Driving to Net Zero

Submitted to: Santa Clara County
Submitted by: ICF

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County of Santa Clara Office of Sustainability

MARCH 9, 2018
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Permitting Practices for Electric Vehicle Charging Infrastructure

March 8, 2018
Driving to Net Zero (DNZ)

- Two year project funded by a grant from the Strategic Growth Council

- Objective: deliberately and effectively increase the adoption of zero emission vehicles (ZEVs) throughout Santa Clara County

- Focuses on the role of county and municipal governments in the deployment of electric vehicle (EV) charging infrastructure
Relevant DNZ Resources

See the DNZ website for other relevant resources for stakeholders, including:

- EV Best Practices Compendium
- EV Building and Zoning Code Evaluation and Recommendations
- Local Government EV Siting Toolkit and Reference Guide

## Terminology

### Vehicles

<table>
<thead>
<tr>
<th>Fuel Type</th>
<th>Electric Range (miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plug-in Hybrid Electric (PHEV)</td>
<td>9 mi – 53 mi</td>
</tr>
<tr>
<td>Battery Electric (BEV)</td>
<td>57 mi – 335 mi</td>
</tr>
</tbody>
</table>

### Charging Stations

<table>
<thead>
<tr>
<th>Type</th>
<th>Current Type</th>
<th>Voltage (V)</th>
<th>Range &amp; Charging Time</th>
<th>Primary Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>AC</td>
<td>110/120V</td>
<td>2 to 5 miles of range per hour of charging</td>
<td>Residential Workplace Fleet</td>
</tr>
<tr>
<td>Level 2</td>
<td>AC</td>
<td>220/240V</td>
<td>10 to 20 miles of range per hour of charging</td>
<td>Residential Workplace Public Fleet</td>
</tr>
<tr>
<td>DC Fast</td>
<td>DC</td>
<td>480V</td>
<td>60 to 80 miles of range per 20 minutes of charging</td>
<td>Public</td>
</tr>
</tbody>
</table>
Leading the Way in EVs

- California has ambitious goals for EV adoption
  - In 2012: set a goal of having 1.5 million ZEVs on the road by 2025
  - In 2018: increased goal to 5 million ZEVs on the road by 2030

- Santa Clara County is the leading region for early EV adoption

- ICF estimates that there will 250,000 EVs in Santa Clara County by 2025
Agenda

- Background on Permitting
- Permitting Process
- Installation & Inspection
- Utility Notification
- Metrics
- Key Recommendations
Background on Permitting

- Types of EV Charger Installations
  - Residential
    - Single-family, multi-family
  - Non-Residential
    - Workplace, retail

- Applicable Codes
  - National Electrical Code (NEC)
  - 2016 California Electrical Code (CEC)
  - 2016 California Green Building Standards Code (CALGreen)
Background on Permitting

**Good News**
- Each municipality can determine:
  - Application type/format
  - Required documentation
  - Fees
  - Timeframes

**Bad News**
- Each municipality can determine:
  - Application type/format
  - Required documentation
  - Fees
  - Timeframes

Complicated, labor-intensive permitting process create barriers to increased EV charging station installations
Assembly Bill 1236 - Local governments must streamline the permitting process for EV charging infrastructure

- Timeline:
  - Population > 200,000 – by September 30, 2016
  - Population < 200,000 – by September 30, 2017

- Required Ordinance Elements:
  - Permitting checklist
  - Expedited review for eligible projects
  - Materials available online
  - Allow for electronic submission

Materials available from the Governor’s Office of Planning and Research at: [www.opr.ca.gov/planning/transportation/zev.html](http://www.opr.ca.gov/planning/transportation/zev.html)

For those who have not passed an ordinance, see [www.calbo.org](http://www.calbo.org) for the “AB 1236 Tool Kit: EV Charging Stations Ordinance and Staff Report Templates”
Executive Order B-48-18

- 5 million ZEVs by 2030
- Streamline ZEV infrastructure installations
  - Governor’s Office of Business and Economic Development (GO-Biz)
  - EV station development guidebook
  - Expected later this year
Recommendations for Municipal Governments
Permitting Process

- Specific Application
  - Adapt 240V circuit installation, but specify EV charging
- Permitting Fees
  - Goal: Cover municipal costs (review and inspection), but lower the installation cost burden
  - Recommend $75 to $200 per permit for residential
  - Consider waivers or incentives
- Permit Accessibility
  - Available online AND over-the-counter
- Time to Issue Permit
  - Recommend 48 hours or less

Examples:
- Encinitas – energy-efficient permit fee waiver for residential chargers
- Anaheim – residential building permit cost waiver
Permitting Process

- **Required Documentation/Materials**
  - Keep it simple and clear
  - Minimize required information, within reason
  - Recommend avoiding site plan approval, when possible

https://www.sccgov.org/sites/dpd/DocsForms/Documents/EV_ChargingStationPermit.pdf
Permitting Process Example

Residential
The Building and Safety Department is pleased to provide guidelines for the permit application process for the installation of residential electrical vehicle (EV) charging station. Follow the link, obtain permit and start saving energy now.

Apply for EV Charging Station Permit Online!

Submittal Requirements:
- EVC System in Single Family Residence Plan Review and Permitting Requirements

Permit Fees Table:

<table>
<thead>
<tr>
<th>Service</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical Vehicle Charging System</td>
<td>$149.63</td>
</tr>
<tr>
<td>Planning Community Fee</td>
<td>$7.25</td>
</tr>
</tbody>
</table>

Inspection Information:
- Building Inspection Procedure

http://www.ci.milpitas.ca.gov/milpitas/departments/building-and-safety-department/electrical-vehicle-charging-station/

Commercial
Submittal Requirements:
- Eligibility Checklist for Expedited Permitting Process and Submittal Requirements
- Policy for Multi-Family Electric Vehicle (EV) Charging Station

Permit Fees Table:

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<tr>
<th>Service</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan Check Fee</td>
<td>$177.33</td>
</tr>
<tr>
<td>Inspection Fee: First EV Charging Station</td>
<td>$176.30</td>
</tr>
<tr>
<td>Each additional EV Charging Station</td>
<td>$58.48</td>
</tr>
<tr>
<td>Planning Community Fee</td>
<td>$8.6 (First EV) and $2.85 each additional</td>
</tr>
</tbody>
</table>

Plan Check Process:
- Electronic Plan Submittal
- Express Plan Check (Over the Counter)

Inspection Information:
- Building Inspection Procedure
Permitting Process

- Load Calculations
  - Needed to confirm adequate electrical capacity
  - Calculators/worksheets available

- Checklist
  - Primarily benefits the applicant
  - Also helpful for reviewers
  - Templates available

Materials available from the Governor’s Office of Planning and Research at:
www.opr.ca.gov/planning/transportation/zev.html
Permitting Process Example

- Document includes:
  - Application checklist
  - Information from utility (PG&E)
  - Load calculation worksheet
  - Inspection checklist

https://www.ci.campbell.ca.us/DocumentCenter/Home/View/7543
Permitting Process

- **Train Staff**
  - The basics: EVs and charging infrastructure, municipal processes and requirements
  - More complex installations may require more training
  - Leverage organizations, peer experience for training

- **Harmonize Practices**
  - In coordination with other jurisdictions
Installation & Inspection

- Installation Guidelines
  - Specify siting and design considerations for different scenarios
  - Point to industry rules of thumb, for example:
    - At least two open spaces on electric service panel
    - Clear wall and floor space
    - Electrical distribution panel nearby
  - Must be installed according to manufacturer specifications

GET A PERMIT BEFORE YOU INSTALL THE CHARGING SYSTEM

Save money by getting your permit online at sjpermit.net.
Or visit the Permit Center and request Over-The-Counter permit service. No appointment is needed.

LEVELS OF EV CHARGING

Two levels of electrical current—called VAC or “Volts Alternating Current”—are allowed in single-family and duplex residences:
- Level 1: 120 VAC—This is the regular household voltage. It can charge a depleted battery in no to 12 hours, depending on the vehicle model.
- Level 2: 240 VAC—This voltage is larger and supports faster charging, typically in three to eight hours, depending on the vehicle model.

Must be installed according to manufacturer specifications

https://www.sanjoseca.gov/DocumentCenter/View/1825
Installation & Inspection

- Required Inspections
  - Limit to one for single-family residential
  - Allow qualified electricians to self-inspect
    - Continue random inspections to ensure quality

**Example: Sunnyvale**
“One inspection is required after the new wiring and charger unit is installed. The manufacturer’s installation guidelines shall be available for the building inspector at the job site during the inspection.”
Utility Notification

EV charging can negatively impact the grid if not properly tracked and managed
- Clustering in certain areas
- Want to avoid transformer overload/failure

Local governments can help!
- Incorporate checkbox into application to give permission to share data with the utility
- Provide utility contact information so applicant can follow up
  - Special rate programs may be available

Local government and the utility will benefit from collaboration
Establish a means to track permitting “performance”
- Time required to issue permits
- Average cost of permits

Revisit, revise, improve
- Incorporate metrics into a feedback loop
Summary: Key Recommendations

- **Streamlined, yet safe**
  - Applies to permitting and inspection

- **Accessible**
  - Application and information available online and over-the-counter
  - Reasonable fees

- **Transparent, specific, and predictable**
  - Staff are trained
  - Contractors and staff know exactly what is required
  - Reduce time for residents, developers, and staff
  - Materials specifically address EV charging
Summary: Key Recommendations

- **Harmonized**
  - To the extent possible, in line with other jurisdictions in the area
  - Incorporating state requirements and leveraging available resources

- **Forward-looking**
  - Incorporate utility notification
  - Periodic review and update
Questions?