



June 28, 2016

Department of Public Safety

Attention: Stephen Carley

Submitted electronically to:

Re: Response of the Center for Sustainable Energy® to proposed amendments to 780 CMR, State Board of Building Regulations and Standards: Chapter 13.00: Energy Efficiency; Chapter 51.00: Massachusetts Residential Code (Chapter 11 and Appendix U); and Appendix 115.AA: Stretch Energy Code

I. INTRODUCTION

The Center for Sustainable Energy® (CSE) hereby submits these comments to the Department of Public Safety (DPS) regarding the proposed modifications to the 780 CMR, State Board of Building Regulations and Standards, sections:

- **C405.10** **Electric Vehicle Service Equipment Capable (Mandatory)¹**
- **R404.2** **Electric Vehicle Service Equipment (EVSE) Ready (Mandatory)²**

CSE supports the proposed amendments outlined in C405.10 and R404.2.

CSE fundamentally supports activities that accelerate plug-in electric Vehicle (PEV) market adoption, including modification to state codes and standards to accelerate the construction of PEV charging infrastructure when suitable. From CSE's perspective, both C405.10 and R404.2 add important updates to the Massachusetts State Board of Building Regulations and Standards code that will accelerate PEV adoption, and, as such, CSE recommends that both C405.10 and R404.2 be expeditiously ratified.

II. CODE THAT PROMOTES PEV READINESS LEADS TO AVOIDED RETROFIT COSTS.

From CSE's perspective, C405.10 and R404.2 are exclusively focused on ensuring that future buildings are PEV-ready. In this regard, it is significantly less expensive to prepare for charging PEVs as buildings are designed and constructed, rather than through costly retrofits. Moreover,

¹ **CHAPTER 13.00: Energy Efficiency:** <http://www.mass.gov/eopss/docs/dps/buildingcode/inf4/bbrs-chapter13-06142016.pdf>

² **CHAPTER 51.00: N1104.2:** <http://www.mass.gov/eopss/docs/dps/buildingcode/inf4/bbrs-chapter13-06142016.pdf>

prewired and PEV-ready infrastructure helps to remove one of the biggest barriers to PEV infrastructure adoption, which is cost. The American Council for an Energy-Efficient Economy (ACEEE) notes: “Retrofitting a residence with a charging circuit can cost over \$2,000 (Morrow 2008, Table 6-12). On the other hand, supplying an appropriately sized circuit during new construction may be able to be done at very little extra cost ... [e.g.,] at a reported cost of around \$250” (AutoBlogGreen 2010).³ This cost analysis is consistent with California Air Resources Board’s (ARB’s) analysis, which finds that PEV-ready codes avoid \$3,750 to \$6,975 per parking space in later retrofit costs,⁴ and with U.S. Department of Energy’s (U.S. DOE’s) analysis, which notes that special work such as trenching or boring—activities associated with retrofitting— were approximately 25% more costly than sites that did not need special work.⁵ Accordingly, C405.10 and R404.2 provide a crucial update to ensure that Massachusetts is enabling the deployment of PEV-ready infrastructure in a cost-effective manner during a project’s initial construction, rather than in a costly retrofit at a later time.

III. CODE UPDATING IS FUNDAMENTALLY CONSISTENT WITH MASSACHUSETTS ZEV POLICY

Under the Regional Greenhouse Gas Initiative (RGGI), Massachusetts has statutory commitments to reduce its greenhouse gas (GHG) emissions. Because transportation accounts for 26% of the nation’s GHG emissions,⁶ zero-emission vehicle (ZEV) policies are key instruments to help meet Massachusetts meet its GHG emissions reduction goals.

Massachusetts already has a rich ZEV policy framework. Massachusetts is a signatory to a diverse range of policy initiatives designed to accelerate ZEV adoption, including the 8-state Governor’s ZEV Memorandum of Understanding,⁷ as well as a stakeholder in the multi-state ZEV action plan. Notably, this action plan prioritizes the establishment of consistent codes and standards for ZEV infrastructure through revisions to national and state building codes.⁸ Massachusetts is also a signatory of the Governors’ Accord for a New Energy Future, which prioritizes the streamlined siting of environmentally-desirable infrastructure and the setting of renewable and energy efficiency standards.⁹

³ <http://aceee.org/files/proceedings/2012/data/papers/0193-000012.pdf>

⁴ California Air Resources Board – EV Charging Infrastructure, July 9 2015
<http://www.documents.dgs.ca.gov/bsc/2015TriCycle/CAC/GREEN/Exhibit-B-CARB-Cost-Analysis-and-Technical-Report.pdf>

⁵ The DOE analysis reports that installation costs can range from \$600 - \$12,700. Moreover, the study mentions that special work such as trenching or boring—activates associated with retrofitting-- were about 25% more costly than sites that did not need special work. U.S. Department of Energy (DOE) “Costs Associated with Non-Residential Electric Vehicles Supply Equipment, November, 2015 http://www.afdc.energy.gov/uploads/publication/evse_cost_report_2015.pdf

⁶ <https://www3.epa.gov/climatechange/ghgemissions/sources/transportation.html>

⁷ http://arb.ca.gov/newsrel/2013/8s_zev_mou.pdf

⁸ <http://www.zevstates.us/>

⁹ <http://static1.squarespace.com/static/56704ad6bfe873c2cc9eff73/t/56c3b30c62cd942b3f8c1dc5/1455665943323/accord>

From CSE's perspective, C405.10 and R404.2 fundamentally align with this broader ZEV policy framework, by supporting Massachusetts to prioritize policies that focus on streamlining permitting and codes and standards processes to accelerate ZEV adoption.

IV. SPECIFICALLY REGARDING R404.2, THE DPS SHOULD ALSO CONSIDER THE USE OF ENERGY MANAGEMENT SOFTWARE

CSE suggests that in lieu of upsizing the electrical service (as currently proposed in R404.2), the DPS should consider the use of energy management software, which can balance the additional load brought on by PEV charging. In some cases, where the main electrical service is located on the exterior wall of the garage, or within a certain distance from the parking space, the costs associated with the EVSE installation would essentially be the same as if the circuit had been routed through the wall or out of the service panel in advance. As such, CSE suggests that the DPS should evaluate the use of energy management software as an additional tool to support PEV charging.

V. CONCLUSION

For the purpose of avoiding future costs, streamlining the development of make-ready PEV infrastructure, and updating code consistent with the Commonwealth's ZEV policies, CSE strongly recommends that both C405.10 and R404.2 be ratified by the DPS. CSE also recommends that the DPS further evaluate the use of energy management software to support its PEV charging.

CSE appreciates the opportunity to respond to the proposed amendments of the State Board of Building Regulations and Standards. From CSE's perspective, adding new code sections C405.10 and R404.2 is timely and a warranted adjustment that will encourage ZEV growth across the Commonwealth of Massachusetts. As such, we encourage the DPS to promptly ratify these provisions.

Sincerely,



Sachu Constantine
Director of Policy
Center for Sustainable Energy®