Notice of Nondiscrimination Rights and Protections to Beneficiaries

Federal “Title VI/Nondiscrimination” Protections

The Franklin Regional Council of Governments (FRCOG) operates its programs, services, and activities in compliance with federal nondiscrimination laws including Title VI of the Civil Rights Act of 1964 (Title VI), the Civil Rights Restoration Act of 1987, and related statutes and regulations. Title VI prohibits discrimination in federally assisted programs and requires that no person in the United States of America shall, on the grounds of race, color, or national origin (including limited English proficiency), be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity receiving federal assistance. Related federal nondiscrimination laws administered by the Federal Highway Administration, the Federal Transit Administration, or both prohibit discrimination on the basis of age, sex, and disability. These protected categories are contemplated within FRCOG’s Title VI Programs consistent with federal interpretation and administration. Additionally, FRCOG provides meaningful access to its programs, services, and activities to individuals with limited English proficiency, in compliance with U.S. Department of Transportation policy and guidance on federal Executive Order 13166.

State Nondiscrimination Protections

FRCOG also complies with the Massachusetts Public Accommodation Law, M.G.L c 272 §§ 92a, 98, 98a, prohibiting making any distinction, discrimination, or restriction in admission to or treatment in a place of public accommodation based on race, color, religious creed, national origin, sex, sexual orientation, disability, or ancestry. Likewise, FRCOG complies with the Governor’s Executive Order 526, section 4 requiring all programs, activities, and services provided, performed, licensed, chartered, funded, regulated, or contracted for by the state shall be conducted without unlawful discrimination based on race, color, age, gender, ethnicity, sexual orientation, gender identity or expression, religion, creed, ancestry, national origin, disability, veteran’s status (including Vietnam-era veterans), or background.

If you need help understanding this document because you do not speak English or have a disability which impacts your ability to read the text, please contact FRCOG’s Title VI Specialist at (413) 774-3167 (voice) (MA Relay System: 800-439-2370), 413-774-3169 (fax), or mrhodes@frcog.org (e-mail).

If you believe that you or anyone in a specific class of persons has been subjected to discrimination prohibited by Title VI and other nondiscrimination laws based on race, color, national origin, sex, age, disability, or gender, you or your representative may file a complaint with the FRCOG, which we can help complete. A complaint must be filed no later than 180 days after the date of the alleged discrimination for Title VI complaints and no later than 300 days for state protected category complaints. If you require further information, please contact FRCOG’s Title VI Specialist at (413) 774-3167 (voice) (MA Relay System: 800-439-2370), 413-774-3169 (fax), or civilrights@frcog.org (e-mail).
English: If this information is needed in another language, please contact the FRCOG Title VI Specialist at (413) 774-3167.

Spanish: Si necesita esta información en otro idioma, por favor contacte al especialista de FRCOG del Título VI al (413) 774-3167.

Russian: Если Вам необходима данная информация на любом другом языке, пожалуйста, свяжитесь со специалистом по Титулу VI FRCOG по тел: (413) 774-3167.
Evaluation of Demand for Electric Vehicle Charging Stations in Franklin County

Introduction
The Franklin Regional Council of Governments (FRCOG) conducted a study in 2017 to assess the current demand for electric vehicle charging stations in the region and determine if the existing infrastructure is adequate or if additional charging stations are warranted. The study also examined potential locations for additional stations and the types of charging stations that may be needed. As part of this study, the FRCOG staff surveyed users of the charging stations within Franklin County to understand their needs and the issues they have faced accessing charging stations. The FRCOG staff also reviewed the number and types of charging stations outside of Franklin County with the goal of evaluating: 1) the ability of electric vehicles to commute to the region from the surrounding areas; 2) the ability of electric vehicles to pass through on much longer journeys; or 3) the ability to travel from major cities such as Boston or New York to Franklin County.

The results show that charging stations are located at sufficient intervals along the Interstate 91 corridor to allow for commuting and tourist travel north-south through the region. However, traveling east-west along Route 2 is more difficult for electric vehicle owners because of the gaps between existing, sporadic stations. The surveys that the FRCOG conducted show that the existing charging stations within Franklin County are well-used and additional stations are warranted in both downtown Greenfield to supplement supply, but also in other areas of the County to fill in the infrastructure gaps in the hilltown areas and along Route 2.

Overview of Electric Vehicles
The number of electric vehicles on the road in Massachusetts has been increasing rapidly in the last several years. The state of charging infrastructure has also been improving dramatically. According to an October 2016 report from the Idaho National Laboratory (INL), since 2011, the number of plug-in electric vehicles in Massachusetts has increased from less than 100 to more than 5,000. Similarly, in 2011 there were a total of 33 charging stations in Massachusetts. This number has increased to 550 in 2016 across the Commonwealth. There are currently eight charging stations located in Franklin County.
Electric vehicles can be classified into three primary categories:

- Hybrid electric vehicles (HEVs)
- Plug-in hybrid electric vehicles (PEVs)
- All electric vehicles (EVs)

**Hybrid Electric Vehicles**
HEVs are the most common type of electric vehicles on the road today. They are powered both by an Internal Combustion Engine (ICE) and an electric motor that uses energy stored in a battery. The battery is charged through regenerative braking and by the ICE. This type of vehicle cannot be plugged in to charge the battery like other electric vehicles.

**Plug-in Hybrid Electric Vehicles**
PHEVs are also powered by both an ICE and by an electric motor that uses energy stored in a battery. This battery is much larger than the one in a HEV and can charged by plugging in to an electric power source, through regenerative braking, and by the ICE. The larger size of the battery means that a PHEV is able to travel on battery power alone. Because of the ICE, PHEVs do not have to be plugged in before driving and can be fueled with gasoline just like a HEV. However, they will not maximize fuel efficiency or take advantage of their all-electric capabilities without plugging in. There are two types of PHEVs. Some are considered “extended-range electric vehicles” because the ICE only charges the battery and does not actually propel the vehicle, while others can be propelled by both the battery and the ICE when needed. The driving range of a PHEV on all-electric driving is between 10-40 miles.

**Battery Electric Vehicles**
BEVs are solely powered by electricity and do not contain an ICE. Therefore, they do not emit any tailpipe emissions; although there may be emissions associated with the power plant producing the electricity. The batteries are larger than the PHEVs and are charged primarily by an outside electric power source and, to a lesser degree, through regenerative braking. The driving range of a BEV is between 70-90 miles on a fully charged battery, although some models have much longer ranges of approximately 230 miles. A BEV’s range can vary according to driving conditions and driving habits. Extreme weather conditions usually reduce the typical range since the battery also needs to be used for climate control in addition to powering the motor. Recharging the battery can vary widely – taking between 20 minutes to 20 hours. The recharging time depends on the type of charging equipment, the type and capacity of the battery, and how depleted is the battery.
Charging Electric Vehicles

Electric vehicles can be charged in several ways. The majority of EV charging is expected to take place at EV owners’ homes. Depending on commute times and number of trips during the day, workplace charging stations and publically available stations may also be needed to provide sufficient power for an EV owner. There are three types of charging stations that vary based on the rate at which the batteries are charged. Two types, AC Level 1 and AC Level 2, provide alternating current (AC) to the vehicle, with the vehicle’s onboard equipment converting AC to the direct current (DC) needed to charge the battery. The third type, DC Fast Charging, provides DC electricity directly to the vehicle. Table 1 summarizes the various differences between the three types of electric vehicle charging stations.

Table 1: Electric Vehicle Charging Station Options

<table>
<thead>
<tr>
<th>Charging Level</th>
<th>Amperage</th>
<th>Supply Voltage</th>
<th>Charging Rate</th>
<th>Range per Hour of Charging</th>
<th>Primary Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC Level 1 (slow charging)</td>
<td>Up to 16A</td>
<td>120V</td>
<td>1.9+ kW</td>
<td>5-8 miles</td>
<td>Residential and workplace charging</td>
</tr>
<tr>
<td>AC Level 2 (fast charging)</td>
<td>Up to 80A</td>
<td>208V / 240V</td>
<td>3.3+ kW</td>
<td>10-24 miles</td>
<td>Residential, workplace, and public charging</td>
</tr>
<tr>
<td>DC Fast Charging (rapid or quick charging)</td>
<td>100-200A</td>
<td>208V / 480V</td>
<td>25+ kW</td>
<td>40-80 miles*</td>
<td>Public charging</td>
</tr>
</tbody>
</table>

*Range reflects 20-30 minutes of charge time.

As Table 1 shows, there is a wide variation between the different types of charging stations in terms of how fast they can recharge a battery. However, it is important to note that no matter how fast a station is capable of charging, the software in the EV dictates the charge time. If the onboard software of an EV says that the maximum charge rate is set at 6.6kW, connecting this EV to a charging station that is capable of charging at 20kW will not matter. That EV will still only draw power at 6.6kW.

**Level 1 Charging**

Level 1 charging typically uses a 120-volt AC outlet and is the cheapest to purchase, often less than $400, and easiest to install. The utility of Level 1 charging stations depend on the fact that vehicles often sit unused for long periods of time, such as overnight or during the workday. A typical EV needs approximately 8kW of energy per day, which can be provided with four hours of charging at a Level 1 charger. All EVs come with a portable Level 1 charging station with a

---

standard three-prong plug that enable users to plug in basically anywhere they can access an outlet.

**Level 2 Charging**
Level 2 charging can provide a much greater range of electricity to vehicles, from 3.3 kW up to 20 kW. Most electric vehicles typically charge between 3.3-7.6 kW, so this rate of charging is more than adequate for most vehicles. The cost of a Level 2 charging unit is comparable or slightly more expensive than a Level 1 unit for a basic version. Networked or “smart” dual-port versions can cost significantly more – from $1,600 up to $6,000. Installation is not much more difficult than a Level 1 unit, but because a Level 2 requires more power, it may impact available capacity on a facility’s electrical panel. Level 2 chargers are most appropriately located at workplaces or public places where users can charge quickly after commutes and between trips. They most directly benefit BEVs who rely solely on their batteries for transportation.

**DC Quick Charging**
DC Quick Charging (DCQC) employs a very different technology than the Level 1 and 2 chargers. They bypass the vehicle’s onboard charger and directly transfers power to the battery. Only BEVs with specialized DCQC charger ports can connect to these types of chargers. There is also no standard universal DCQC connector and the charging units can cost over $20,000 with expensive installation required. However, they are capable of charging a BEV with up to 50 kW – allowing a battery to be recharged up to 80% within the first 30 minutes. Because of the limitations of connector standards and cost, DCQC chargers are not as common. They are best suited for workplaces with frequent daytrips and public places where electric vehicle ownership is high.

**Existing Infrastructure**
There are currently eight publicly available charging stations with a total of 13 charging ports located around Franklin County. All but one of them are Level 2 charging stations and are free for public use. The one non-Level 2 station is a DCQC/combo station located at the Big Y in Greenfield and is also free for public use. The map on the following page shows the location and type of charging stations within Franklin County. The website, [https://www.chargepoint.com/](https://www.chargepoint.com/), also has an interactive map in which users can zoom into charging station locations to determine where exactly they are located. In addition, the map contains information users have added for any particular station that may be helpful to know about that location and if a station is networked making it possible to know whether it is currently occupied and/or being used.

Just outside Franklin County are many more existing public charging stations. These are primarily located in the towns of Northampton/Amherst to the south and Brattleboro to the
Electric Vehicle Charging Stations in Franklin County and Surrounding Region

Legend

EV Charging Stations by Type*
- Level 2
- DCQC
- Tesla

* Numbers denote the number of charging ports at each station.

Interstate Highway
U.S. Highway/State Route
County Boundaries
Town Boundaries
north in Vermont. Both areas have a range of charging station types, including many Level 2s, a few DCQC, and several Tesla charging stations. Tesla has designed its own quick charging stations that are only compatible with Tesla vehicles (adaptors are needed for other vehicles to use them) and charge even faster than the typical DCQC station. The Tesla stations are located in Brattleboro. There is also a Level 2 charging station with 2 ports to the east on Route 2 in the Town of Athol. This is a public station and free to use. Amherst, Northampton, Brattleboro, and Athol are all approximately 20 miles away from Greenfield which is located in central Franklin County. With the average range of 70-90 miles for a BEV on a fully charged battery, commuting between these locations is entirely feasible, particularly with the option of recharging at either end during the workday or during the night.

Results of Survey
FRCOG staff visited each of the Franklin County charging stations during the workday for a week-long period and documented the number of electric vehicles present at the charging stations. A survey was placed on the EVs’ windshields along with a pre-addressed and stamped return envelope. There were a total of eight unique EVs using the charging stations between July 21-August 2. The majority (75%) of these EVs were Battery Electric Vehicles (BEVs), which rely only on their batteries for power. The other 25% of EVs were Plug-in Hybrid Electric Vehicles (PHEVs), which can switch to their gas-powered engines if there is insufficient energy in the battery.

Out of the eight EVs counted at the charging stations, six of them completed and returned surveys. Almost all of the survey respondents said that the charging stations at which they were parked was their final destination for the workday and that most of them also charge their vehicles at their homes during the night. The origins of the EVs were all within 10 miles of the charging stations – a distance easily accessible by BEVs. Eighty percent of the respondents say that they use the public charging stations at least weekly, while fifty percent say that use these charging stations daily. The station at Northfield Mount Hermon is used on a daily basis by one survey respondent; while the daily users at the Greenfield locations say that they alternate the charging station that they use within town based on availability. All survey respondents said they also use other charging stations throughout the region, including locations at UMass Amherst, Northampton, and at various car dealerships.

All but one of the respondents said that they have experienced difficulty at times finding an available charging station. This difficulty is the result of three separate reasons:

- The first is that there are simply no charging facilities in certain areas – the hilltowns and east and west along Route 2 in particular are large areas in which there is little to no electric vehicle charging infrastructure available to the public.
Another reason that respondents may experience difficulty is because other vehicles, both EVs and/or gas-powered vehicles, are already parked at the charging stations. Survey respondents said that this is particularly an issue at the Big Y grocery store in Greenfield where non-EVs often park in the dedicated charging spaces. The charging stations are located near the store entrances and are marked with signs saying that the parking spaces are for EVs only. However, many vehicles with handicapped placards can often be seen parking in those spaces – perhaps due to confusion because of their priority parking location and the size of the spaces, which is larger than normal to accommodate the charging cords.

The third reason survey respondents have had difficulty locating a facility is because of broken charging stations. The Town of Greenfield has noted that they have had trouble with vandalism at some of the stations and have recently moved one of the more troubled stations to a more visible location by the Town Hall in the hopes of reducing this issue.

In addition to the survey, FRCOG staff contacted the Town of Greenfield to understand their experience with the two charging stations they had installed at public lots in January 2015. Laurie DiDonato, the Town’s Energy/Sustainability Assistant, said that the Town had been able to track the usage of both stations online for the first year and during that time there were a total of 916 charge events. This equates to approximately 2-3 EV’s charging daily at these two stations.

Findings
The surveys show that there are currently charging stations located at distances that allow easy commutes between population centers along the I-91 corridor in Western Massachusetts. The survey respondents state that they have experienced difficulty at times finding an available charging station within Greenfield – this indicates that potentially additional stations are needed in the downtown. The new parking garage that is currently being constructed on Olive Street in downtown would be an optimal location for additional charging stations. At a minimum, a Level 2 charging station should be installed here; but also installing a DCQC charger would provide greater flexibility and options for EV owners in the area.

There are notable gaps in the charging infrastructure outside the I-91 corridor, particularly in the hilltowns and in other population centers of Franklin County. Downtown Shelburne Falls would be an excellent location for at least one Level 2 charging station for the West County region. There are many tourists that drive along Route 2, either on their way to the Berkshires or to visit Shelburne Falls. Another optimal location for a public charging station would be in South Deerfield – either in the Village Center or at the Yankee Candle flagship store. The
Yankee Candle Store draws many tourists from all over New England. EV owners could either recharge onsite while shopping there or, preferably, recharge in the nearby Village across Route 5/10 in order to draw tourists to the Village business district to dine and spend money on other local businesses.

Other locations within Franklin County that would be ideal sites for additional charging stations include:

- Ashfield Center at either the Library, Town Hall, or Elmer’s Store;
- Bernardston along Church Street;
- Conway Center at the Library or Town Hall;
- Millers Falls in Montague or Ervingside in Erving;
- Montague Center at either the Library or at the Montague Book Mill;
- Sunderland at the Town Hall or Library;
- Turners Falls at either Town Hall or near Food City; and
- Whately Park and Ride on Route 5/10 with a DCQC charger.

These sites are located in population centers where there are currently no public charging stations available. Most of them also offer amenities, such as dining and shopping, which EV owners could use while charging their vehicles. Except for the Whately Park and Ride, Level 2 chargers would probably be the most cost effective and beneficial to users at all of the recommended sites. The Whately Park and Ride is best suited for a DCQC charger due to its proximity to I-91 enabling long distance travelers to quickly recharge on their journeys.

**Policy Actions for Municipalities**

There are several ways in which municipalities could facilitate or encourage the installation of charging stations through policy. Changes to the zoning bylaws, permitting process, and/or parking ordinances can clarify the regulations and provide assurance that EV infrastructure is encouraged. In some instances, changes to policies can accelerate the creation of charging infrastructure. The following sections provide examples from other local governments.

**Zoning and Parking Bylaws**

There are many methods in which a municipality’s zoning can be amended to facilitate EV infrastructure installation. They can include adding definitions relating to EVs and charging infrastructure terms. The zoning can also be amended to specify that EV charging stations are permitted as an accessory use and structure in all zoning districts. The Town of Ipswich has recently done this by updating its parking lot requirements to specifically mention electric vehicle charging stations as a permitted accessory use of parking areas.
A municipality can also specify, if necessary, the location of the types of chargers allowed in each of the zoning districts – a town may feel that the siting of DCQC chargers should be more restrictive, for example. Another potential zoning change can include the requirement that new developments of a certain size be pre-wired for electric vehicle charging stations. The City of Vancouver requires that 20% of parking spaces in multi-family developments must be wired with appropriate outlets or electrical panel capacity. As a way of encouraging EV parking, the City of Atlanta created an incentive program for developments where off-street parking is required. It allows each EV charging station to be counted as a parking space and reduces the minimum parking requirement by one additional space. The City of Atlanta also created general design standards and criteria related to EV parking and charging stations with details on the siting of charging infrastructure and wayfinding signs.

In 2017, Massachusetts Governor Baker signed the Senate Bill 2505, An Act Promoting Zero Emission Vehicle Adoption. This bill prohibits owners of public charging stations from charging users a subscription or membership fee and requires the use of payment options that are available to the general public. The legislation also allows municipalities and private businesses to restrict parking spaces specifically for EV use.

Permitting
Permitting is also an opportunity for encouraging the installation of electrical vehicle infrastructure. Towns can streamline its permitting process to define EV charging stations as “minor work” and can also provide clear installation guidelines with regard to load calculations and best practices for siting and design. The Senate Bill 2505 mentioned above authorizes the State Board of Building Regulations and Standards (BBRS) to work with the Department of Energy Resources (DOER) to create state building codes to require residential and some commercial buildings be built to accommodate EV charging stations. Once these regulations are promulgated, there will be increased clarity around the installation of the various types of charging stations which will create uniformity among municipalities and be easier for Town inspectors to permit.

Potential Funding
There are several funding sources for EV charging infrastructure in Massachusetts. There are also multiple funding sources and subsidies for the purchases of electrical vehicles, but this section will be limited to information on the assistance of charging infrastructure.²

The first major funding program is the Massachusetts’ Electric Vehicle Incentive Program (MassEVIP). There are two components to this program with funding for 1) municipal fleets & charging stations and 2) workplace charging stations. Currently, the EVIP: Fleet program has no

---

² For more information on EV subsidies and programs, go to https://mor-ev.org/.
more funding available; but the EVIP: Workplace Charging program still has $60,000 available for the Western and Central regions of the state as of September 2017.\(^3\) It is not clear at the State level if there will be any additional funding funneled into this program or when it may be replenished. The EVIP: Workplace Charging program is focused on employers with fifteen or more employees and will provide 50% of the funding (up to $25,000) for hardware costs for the installation of Level 1 or Level 2 charging stations. Both government and private employers are eligible to apply for funding.

The Massachusetts Department of Environmental Resources’ (DOER) Green Community Program has been a popular program with towns to fund charging stations for their municipal fleets and for public use. In the 2017 Green Communities Competitive Grant round, funding was available for both electric vehicle purchases and charging stations. In that grant round, funding covered up to the full cost of installation of the charging stations. The guidelines for eligible projects can change from year to year; however funding at some level for EVs and their related infrastructure is expected to continue.

There is currently a pilot program through Eversource Electric for customers who own an EV to receive a Level 2 charger for a significantly reduced price of $500. This program, called PlugMyRide@HOME, allows EV owners to charge at home with a Level 2 charger while providing research to Eversource to design an effective time-of-day rate for customers.\(^4\)

\(^3\) For more information on application guidelines and program requirements: [http://www.mass.gov/eea/agencies/massdep/air/grants/workplace-charging.html](http://www.mass.gov/eea/agencies/massdep/air/grants/workplace-charging.html)

\(^4\) For more information on the PlugMyRide program, contact the Eversource EV Information Center at 855-463-6438 or go to [http://www.plugmyride.org/](http://www.plugmyride.org/).
Survey for Electric Vehicles

The FRCOG is presently evaluating demand for electric vehicle charging stations in Franklin County. Completion of this survey will help the FRCOG make recommendations as to whether additional charging stations are needed, where, and what type. Thank you for your input!

1. Where did your trip to this charging station originate?
   Town: ____________________________   State: ____________________________

2. Are you charging here because this is your final destination, or are you charging along the way to another destination?  
   [ ] Final destination  [ ] Mid-trip  (please provide final destination below if this is a mid-trip stop)
   Town: ____________________________   State: ____________________________

3. Are there other charging stations that you commonly use in Franklin County or the surrounding areas? Please list locations.
   ___________________________________________________________

4. Have you had trouble finding an available charging station in Franklin County or the surrounding areas? Please explain.
   ___________________________________________________________

5. How frequently (on average) do you use this charging station?  
   [ ] Daily  [ ] Weekly  [ ] Monthly  [ ] Infrequently  [ ] First Time

6. How often do you use your electric vehicle during the weekday?  
   [ ] Daily  [ ] 1-2x per week  [ ] Rarely (less than 1x per month)  [ ] Never

7. What is the maximum range of your electric vehicle? ____________________________

8. What is your vehicle’s onboard maximum charge rate? ____________________________kW

9. What is your vehicle’s battery size? ____________________________kWh

10. Does your vehicle have the ability to connect to a DC fast charger?  
    [ ] Yes  [ ] No

11. If you have suggestions for electric vehicle charging stations for the region, please feel to write on the reverse of this sheet (ex. locations, charging levels, pay structure, etc.).

Thank you for taking the time to complete this survey. If you have any questions or comments regarding this survey, contact Megan Rhodes (Senior Transportation Planner) at (413)774-3167 or mrhodes@frcog.org.

**PLEASE MAIL THIS SURVEY BACK IN THE ATTACHED ENVELOPE**