



Inclusive Utility Investments for E-Transport

Transportation electrification is a potential category of investment for utilities, not only in the delivery of electricity as fuel, but in the charging infrastructure and battery for light duty and heavy duty vehicles. Clean Energy Works has worked with the Global Innovation Lab for Climate Finance to develop [PAYS for Clean Transport](#), starting with transit buses. Through this instrument, the utility pays the upfront cost for the charging infrastructure and the battery of the transit bus, reducing the up front cost of the electric buses and new infrastructure for the customer, and leveraging any other funding available or financing needed to cover all the cost for the bus replacement. Like in the case with the energy efficiency upgrades, the utility recovers all the costs via a service charge the electricity bill of the transit agency or bus owner. The tariff caps the service charge to be less than the estimated savings from switching from diesel buses to electric buses.

The instrument can also be applied to electric school buses and to private electric vehicles. In addition, inclusive utility investments can also be applied to the charging infrastructure, specifically the chargers at a customer's site. This includes the charger hardware and software required for any of the vehicles.

Differences between inclusive utility investments for building upgrades and electric vehicles

Inclusive utility investments can be utilized in both buildings and vehicles, the basics and benefits of the instrument application are the same, but there are some differences that can be seen in Figure 2 below.

The main difference is that the on-board battery, in the case of transportation applications, is an essential part of the functioning of the whole vehicle as well as a storage asset at the grid edge, and in some cases it is worth half of the cost of the electric vehicle (specifically in electric buses). Moreover, for vehicles, the split ownership is more significant and in some cases it is a prerequisite for additional financing. However, these differences are factored in the design of the instrument, and while the utility owns the battery and charging equipment at the outset, the instrument establishes a path to ownership for the owner of the rest of the electric vehicle, once the utility recovers all its costs.

Another important difference is the customer who pays for the tariffed service charge could be an individual customer such as a homeowner, but also a fleet owner such as a school district, transit agency or even truck operators. For both buildings and vehicles, utilities willing to provide these investments to scale up clean energy solutions, must seek approval from their regulatory commission or oversight board.

Figure 1. Inclusive Utility Investments Features by Different Applications

FEATURES	RESIDENTIAL BUILDINGS	CONSUMER ELECTRIC VEHICLES	ELECTRIC TRANSIT & SCHOOL BUSES
Tariff on bill investment structure	Yes	Yes	Yes
Allows for fiscally sustainable and scalable deployment	Yes	Yes	Yes
Overcomes up front cost barrier for clean energy	Yes	Yes	Yes
Ownership of upgrades during cost recovery	Building owner gains ownership of upgrades once the utility's costs are recovered; meanwhile, utility owns the upgrades.	Car owner gains ownership of charger (and battery, if desired) once the utility's costs are recovered; meanwhile, utility owns the charger (and battery, if desired).	Bus owner gains ownership of charger (and battery, if desired) once the utility's costs are recovered; meanwhile, utility owns the charger (and battery, if desired).
Source of cost recovery payments (who pays?)	Individual utility customer	Individual utility customer	Public or private entity that is the utility customer Government agency, transit agency, school districts or private transport operator
Promotes inclusive and equitable customer	Yes	Yes	Indirectly Engages with transit agencies or school

participation			districts to improve service to riders; rider fare revenue not affected
Need utility regulator approval	Yes, the same authority that approves rates	Yes, the same authority that approves rates	Yes, the same authority that approves rates
Barriers to securing financing for the rest of the assets	No	Yes Banks using repossession of collateral as security do not like to finance split asset ownership; which could limit utilities to charger, not battery	Yes Banks using repossession of collateral as security do not like to finance split asset ownership; which could limit utilities to charger, not battery

Advantages of electric transportation investments for utilities - V2X

In addition to having new off-peak electricity sales, electric school buses, transit buses, and some light duty electric vehicles and their chargers also have the capability of bidirectional charging. Utilities can definitely benefit. Batteries are assets to the wider grid, to microgrids, and directly to buildings for energy security, resilience and reliability. All those services have the potential to produce value streams that can help both the customer and utility realize savings. These applications are known as Vehicle to Everything (V2X).

Inclusive utility investments to deploy bidirectional chargers can help individual car owners, transportation agencies, school districts, and other heavy duty vehicle owners transform their vehicles and fleets into mobile power sources that charge when energy demand is low and feed power back into the grid during peak times.

Utility investments in electric chargers and on-board batteries can help address inequalities in transportation electrification

By reducing the up-front cost of electric technologies, inclusive utility investments allow customers - from individuals or families who want to buy an electric vehicle to fleet owners who want to buy electric buses - to afford these technologies. Low-income customers and transit agencies or school districts with tight balance sheets, including those serving low-income communities of color, have more barriers to acquire and benefit from zero emission technologies. Some of the barriers are the lack of cash in hand, limited access to incentives, or a credit rating inadequate for traditional financing. An inclusive utility investment is not a loan, which allows for higher participation from historically excluded customer segments.

The savings from the use of electric technologies in transportation allow for the payment of the inclusive utility investment tariff for the battery and charger. Customers can benefit from the zero emissions technologies and continue to save money. Moreover, by using an utility investment in inclusive terms, existing funding and incentives available for electric vehicles - from federal, state, or local sources - are leveraged, and therefore, these funds can go further, allowing more customers to acquire clean energy solutions, and eventually reaching everyone.