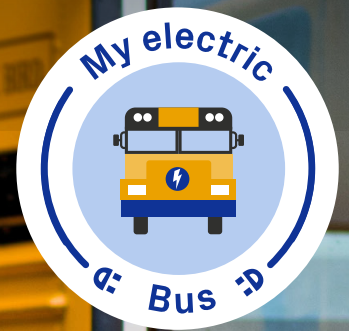


Considerations for a smooth transition

Fact Sheet



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Although they are not radically different from their diesel counterparts, the transition to electric vehicles requires that consideration be given to various aspects which involve more than just the vehicle itself. Beyond the most frequent issues related to cost (see [Costs](#) fact sheet), range (see [Range](#) fact sheet) and recharging (see [Charging](#) fact sheet), there are other elements that need to be considered.

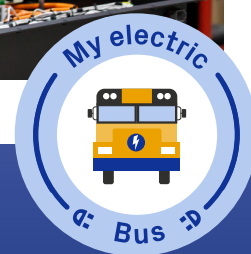
Organizing operations

Managing the charging of electric buses brings with it a number of constraints that can impact how operations are organized. Although it is possible to utilize electric school buses in the same manner as diesel buses, it may be advisable to make a number of adjustments to operations in order to achieve optimum benefits.

Prioritizing the use of electric school buses on routes that have a stop at a charging point between morning and evening runs makes it possible to operate with buses that have a shorter range and at reduced cost. Conversely, if buses do not return to the charging station during the day or even at night (for example, by being parked at the driver's residence), this should not be a limitation, because solutions can be put into place (e.g., charging stations at the driver's residence, different buses to cover the same route, etc.).

Maintenance and repairs

Electric buses require less maintenance, but they also require a different kind of expertise that will initially be harder to find on the market. Additional training for mechanics will therefore need to be planned. In addition, it may be appropriate to stock spare parts and allow for longer downtime in the event of an accident or breakdown. The current part supply situation may result in certain delays, because right now parts are less readily available, and this will be the case for some time.



Future purchases

Managing a small fleet of electric school buses can present very different challenges than managing a fleet with a large number of electric vehicles. With a large number of electric school buses, issues can arise, particularly with respect to how charging is managed (see [Recharging](#) fact sheet), and this can affect the return on investment. It is therefore important that the transition is carefully planned, based on current and future needs, and that existing energy management tools are used.

On the other hand, when less than 20% of a fleet is made up of electric buses, there remains a high level of flexibility where diesel buses can be used to accommodate the most complex routes, but this is less the case when you get to 50% of the fleet. The same is true when it comes to the management of vehicle maintenance or downtime, which is currently less frequent for electric school buses, but is typically of longer duration. In order to reduce future complexity and potential associated costs, a phased-in acquisition plan which includes a goal of achieving maximum electrification should be considered early in this transition.

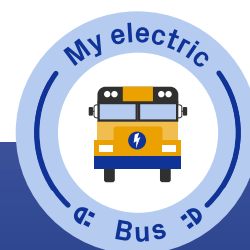
The Winter factor

Preheating an electric school bus while it is plugged into the charging station is a good practice to ensure system optimization in winter. Although the impact on range is minimal in winter (a loss of 10 to 15%, see the [Range](#) fact sheet), winter conditions can influence how parking is managed. The placing of charging stations and the orientation of the charging ports need to be taken into account. Snow removal and the possibility of sheltering the infrastructure should not be overlooked when planning installation of the charging infrastructure.

Resistance to change

Although often overlooked, this is potentially one of the most important elements. It is essential that employees are involved throughout the various stages of this change, as it can create resistance among staff, the intensity of which varies from person to person. To minimize its impact, it is important to hold focus groups or information sessions involving the most reluctant individuals and those who are more enthusiastic during the preparatory phases (e.g., when it comes to choosing terminal locations). Finally, what we observe is that once the change has been made, there is never any desire on the part of the drivers to go back to diesel buses.

The Valley of Despair Kubler-Ross



Environment and public health

Although it is important, the environmental impact is not necessarily at the top of the list of reasons for carriers wanting to make this shift. The use of electric school buses by a company gives it a responsible, environmentally sensitive and positive image, and these are all elements that are highly sought-after by customers (school service centres) and the general public. Also, drivers and users appreciate their quiet operation and the lack of harmful emissions. Furthermore, the government's goal of electrifying 65% of the school bus fleet by 2030¹ and the new regulations requiring diesel buses to be converted to electric as they are being replaced, are all considerations that are becoming unavoidable.

1. [Gouvernement du Québec, 2030 Plan for a Green Economy](#) (only in French)



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