3.5.3 SAMPLE BUILDING CODE AMENDMENTS FOR PEV AND ON-SITE ENERGY SYSTEM READINESS

The following section of the guidelines offers examples of building code amendments pertaining to EV charging station installations and energy/storage management systems. The two are grouped so that local agencies can consider aligning the goals of sustainable transportation, energy efficient buildings, and reduced emissions. Building ordinance amendments can be utilized as an effective mechanism to require the installation of EV charging stations. In examples that follow, deployment recommendations are followed by actual language cited from existing codes and amendments in the U.S. and Canada.

Recommendation #11 – Require sufficient area and electrical infrastructure for charging PEVs.
Properly size all electric vehicle supply equipment, the electrical room wall, and floor area to accommodate the charging of PEVs.

In new multi-unit, commercial or industrial developments, local agencies may choose to require all conduits leading to the electrical room including electrical service conduits, and the electrical room to be appropriately sized to accommodate future electrical equipment necessary for electric vehicle charging stations, and the voltage and amperage capability of other anticipated infrastructure.

Adopted Code Language: *Vancouver, B.C. Building By-law*
Electric Vehicle Charging: Electrical Room:

> The electrical room in a multi-family building, or in the multi-family component of a mixed use building that in either case includes three or more dwelling units, must include sufficient space for the future installation of electrical equipment necessary to provide a receptacle to accommodate use by electric charging equipment for 100% of the parking stalls that are for use by owners or occupiers of the building or of the residential component of the building.[46]

Recommendation #12 – Encourage single-family residential chargers and PEV "pre-wiring" readiness.
Local agencies may wish to include basic infrastructure, such as conduits, junction boxes, wall space, electrical panel and circuitry capacity to accommodate future upgrades for solar systems and PEV charging.

Most PEV charging will occur at night at homes when vehicles are parked for long periods of time and when electric utility rates are often the lowest. Some local agencies have already adopted requirements that new residential developments contain basic infrastructure to capture roof top solar power. Producing renewable energy during peak use periods and charging during off-peak periods is an ideal way to power PEVs. Buyers of new homes may seek those where low cost solar readiness improvements have been put in place.

Adopted Code Language: *City of Chula Vista, California. Planning Ordinance*

Photovoltaic pre-wiring:

> All new residential units shall include electrical conduit specifically designed to allow the later installation of a photovoltaic (PV) system which utilizes solar energy as a means to provide electricity. No building permit shall be issued unless the requirements of this section and the jurisdiction's Pre-Wiring Installation Requirements are incorporated into the approved building plans. The provisions of this chapter can be modified or waived when it can be satisfactorily demonstrated to the Building Official that the requirements of this section are impractical due to shading, building orientation, construction constraints or configuration of the parcel.[47]

Adopted Code Language: *CALGreen, Tier 1 (Voluntary)*

Electric vehicle (EV) Charging: One-and two-family dwellings.

> Install a listed raceway to accommodate a dedicated branch circuit. The raceway shall not be less than trade size 1. The raceway shall be securely fastened at the main service or subpanel and shall terminate in close proximity to the proposed location of the charging system into a listed cabinet, box or enclosure. Raceways are required to be continuous at enclosed or concealed areas and spaces. A raceway may terminate in an attic or other approved location when it can be demonstrated that the area is accessible and no removal of materials is necessary to complete the final installation.[48]