

## Workplace Charging Challenge

### Enabling employees to charge from work

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Formed by the Electrification Coalition, Drive Electric Northern Colorado (DENC) is a community-wide initiative designed to achieve widespread deployment of plug-in electric vehicles (PEVs) in the Northern Colorado Region.

### Why Should You Consider Joining Workplace Charging Challenge?

Commuting to and from work accounts for over a quarter of an average driver's daily vehicle travel. The range of existing electric vehicles is more than enough to handle the typical day's worth of driving needs. But there are always circumstances that could require additional range. The workplace can play a critical role in enabling drivers with longer commutes to leave work free of worry or need for electricity. You can help facilitate the widespread transition to electric vehicles by incorporating this technology at your workplace.

As Ambassadors to the Department of Energy's Workplace Charging Challenge, the Electrification Coalition will develop a plan to make Northern Colorado the leading region for business-led EV charging. Workplace charging will serve as a core component of Drive Electric Northern Colorado's infrastructure strategy.

The electric vehicle market is growing quickly in the United States. In fact, current sales are out-performing those of hybrids since the vehicle technology first entered the automobile market in the year 2000. In Colorado, we are seeing a significant uptake of electric vehicles. The state has one of the largest state tax credits for electric vehicles in the country. Soon, you will be seeing electric vehicles driving through the streets, and into your parking lot, with greater regularity.

### Benefits of Installing Workplace Charging Stations

**Employee Benefits:** One of the most compelling benefits of an electric car is the ability to essentially fuel it while you do other things—sleep, shop, and, in this case, work. Without having to stop at a public fueling station, an electric vehicle owner can satisfy 99% of their driving needs with a pure electric vehicle. As employees become more aware of this possibility, they will perceive charging services as an important benefit.

**Employee attraction:** Colorado is attracting highly skilled professionals from around the country in greater volume than ever before. By offering EV charging services, you can attract professionals looking for cutting edge employers.

**Fleet Savings:** Businesses that operate fleets are familiar with the costs associated with regularly fueling and maintaining their vehicles. Businesses can incorporate electric vehicles to reduce these costs and benefit from a "fueling" source at the home base.

**Branding and Publicity:** By participating in this workplace charging initiative, your company has another opportunity to publicize and increase awareness of its work.

### Process for Incorporating Workplace Charging

Are you interested in joining our workplace charging challenge? If so, please reach out to our team to discuss next steps for joining. Here is a brief description of the process for incorporating charging infrastructure at your business.

1. Assess interest in workplace charging with necessary internal decision makers.
2. Engage building owner or manager in discussion about workplace charging; where possible, include DENC to help provide expertise and background information.
3. Survey employees to determine potential interest in charging. This might be best executed by holding a Ride and Drive event to help develop interest.
4. Determine who can use the charger
  - a. Public or private access
  - b. Reserved parking spaces or open to all.
5. Work with the city to help identify best locations, permit inspection processes, and installation of the equipment.
6. Notify employees of availability of charging station.
7. Work with DENC to help promote employer's installation of charging stations.





## Types of Charging Equipment

Charging stations are typically categorized according to the rate with which they charge a vehicle's battery. There are three levels of charge most commonly used—Level 1, Level 2, and direct current (DC) Fast Charging. The speed and cost of this equipment increases at each level.

**Level 1:** Level 1 charging can consist of a standalone or wall-mounted charging station or, more commonly, a simple household outlet. Level 1 charging delivers 120 volts of alternating current (AC) to the vehicle's onboard charger, which converts the power to direct current (DC) to charge the battery. Every electric vehicle comes with its own charging cable capable of plugging into a standard outlet. One end of the cord set is a standard household three-pronged plug (NEMA 5-15 connector), while the other end, which plugs into the car, is a standardized connector that conducts a "communications handshake" to notify the vehicle when to commence and discontinue charging.

The costs associated with installing this equipment are little to none. Therefore, many outlets or charging ports can be installed cost effectively. Level 1 charging is ideal for locations where vehicles are likely to be parked for extended periods of time. This level takes some time to fully charge a battery (approximately 2-5 miles of range per hour of charging time), but it can be perfectly suitable for overnight charging.

**Level 2:** Like Level 1 charging, Level 2 charging delivers AC power at 240 volts, Level 2 charging will charge a car in half the time—approximately 2-4 hours for a vehicle that has depleted 40 miles of its range. Unlike Level 1 charging, Level 2 typically requires the installation of a charging station and a dedicated circuit of 20-80 amps, depending on requirements.

Level 2 charging stations can cost anywhere from \$500 to \$3,000 per unit, depending on networking capability and Internet connectivity. In an hour, it will give a vehicle 10-20 miles of additional range, making it an option for quicker top-offs. It is also well suited for nighttime charging.

**DC Fast Charging:** A DC Fast Charging station delivers 480 volts of electricity directly to the vehicle's battery. It will charge a fully depleted electric vehicle to 80 percent in as little as 20 minutes. This form of charging is ideal for public charging, but could also be suitable for a hotel that may only have one charger but a need to circulate multiple vehicles.

## Installation Costs

The cost to install a charging station varies depending on factors such as number of stations and circuits installed, electrical upgrades required, where the charger will be located and any necessary trenching. DENC and the city can work with you to help determine the costs



## Operating Costs

- Depending on the distance of their commute, employees will likely require minimal charging, resulting in very little electricity usage.
  - The average commute in Fort Collins is only 5 miles long
  - Electric vehicles cost, on average, three cents per mile to charge
- Costs for operating Level 1 and Level 2 charging stations will be equal to running a hair dryer or clothes dryer respectively.
- DC Fast charging will have higher operating costs.
  - Depending on time of day, DC Fast Charging may incur high costs
  - Also consider potential for utility demand charges

Please contact the DENC team if you're interested in joining our program.

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