

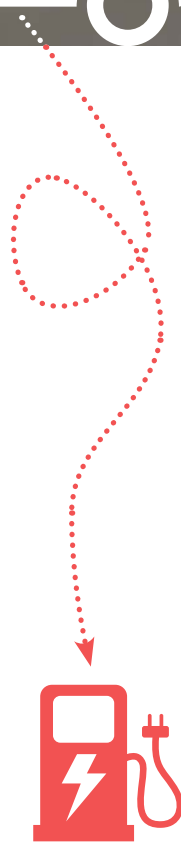
ELECTRIC VEHICLES & CHARGING NETWORKS

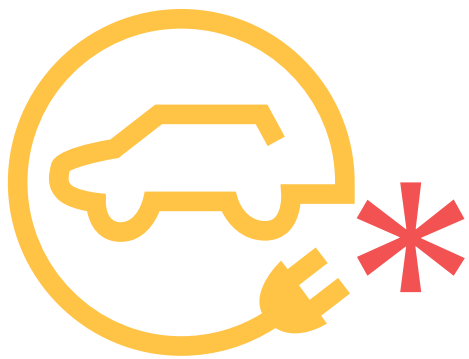
THE MPO ROLE

As concerns grow about climate change and greenhouse gas emissions, electric vehicles (EV) are beginning to penetrate both the personal automobile and commercial truck fleets.

These may be fully electric vehicles or plug-in hybrids, which use gasoline engine to extend the driving range when longer trips than the battery can provide are taken. This can create a challenge for the vehicle operator in terms of being able to charge their vehicle in locations away from home or the commercial fleet base of operations. While some employers have installed EV charging stations (known as EV Supply Equipment or EVSE), EV car owners may expect that they should be able to access public charging stations.

Key issues related to public EVSE include siting the charging stations, providing the underlying infrastructure, selecting the types of chargers to install, and developing a plan for maintenance and operation.





SITING EVSE

Choosing locations for public access EVSE should be based on analytic work in order to maximize the value to the community. For example, while a parking garage installation may appear a reasonable choice, the location may not meet the needs of users. Work done by other MPOs (Puget Sound Regional Council for example http://www.psrc.org/assets/4144/Station_siting_July2010.pdf) provides suggestions of using surveys to forecast EV owner travel patterns. It is also noted that EV owners plan for their regular trips, like the work commute, but may want a charging station at sites like entertainment venues. See also a report "Siting Electric Vehicle Charging Stations" from Sustainable Transportation Strategies

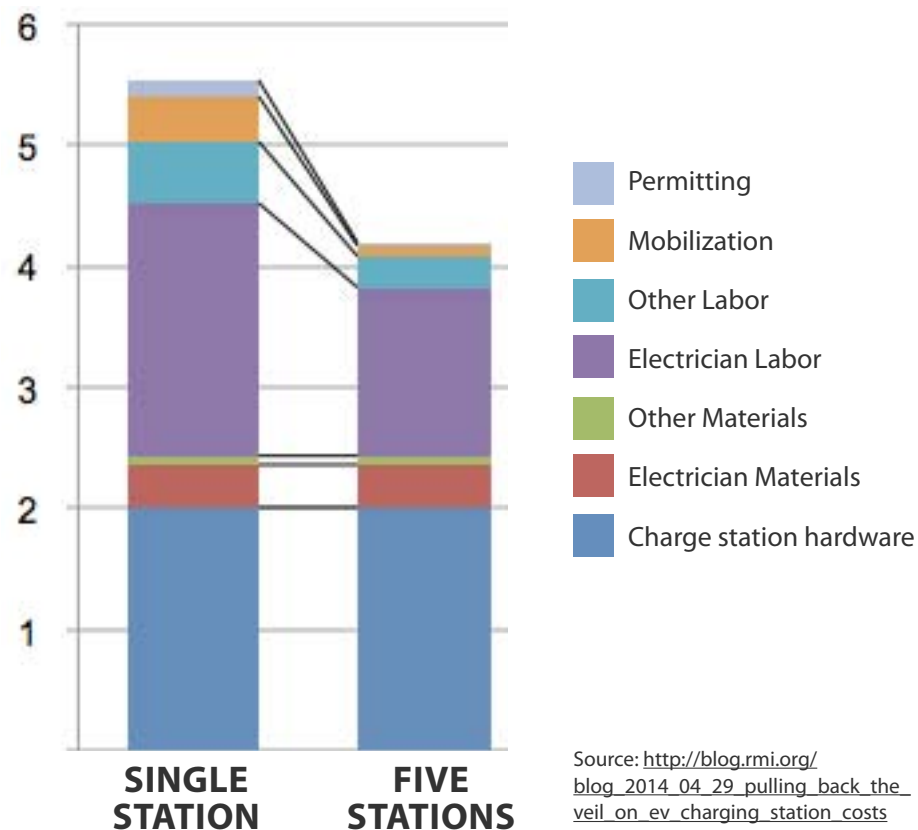
<http://www.sustainabletransportationstrategies.com/wp-content/uploads/2012/09/Site-Design-for-EV-Charging-Stations-1.01.pdf>

COST OF EVSE SYSTEMS

The cost to a public agency for installation of EVSE depends on the infrastructure work that will need to be done, type of charger being provided, and the number of chargers in a single installation. These graphs indicate a range of cost estimates for garage and curbside installations.

PARKING GARAGE INSTALLATION

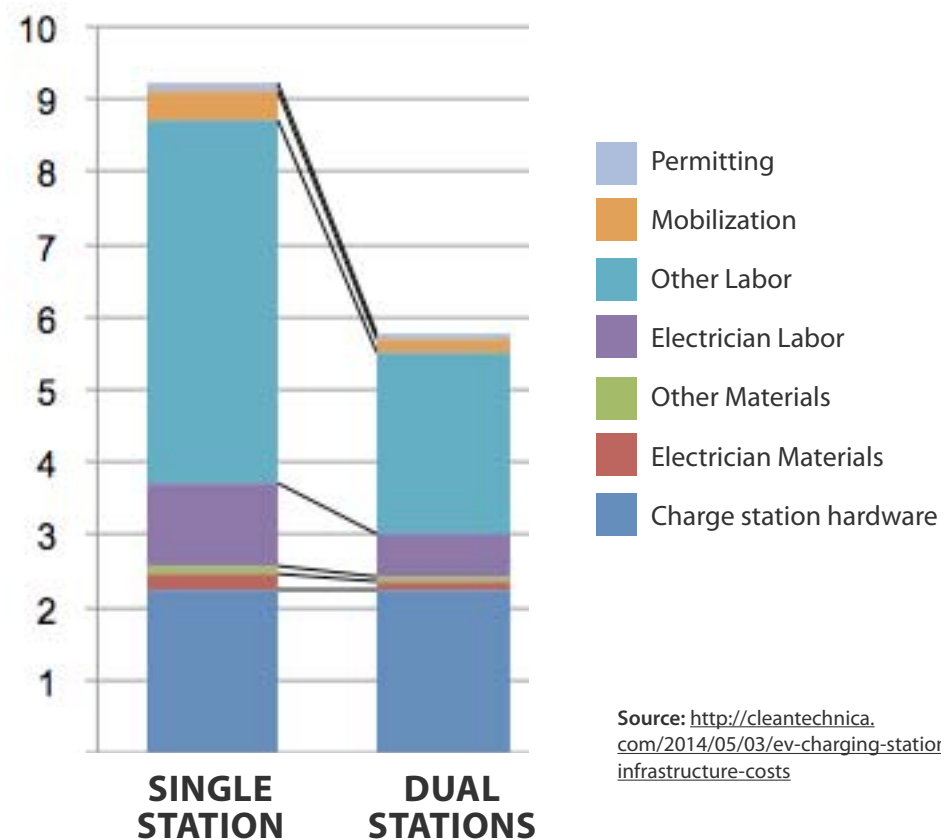
Cost per charger, thousands USD



Source: http://blog.rmi.org/blog/2014/04/29/pulling_back_the_veil_on_ev_charging_station_costs

CURBSIDE INSTALLATION

Cost per charger, thousands USD



Source: <http://cleantechnica.com/2014/05/03/ev-charging-station-infrastructure-costs>

LOCAL GOVERNMENT ROLE

Local governments play a key role in developing and maintaining a network of publicly accessible charging stations. They will need guidance on a range of issues from siting and design, to permitting and codes.

The Transportation and Climate Initiative (TCI), a collaboration of Northeast and Mid-Atlantic state transportation, environment, and energy agencies, has developed a suite of documents to help communities become EV-ready as part of its Northeast Electric Vehicle Network project, available at www.northeastEVs.org. These resources can be used by a municipality when developing an EV readiness plan.

Basic local government actions include...

Zoning

- Defining EVs and EVSE as a permissible use in zoning regulations is a first step on which decision makers can build future regulations.
- By setting development standards through zoning ordinances, municipalities can shape the scope of EVSE deployment.

Codes

- Codes can be used to provide consistent and flexible options to regulate for EVSE. This can include setting development standards, such as requirements for a certain number or percentage of EVSE-designated parking stalls.
- Code changes will require buy-in from the development community, but precedents indicate costs will not increase dramatically.

Permitting

- Several municipalities have found their existing permitting processes to be sufficient by defining EVSE installations as "minor" work."
- Reducing permitting fees for EVSE should start by eliminating unnecessary administrative and inspection steps. Fee standardization benefits consumers and is useful to electricians quoting prices.

Parking

- Regulation of EVSE use through parking ordinances can set the scope and enforcement requirements for parking with state or local laws.
- Parking ordinances can be effective tools in encouraging EVSE in a wide range of installation scenarios, including public and private venues as well as new and existing construction.
- Parking ordinances work hand-in-hand with parking management (whether public or private) to enforce regulations on the use of parking spaces, including EV charging-only spots.
- Opportunities exist for private parking management and for developing EV parking incentives, such as preferred parking, which may encourage EV purchases.

Partnership and Procurement

- Having a diverse set of partners in EV-readiness planning is important because it can strengthen the EV markets. Expertise and dissemination of information are necessary for new technologies to catch on. This is often best accomplished by working with public, private and non-governmental organizations dedicated to EVs.
- Private-sector innovation and investment will continue to shape the EV market.
- The public sector can encourage this development and reduce public expense by establishing procurement programs and policies for equipment and services.

From *Creating EV Ready Towns and Cities: A Guide to Policy and Planning Tools* (Georgetown Climate Center, Nov 2012)



MPO INVOLVEMENT

Why should an MPO get involved with EV promotion and EVSE infrastructure?

- It aligns with environmental goals and objectives through reduction of mobile-source emissions.
- It aligns with climate change goals and objectives through reduction of greenhouse gases.
- It supports planning for sustainable transportation and communities.
- Coordination among municipalities in a metropolitan region is a primary function of MPOs.
- Travel does not recognize municipal boundaries; there is a need for strategic planning on a regional basis in order to develop effective regional and inter-regional networks.

Planning for EV charging stations makes the most sense at a regional level, so consumers will have uniform expectations wherever they are. When individual municipalities adopt their own ordinances, codes, and programs, the resulting patchwork of infrastructure can create confusion. There is also the potential for costly retrofitting if a regional approach is an afterthought.

staff can assemble a toolbox for EVSE network implementation, including model ordinances, codes, and standards. They can also use the established MPO public involvement process to both educate the public and gather input and ideas. The MPO may also have the capability to provide technical assistance in siting EVSE, using the analytical tools described in this document. As a regional initiative, there

MPOs can approach this issue through their planning process. It should begin with examining the goals and objectives of the long range transportation plan, and considering modifications as necessary. Remember that one of the national performance goals in MAP-21 is sustainability. Is there a champion among the MPO decision makers for EVSE network support?

The Planning Committee may be a place to gauge local interest in EVSE networks. With their support, MPO

may be opportunities to seek funding to support capital projects.

The MPO may be involved in developing a funding package to support the implementation. Clean Communities coalitions, part of the U.S. Department of Energy's Clean Cities program, strive to advance economic, environmental, and energy security by promoting the use of alternative fuels, advanced vehicle technologies, and policies that reduce petroleum consumption in transportation. Many MPOs in the country, including Capital District Transportation Committee (CDTC) in New York State, host such coalitions and provide educational events, demonstrations of alternative fuel vehicle technology, and networking/ collaborating opportunities for public and private organizations.

MEASURE OF SUCCESS

As automobile technology continues to evolve, and the electric vehicle market share expands, you can use "We are an EV Ready Region" as a marketing tool.

RESOURCES

Northeast Electric Vehicle Network, www.northeastEVs.org

New York State Energy Research and Development Authority, www.nyserda.ny.gov

U.S. Fuel Economy, www.fueleconomy.gov

U.S. Dept of Energy Alternative Fuels Data Center, www.afdc.energy.gov/fuels/electricity_infrastructure.html

Capital District Clean Communities Coalition, <http://capitalcleancommunities.org>

USDOE Clean Cities Program, <http://www1.eere.energy.gov/cleancities>



New York State Association of Metropolitan Planning Organizations

<http://www.nysmpos.org>