

Electric Vehicle Charging Stations: Program Considerations in Calendar Year 2014

Western Weights and Measures Association

Kalispell, MT

September 24, 2013



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California Division of Measurement Standards

Plug-in Electric Vehicles - 2013

Released: Dec 2010



2011 Nissan LEAF



2011 Chevrolet VOLT

Released: Dec 2010

Released: January 2012



2011 Mitsubishi i-MiEV



Prius Plug-in Hybrid

Released: March 2012

Released: Spring 2012



2012 Ford Focus



2012 Tesla Model S

Released: Mid-2012

Released: January 2012



2011 BMW ActiveE



2012 Honda Fit EV

Released: 2012

Plug-in Electric Vehicles - 2013

Fiat 500e
Released January 2013



C-Max Energi
Released: October 2012

Chevy Spark
Coming: Spring 2013



Ford Fusion Energi
Released: February 2013

Honda Accord Plug-in
Released: January 2013



Smart ED
Released: Mid-2012

RAV4 EV
Released: Fall 2012



BMW i3 and i3 BEVx
Coming late 2013

Key Considerations for Weights and Measures Directors

- 1. NIST Handbook 130 Method of Sale Regulation: Retail Sales of Electrical Energy Sold as a Vehicle Fuel**
- 2. NIST Handbook 44 Electricity-Measuring Device (EVSE) Code**
- 3. EVSE jurisdiction falls to Public Utility, Weights and Measures, or Nobody?**
- 4. Establishing an EVSE Program**

1. NIST Handbook 130 Method of Sale Regulation adopted July 2013

2.34. Retail Sales of Electrical Energy Sold as a Vehicle Fuel.

- **2.34.2. Method of Retail Sale. – All electrical energy kept, offered, or exposed for sale and sold at retail as a vehicle fuel shall be in units in terms of the megajoule (MJ) or kilowatt-hour (kWh). In addition to the fee assessed for the quantity of electrical energy sold, fees may be assessed for other services; such fees may be based on time measurement and/or a fixed fee.**

2. NIST Handbook 44 Electricity-Measuring Devices – Tentative Code

- Fall 2013: CA Division of Measurement Standards submitted Developing Item to add specifications, tolerances, and other technical requirements for electric vehicle fueling and submetering devices (EVSE)***
- Sent to all regional weights and measures associations**
- Purpose: Inform community about the work being done to develop standards - and encourage participation**

***EVSE (aka Electric Vehicle Supply Equipment)**

NIST U.S. National Work Group (USNWG) on Electric Vehicle Refueling & Submetering

- **Established by NIST in 2012**
- **Next meeting October 30, 2013**
- **Key Objectives**
 - ✓ **Method of Sale for electricity sold as a vehicle fuel**
 - ☐ **Requirements for electric-measuring devices**
 - ☐ **Traceable standards, test procedures, training, etc.**
- **NIST Contacts**
 - **Juana Williams, USNWG Chair**
 - **Tina Butcher**

3. Jurisdictional Issues

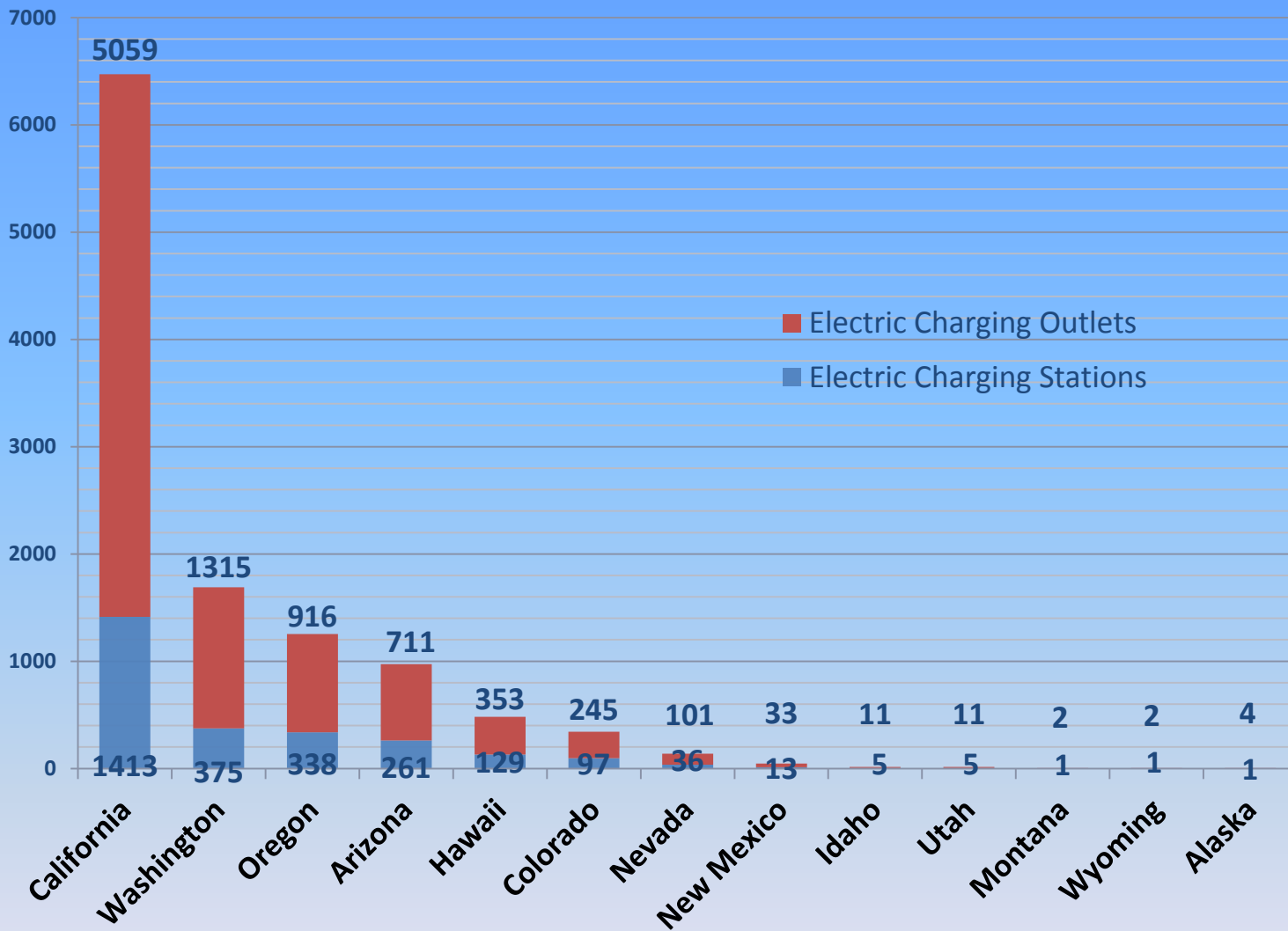
- **Enforcement Authority**
- **Laws or Regulations**
 - **Weights and Measures Law or Utility Law?**
 - **Is there a conflict between laws?**
 - **Arbitration of Disputes**

Electric Charging Stations (EVSE) and Outlets*

State	Electric Charging Stations	Electric Charging Outlets
California	1413	5059
Washington	375	1315
Oregon	338	916
Arizona	261	711
Hawaii	129	353
Colorado	97	245
Nevada	36	101
New Mexico	13	33
Idaho	5	11
Utah	5	11
Montana	1	2
Wyoming	1	2
Alaska	1	4

*EVSE is the physical location. Outlets are equivalent to nozzles at a gas station.

http://www.afdc.energy.gov/data/#tab/all/data_set/10366

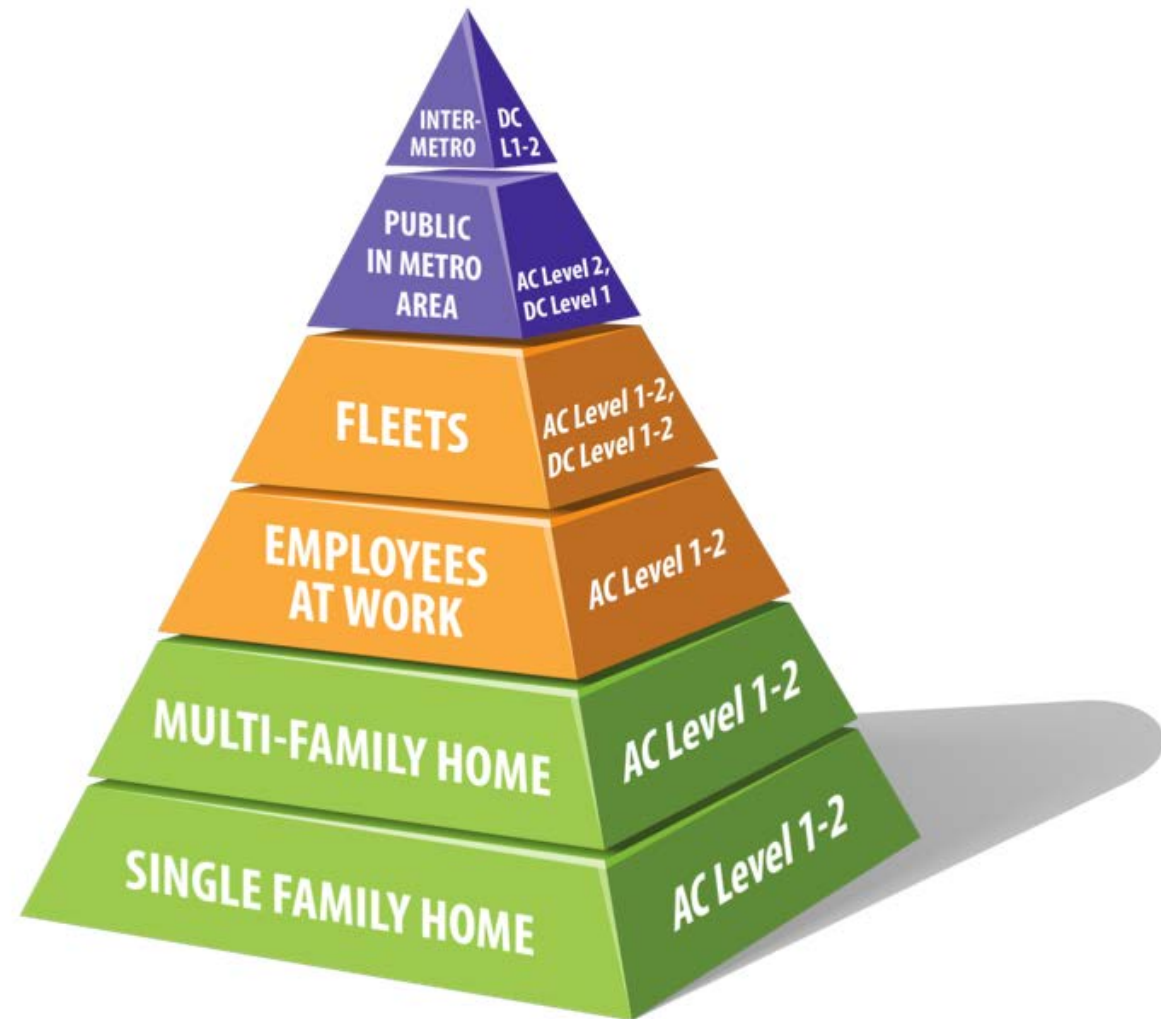


Projected Charging Infrastructure: Charging Locations and Levels

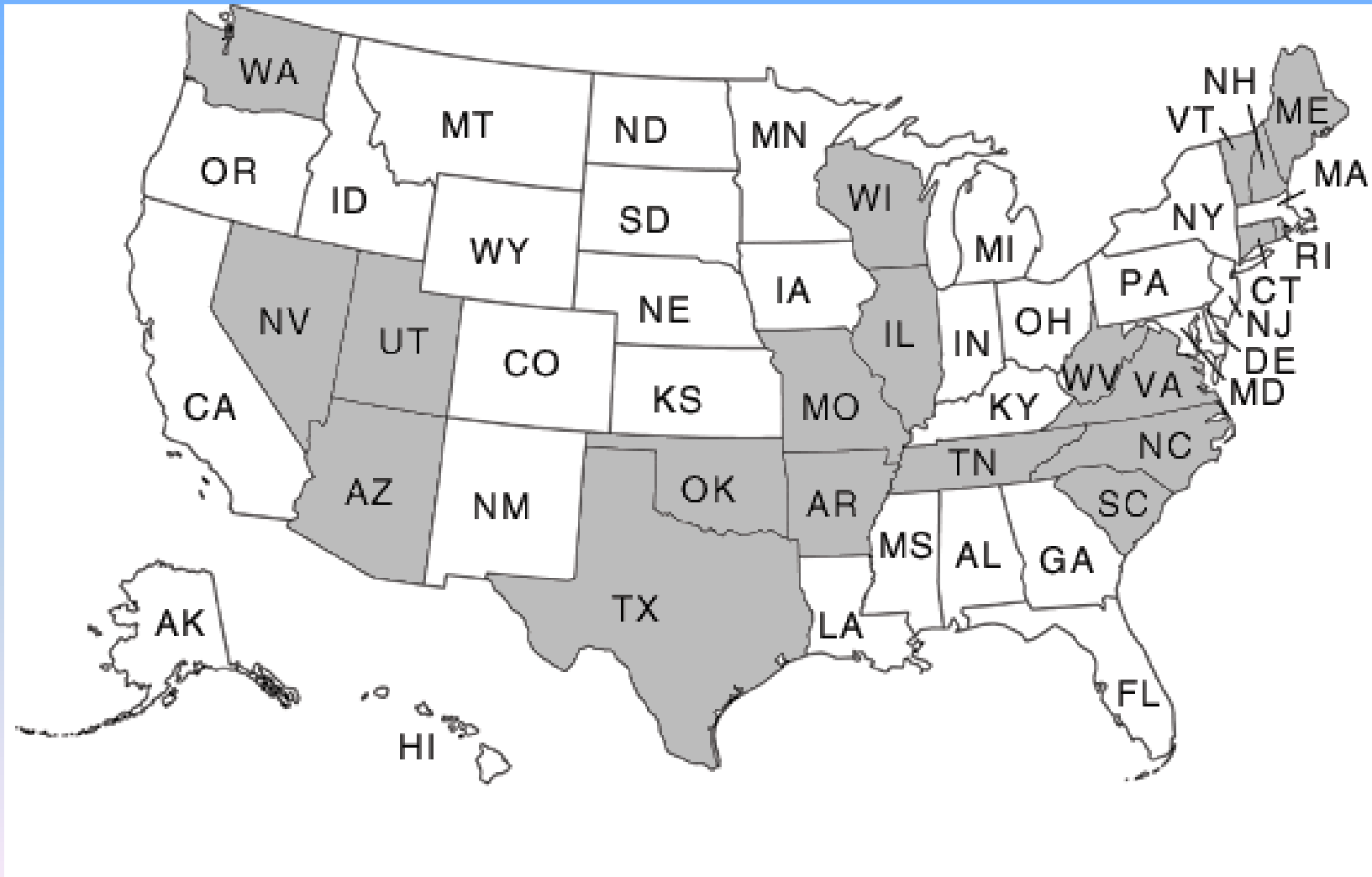
3: Public

2: Work

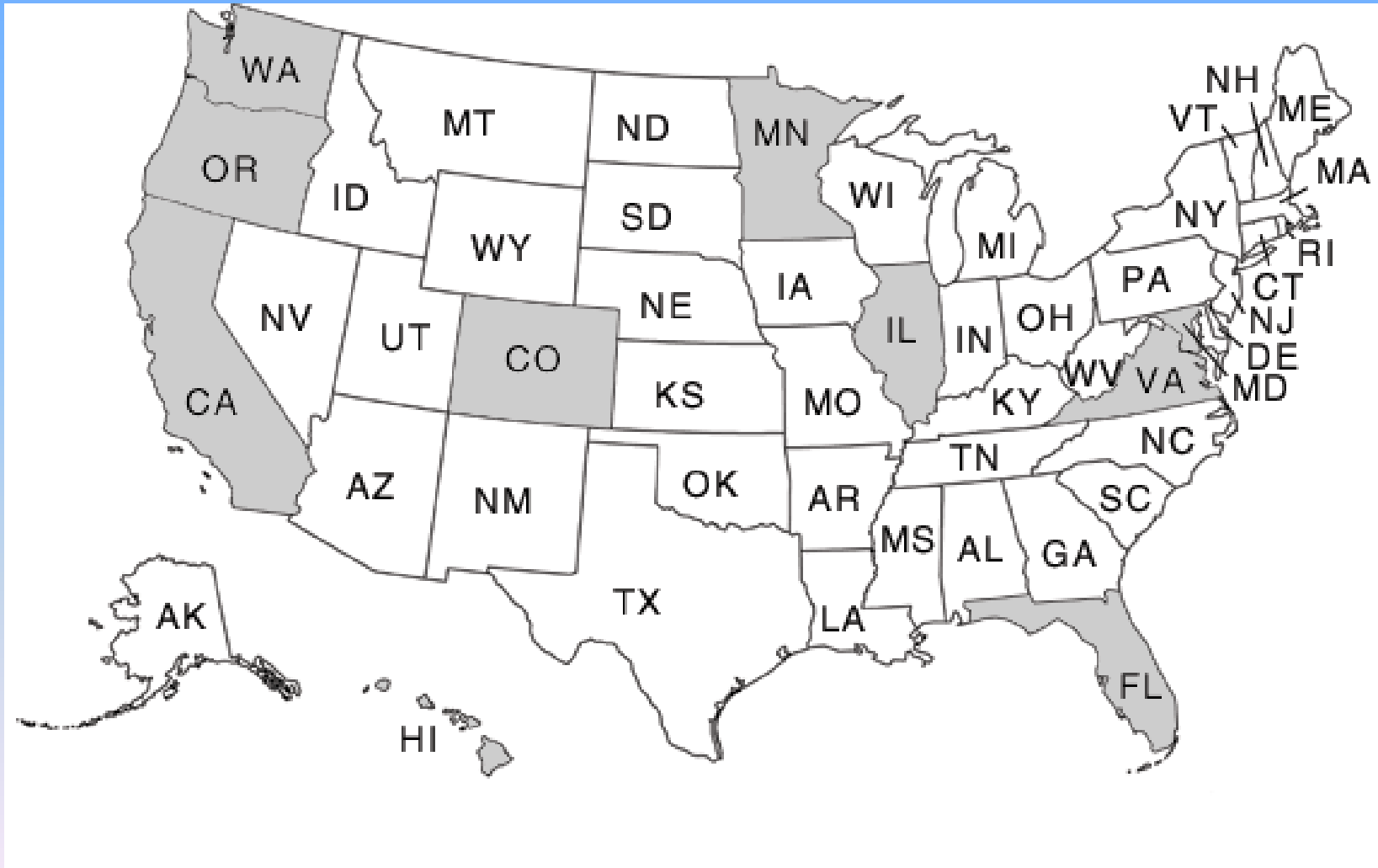
1: Home



States (shaded) that automatically adopt Latest version of NIST Handbook 130 Method of Sale Regulation



States (shaded) that have exempted EV charging services from Utility Regulation



Washington

Rev. Code of Wash. 80.28.320:

The Washington Utilities and Transportation Commission shall not regulate the rates, services, facilities, and practices of an entity that offers battery charging facilities to the public for hire if (1) that entity is not otherwise subject to commission jurisdiction as an electrical company; (2) that entity is otherwise subject to commission jurisdiction as an electrical company, but its battery charging facilities and services are not subsidized by any regulated service. An electrical company may offer battery charging facilities as a regulated service, subject to commission approval.

California

PU Code §216(i):

Places into law CPUC decision 09-08-009 exempting electric vehicle charging equipment or providers from regulation as a utility.

“The ownership, control, operation, or management of a facility that supplies electricity to the public only for use to charge light duty plug-in electric vehicles does not make the corporation or person a public utility.”

Oregon

OR Stats. §757.005(1)(b)(G):

The statutory definition of “public utility” does not include any corporation, company, partnership, individual or association of individuals that furnishes electricity for use in motor vehicles as long as the entity is not otherwise a public utility.

Colorado

CO Rv. Stats Ch. 40 §101-104:

Persons selling electricity...to the public for use as a fuel in alternative fuel vehicles ...are not subject to regulation as a public utility and are not subject to the jurisdiction, control, and regulation of the Commission or any other public regulatory body.

Hawaii

HI Rev. Stat. §269-1:

Hawaii Revised Statutes states that owners and operators of facilities used primarily to charge vehicle batteries for electric vehicles are exempt from the definition of utility.

Nevada, Utah, Arizona

NIST Handbook 130 Method of Sale Regulation is automatically adopted but Utilities have not exempted themselves from EV charging services:

- Nevada Public Utilities Commission**
- Utah Public Service Commission of Utah**
- Arizona Corporation Commission**

Other WWMA States

NIST Handbook 130 Method of Sale Regulation is NOT automatically adopted and Utilities have not exempted themselves from EV charging services:

- **Idaho Public Utilities Commission**
- **Montana Public Service Commission**
- **Wyoming Public Service Commission**
- **New Mexico Public Regulation Commission**
- **Regulatory Commission of Alaska**

Current Methods of Sale

- **EV charging stations - no charge**
- **EV park and charge meters – charging based on time (coin, token, or card)**
- **Monthly subscription, (cell phone plan; tiered rate schedule)**
- **Monthly subscription, billing customer for Time-Of-Use (TOU)**

4. Establishing an EVSE Program

- **Safety**
- **Promote Uniformity**
- **Level Playing Field**
- **Protect Buyers and Sellers**
- **Measurement Traceability**
- **Harmonize with International Standards**

NIST Handbook 155: Weights and Measures Program Requirements

- **Examine Existing Laws (definitions, method of sale, advertising)**
- **Standards, type evaluation, inspection**
- **Enforcement**
- **Service agency requirements**
- **Authority to Issue Regulations**
- **Effective Date**

Cost Considerations

- **Cost to Weights and Measures**
 - **Costs of Standards**
 - **Costs for Training**
 - **Costs for Inspections**
- **Cost to Industry**
 - **Cost to Manufacturers**
 - **Cost to EVSE Station Owners**
 - **Cost to EVSE service agencies**

California Submeter Testing

Mobilehome
and RV Parks



California Submeter Testing

**Apartment
Complexes**



California Submeter Testing

Marinas



California Submeter Testing

- **320,950** registered electric watt-hour meters
- **23** Active CTEP Certificates of Approval
- **32** Registered Service Agencies
- **58** Licensed Service Agents

Costs to Weights and Measures

Electric Meter Field Standards

KNOPP FS-9* (Cost: ~ \$9000.00)



Type FS9 Closed-Link Test System



Closed-Link test system used with watt-hour standard

***Note: CA Division of Measurement Standards does not endorse specific products**

Costs to Weights and Measures

- **Costs of Training (Options):**
 - **Northwest Electric Meter School (North Seattle Community College) in Seattle, WA (~ \$400.00/course/person)**
 - **eLearning from organizations such as UL (Underwriters Laboratories) on charging stations**
 - **Attend a JATC (Joint Apprenticeship & Training Committee) training course**

Costs to Weights and Measures

- **Costs of Inspecting**

- **Safety Equipment*:**

- 1) **Lineman's gloves (rubber gloves) having a maximum use voltage of 500 V AC and 750V DC (\$61/pair)**
- 2) **Over the lineman's gloves are leather protector gloves for protection against cuts, abrasions, and punctures (\$32/pair)**
- 3) **Electrical Systems of 50 V or more require protective garments: Face shield and Nomex coveralls (\$277)**
- 4) **Slip-on dielectric overshoes (\$87)**

***Lab Safety Supply (LSS) Safety & Industrial Buyers Guide**

Costs to EVSE Manufacturers

- **Manufacturer Type Evaluation Fees***
 - **California Type Evaluation Program (CTEP) type approval costs:**
 - One time cost (\$3,500 - \$14,000/meter)**
 - Yearly certificate maintenance fee (\$200/yr)**
- **National Type Evaluation Program (NTEP) evaluations not yet available**

(*California Division of Measurement Standards, 2013)

Costs to EVSE Manufacturers

▪ California Type Evaluation Program
(CTEP) Certificates of Acceptance: available
<http://www.cdfa.ca.gov/dms/programs/ctep/ctep.html>

• National Type Evaluation Program (NTEP)
Certificates of Conformance: not available
http://www.ncwm.net/ntep/cert_search

Costs to Station Owners*

- **Device registration fee: up to \$3/yr/meter (residential meters)**
- **Device registration fee: up to \$20/yr/meter (commercial meters)**
- **Business location fee: up to \$100/yr/location**
- **State admin fee: \$0.10/yr/meter**

(* fee caps in CA Business and Professions Code Section 12240)

Costs to Service Agencies

- Agency fee: \$200/yr/company
- Agent fee: \$25/yr/person
- Agent license fee: \$35/5 yrs/person

(*California Division of Measurement Standards, 2013)

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