEP) is one of India's leading think tanks with a mission to enrich policymaking with innovative approaches using science and technology for a sustainable, secure, and inclusive society. CSTEP's areas of focus are Climate, Environment and Sustainability, Energy and Power, AI and Digital Labs, Materials and Strategic Studies, and Computational Tools.