To alleviate the emission of greenhouse gases and the dependence on fossil fuel, Plug-in Hybrid Electrical Vehicles (PHEVs) have gained increasing popularity in recent decades. Due to the fluctuating electricity prices in the power market, a charging schedule is very influential to driving cost. Although the next-day electricity prices can be obtained in a day-ahead power market, a driving plan is not easily made in advance. Although PHEV owners can input a next-day plan into a charging system, e.g., aggregators, day-ahead, it is a very trivial task to do everyday. Moreover, the driving plan may not be very accurate. To address this problem, in this paper, we analyze energy demands according to a PHEV owner’s historical driving records and build a personalized statistic driving model. Based on the model and the electricity spot prices, a rolling optimization strategy is proposed to help make a charging decision in the current time slot. On one hand, by employing a heuristic algorithm, the schedule is made according to the situations in the following time slots. On the other hand, however, after the current time slot, the schedule will be remade according to the next tens of time slots. Hence, the schedule is made by a dynamic rolling optimization, but it only decides the charging decision in the current time slot. In this way, the fluctuation of electricity prices and driving routine are both involved in the scheduling. Moreover, it is not necessary for PHEV owners to input a day-ahead driving plan. By the optimization simulation, the results demonstrate that the proposed method is feasible to help owners save charging costs and also meet requirements for driving.