

Utility Tariffs for Investments in Mobile Storage: Accelerating Electrification in the Transportation Sector

Utility regulators in Kansas, Kentucky, Arkansas, New Hampshire and others have already approved opt-in tariffs for building efficiency upgrades. Utilities taking advantage of these opportunities are using the same system for their program design, Pay As You Save ® (PAYS ®). PAYS offers utility customers the option to access cost effective energy efficiency upgrades, such as better lighting or heat pumps, using a proven investment and cost recovery model that benefits both the customer and the utility. These utility tariffed on-bill programs accelerate investment in cost effective upgrades by removing the upfront cost barrier for customers and providing net benefits from the start.

Using utilities' business model to fuel new investment in transportation

Plummeting battery costs are now bringing electric vehicles closer to cost parity on a lifecycle cost basis, making the application of the PAYS breakthrough financing solution possible for the mobile storage. Nevertheless, the upfront cost barrier remains. Tariffed on-bill programs similar to those offered for building energy upgrades can break through the upfront cost barrier by allowing a utility to finance the equipment that drives the premium cost of electric buses -- batteries and charging stations.

The benefit to the utility is more storage connected to the grid and higher electricity sales in the transportation sector, sooner. Transit agencies around the world want to buy zero-emission electric buses to replace their diesel buses, eliminating noise pollution and helping attain emission targets in the process. Electric bus manufacturers have recently reached cost parity with diesel buses on a lifecycle basis, but the upfront costs for EV transit buses, for items such as batteries and charging stations, can still be as much as 150% of the cost of a diesel bus. In the last two years, nearly \$1 billion in electric bus sales have been stranded for lack of government funding for investments that utilities can finance. When utilities offer to invest in mobile storage on tariffed terms, they can overcome the upfront cost barrier, allowing fleet managers to swiftly retire the dirtiest diesel buses in favor of zero-emission transit.

Here's how it works:

1. The **utility** establishes a terms of service agreement (a tariff) for investing in the battery and charging station for each new electric bus sought by a transit agency in its service area.



2. The **EV owner** (e.g. transit agency) opts in to the tariff, allowing the utility to put a fixed charge for cost recovery on the monthly bill at the charging station. The charge is capped at a level below the estimated savings, so *net costs are lower than a diesel bus*.
3. The **utility** recovers its costs within the warranty period of the battery and charging station.

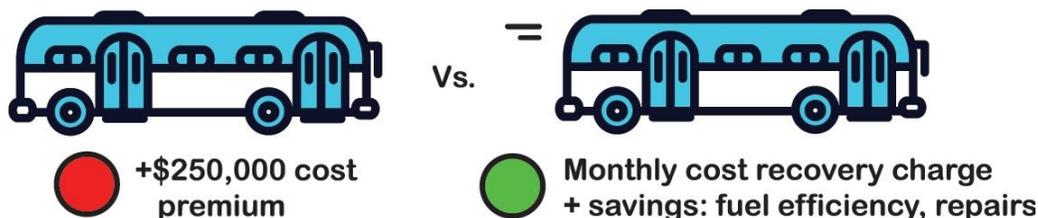


Equipment eligible for utility investment must be covered by a warranty that spans the cost recovery period. Manufacturers bear the costs for repair or remedy without exposing a utility or its customer to technology risk. For electric buses, the standard coverage for battery storage is 12 years.

Benefits to Utilities and Customers

For the transit agencies that opt in, the utility pays for energy saving upgrades to the bus fleet, and the transit authority pays nothing upfront for the premium cost of the zero-emission electric bus. The transit authority has no loan, no lien, and no debt associated with this transaction; just lower costs of operation and a better bus fleet. When the utility recovers its costs, the monthly charges end, and when the transit agency has exhausted a battery used for on-board storage, the utility may opt to buy battery packs for second life applications for stationary storage.

The utility gains approximately \$100,000 in new sales over the life of each electric bus that displaces a diesel bus, and bus riders and communities served by both the utility and the transit agency are then spared the hazards of air pollution and the nuisance of noise pollution produced by diesel buses.



About Clean Energy Works

Clean Energy Works focuses on business plan development for utilities that are using PAYS to update their investment model for the 21st century. We also provide advisory services to policy-makers, public interest groups, and companies interested in rapidly scaling up investment in clean energy solutions. Our work on financing energy efficiency in buildings won a Fire Award in 2015 for high-impact innovation at the Bloomberg New Energy Finance “Future of Energy Summit” and the concept of harnessing the strength and scale of utilities in the transportation sector won both a top award from the Climate Strategies Accelerator in 2017 and was selected by the Global Lab for Climate Finance as a top finance instrument in 2018.