



ELECTRIC VEHICLES 101

A series of transport notes on electric vehicle trends and opportunities from IFC

An EV Playbook for Electric Buses

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Creating Markets, Creating Opportunities



What are the critical questions to ask if you are contemplating an e-vehicle program? Based on the technical and business proposals IFC has seen so far, there are some factors to keep in mind.

FACTORS FOR E-BUS PROPOSALS

Here are some key factors for investors to consider when these proposals hit your inbox:

- **Can the transit authority handle this?** Making the transition to electrics is not a simple leapfrogging exercise. There are a lot of moving parts, and coordination on the public sector side is key. If there is not a relatively solid transit authority and good interagency coordination between other government entities, it is hard to imagine an e-bus program going well.
- **Do you have the infrastructure to make this work?** First, the physical infrastructure. Any bus rapid transit or large bus program will deliver better service if there are dedicated lanes or other ways to enhance traffic flow. This is even more critical for e-buses that suffer from stop-and-go traffic that saps battery range. Electrics also require strategically located maintenance yards where charging can take place. Cities with bus rapid transit systems should have depots in place for charging and maintenance. If this is not the case, and you are planning to implement an e-bus program in a dense urban area, make sure the city has the real estate necessary for your shiny new electrics.
- **Is the local utility engaged?** At the heart of the electric bus question is access to cheap, fixed-price, reliable energy, which includes a dependable grid that can handle the new peaks associated with daily bus charging patterns. Ideally, the local utility would be a participant in the program, but this may be luxurious outside of a few avant-garde places such as Chile, where firms like Enel and Engie are heavily integrated into the process. The local utility will need to have the requisite knowledge of the power requirements and be willing to offer reasonable fixed-price energy to the operators. If there are concerns about grid stability, see if we can support the municipal utility with subnational investment support.
- **Is the taxation and import environment favorable for e-buses (or at least neutral)?** Let's face it: E-buses are still prohibitively expensive in many countries. Subsidies are still necessary, either on the public policy side or through some form of patient (concessional) financing. Optimally, the local government would have grants to defray the higher cost of an electric bus vis-à-vis diesel models. This makes the purchase more viable, but it also shows commitment to the transition. Unfortunately, outside of China and a few OECD markets, grants are generally not available, and electric buses have to survive on their own. At a minimum, the taxes and import duties must be favorable as import tariffs on equipment and batteries can be a killer.
- **Is the contractual arrangement bankable?** As always, bankability is in the eye of the beholder. However, as we have analyzed early-stage projects, we have come across some pretty bizarre proposals. There are some fundamentals to keep in mind. Some of this is good, old-fashioned credit analysis, but we wanted to raise a few things here:
 - **Avoid demand risk:** In many places, demand risk rests with the operators, which is next to impossible to forecast. Look for proposals where there is a capacity payment or other guaranteed minimum revenue stream based on kilometers covered, service parameters, or where the traffic flows and vehicle use are already very well-established (such as an existing operator looking to convert to electrics).
 - **Make sure the municipality is on the hook:** Look for municipal guarantees or at least some sort of escrow or clearinghouse mechanism that makes

the payment risk manageable. Local politics can be a minefield that is difficult to manage. If the municipality has stepped up with payment obligations, consider credit-enhancing the payment stream.

- **Know Your Client:** Obvious, right? Depending on the configuration of the operation, double check who will be deploying your funds. Financing fleet managers might be a way to create some healthy distance, but operator companies are notoriously undercapitalized and fraught with local politics and IDD problems. Be sure that we know where the funds are headed.
- **Collateral, Anyone?** Depending on the program, we may (or may not) be able to get collateral security over the buses. Legally speaking, it may be possible to get pledges over the equipment. However, municipalities will never allow service to be interrupted, so consider whether or not this is liquid and/or enforceable. Also, as the technology is changing rapidly, consider residual values carefully.
- **Are there local currency options to finance the program?** While the power market has been built around U.S. dollar-denominated power purchase agreements, this isn't realistic for the electric bus sector. It might be possible to structure a fixed payment stream through leasing and asset companies for the buses, for example. However, in this case, the payments won't be in U.S. dollars. See if it is possible to offer a true local currency solution.

For sectors other than buses, where there is a less well-defined contractual structure, investment opportunities will likely involve corporate finance-style structures where investors would finance the rollout of

corporate transportation, delivery fleets, and other "green" initiatives. In these cases, there would have to be high-use vehicles to maximize the benefit of lower operating costs, predictable routes to make charging practical, and a clear savings argument for investing. These could be classic candidates for blended finance or even green bond financing and may involve either fleet operators or leasing companies that provide vehicles to such operators.

PUTTING IT ALL TOGETHER

The broad-based electrification of buses and other urban transport represents a massive investment opportunity for IFC and other investors to invest in higher quality, sustainable transport while addressing climate change and improving air quality. At the same time, this sector is beset with some of the trickiest issues related to transport infrastructure, power, municipal finance, and even local politics. For now, investors should be planting seeds with municipalities and the "A students" from the private sector in preparation for what lies ahead. If we are clever and persistent (and perhaps a bit daring), we could ride this wave of sector disruption for the next decade.

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[Bumps in the Road: Challenges to E-bus Implementation](#)

[E-Bus Economics: Fuzzy Math?](#)

[Electric Buses: Why Now?](#)

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