REGIONAL PLANNING COMMITTEE AGENDA

Friday, October 4, 2013
12 noon to 2 p.m.
SANDAG Board Room
401 B Street, 7th Floor
San Diego

AGENDA HIGHLIGHTS

- **SAN DIEGO FORWARD: THE REGIONAL PLAN:**
  - **DRAFT TRANSPORTATION PROJECT EVALUATION CRITERIA**
  - **DRAFT OUTLINE OF WHITE PAPER ON ECONOMIC PROSPERITY**
- **DRAFT SAN DIEGO REGIONAL PLUG-IN ELECTRIC VEHICLE READINESS PLAN**

PLEASE TURN OFF CELL PHONES DURING THE MEETING

YOU CAN LISTEN TO THE REGIONAL PLANNING COMMITTEE MEETING BY VISITING OUR WEBSITE AT WWW.SANDAG.ORG

MISSION STATEMENT

The Regional Planning Committee provides oversight for the preparation and implementation of the Regional Comprehensive Plan that is based on the local general plans and regional plans and addresses interregional issues with surrounding counties and Mexico. The components of the plan include: transportation, housing, environment (shoreline, air quality, water quality, habitat), economy, borders, regional infrastructure needs and financing, and land use and design.

San Diego Association of Governments · 401 B Street, Suite 800, San Diego, CA 92101-4231
(619) 699-1900 · Fax (619) 699-1905 · www.sandag.org

Welcome to SANDAG. Members of the public may speak to the Regional Planning Committee on any item at the time the Committee is considering the item. Please complete a Speaker's Slip, which is located in the rear of the room, and then present the slip to Committee staff. Members of the public may address the Committee on any issue under the agenda item entitled Public Comments/Communications/Member Comments. Public speakers are limited to three minutes or less per person. The Regional Planning Committee may take action on any item appearing on the agenda.

Public comments regarding the agenda can be sent to SANDAG via comment@sandag.org. Please include the agenda item, your name, and your organization. Email comments should be received no later than 12 noon, two working days prior to the Regional Planning Committee meeting. ***Any handouts, presentations, or other materials from the public intended for distribution at the Regional Planning Committee meeting should be received by the Clerk of the Committee no later than 12 noon, two working days prior to the meeting.***

In order to keep the public informed in an efficient manner and facilitate public participation, SANDAG also provides access to all agenda and meeting materials online at www.sandag.org/meetings. Additionally, interested persons can sign up for e-notifications via our e-distribution list at either the SANDAG website or by sending an email request to webmaster@sandag.org.

SANDAG operates its programs without regard to race, color, and national origin in compliance with Title VI of the Civil Rights Act. SANDAG has developed procedures for investigating and tracking Title VI complaints and the procedures for filing a complaint are available to the public upon request. Questions concerning SANDAG nondiscrimination obligations or complaint procedures should be directed to SANDAG General Counsel, John Kirk, at (619) 699-1997 or john.kirk@sandag.org. Any person who believes himself or herself or any specific class of persons to be subjected to discrimination prohibited by Title VI also may file a written complaint with the Federal Transit Administration.

In compliance with the Americans with Disabilities Act (ADA), SANDAG will accommodate persons who require assistance in order to participate in SANDAG meetings. If such assistance is required, please contact SANDAG at (619) 699-1900 at least 72 hours in advance of the meeting. To request this document or related reports in an alternative format, please call (619) 699-1900, (619) 699-1904 (TTY), or fax (619) 699-1905.

SANDAG agenda materials can be made available in alternative languages. To make a request, call (619) 699-1900 at least 72 hours in advance of the meeting.

Los materiales de la agenda de SANDAG están disponibles en otros idiomas. Para hacer una solicitud, llame al (619) 699-1900 al menos 72 horas antes de la reunión.

如有需要, 我们可以把SANDAG议程材料翻译成其他語言.

请在会议前至少 72 小时打电话 (619) 699-1900 提出请求.

SANDAG offices are accessible by public transit. Phone 511 or see* 511sd.com *for route information. Bicycle parking is available in the parking garage of the SANDAG offices.

REGIONAL PLANNING COMMITTEE

Friday, October 4, 2013

ITEM # **RECOMMENDATION**

+1. APPROVAL OF MEETING MINUTES — APPROVE

The Regional Planning Committee is asked to review and approve the minutes from its September 6, 2013, meeting.

2. PUBLIC COMMENTS/COMMUNICATIONS/MEMBER COMMENTS

Members of the public shall have the opportunity to address the Regional Planning Committee on any issue within the jurisdiction of the Committee that is not on this agenda. Anyone desiring to speak shall reserve time by completing a "Request to Speak" form and giving it to the Clerk prior to speaking. Public speakers should notify the Clerk if they have a handout for distribution to Committee members. Public speakers are limited to three minutes or less per person. Committee members also may provide information and announcements under this agenda item.

CONSENT

+3. *TransNet* ENVIRONMENTAL MITIGATION PROGRAM: LAND MANAGEMENT GRANT PROGRAM QUARTERLY STATUS UPDATE (Katie Levy) — INFORMATION

The Board of Directors has approved six cycles of the *TransNet* Environmental Mitigation Program Land Management Grant Program. This report provides information to the Regional Planning Committee on the quarterly status of active projects.

REPORTS

+4. SAN DIEGO FORWARD: THE REGIONAL PLAN: UPDATED POLICY OBJECTIVES (Phil Trom) — INFORMATION

In May, the Board of Directors approved the vision and goals for San Diego Forward: The Regional Plan. In June, the Regional Planning and Transportation Committees provided input on topic areas to inform the development of policy objectives to support the vision and goals. Based on the Committees' discussion and on direction provided at the July and September Board meetings, the policy objectives have been updated as reflected in the attached report.

+5. SAN DIEGO FORWARD: THE REGIONAL PLAN: DRAFT TRANSPORTATION PROJECT EVALUATION CRITERIA (Rachel Kennedy) — DISCUSSION/ POSSIBLE ACTION

On September 6, 2013, the Regional Planning Committee discussed and provided input on the draft transportation project evaluation criteria. This report addresses these comments and the Regional Planning Committee is asked to further discuss the draft transportation project evaluation criteria for use in San Diego Forward: The Regional Plan.

+6. SAN DIEGO FORWARD: THE REGIONAL PLAN: DRAFT OUTLINE OF WHITE PAPER ON ECONOMIC PROSPERITY (Jim Miller) — DISCUSSION

The purpose of this item is to provide opportunities for the Regional Planning Committee to discuss economic strategies and approaches in San Diego Forward: The Regional Plan. Comments from various SANDAG working groups, and from the public workshops held earlier this year, will be relayed.

+7. DRAFT SAN DIEGO REGIONAL PLUG-IN ELECTRIC VEHICLE READINESS PLAN (Anna Lowe) — INFORMATION

The San Diego Regional Electric Vehicle Infrastructure (REVI) working group was formed through a California Energy Commission grant in March 2012. The REVI has prepared a Draft San Diego Regional Plug-In Electric Vehicle (PEV) Readiness Plan that addresses barriers to PEV infrastructure. The Draft PEV Readiness Plan is attached.

8. UPCOMING MEETINGS — INFORMATION

The next Regional Planning Committee meeting is scheduled for Friday, November 1, 2013.

9. ADJOURNMENT

+ next to an agenda item indicates an attachment

San Diego Association of Governments

REGIONAL PLANNING COMMITTEE

October 4, 2013

AGENDA ITEM NO.: **1**

Action Requested: APPROVE

REGIONAL PLANNING COMMITTEE DISCUSSION AND ACTIONS MEETING OF SEPTEMBER 6, 2013

The Regional Planning Committee was called to order by Regional Planning Committee Chair Mary Sessom (East County) at 12:02 p.m. See the attached attendance sheet for Regional Planning Committee member attendance.

1. APPROVAL OF MEETING MINUTES (APPROVE)

Action: Upon a motion by Mayor Sam Abed (North County Inland) and a second by Supervisor Dave Roberts (County of San Diego), the Regional Planning Committee approved the minutes from its June 7, 2013, meeting, and July 19, 2013, joint meeting with the Transportation Committee.

2. PUBLIC COMMENTS/COMMUNICATIONS/MEMBER COMMENTS

John G. Wotzka, member of the public, spoke about various aspects of nuclear fuel movement on the transportation system.

REPORTS (Items 3 through 7)

3. *TransNet* ENVIRONMENTAL MITIGATION PROGRAM: FISCAL YEAR 2014 MANAGEMENT AND MONITORING ALLOCATIONS AND COMPETITIVE LAND ACQUISITION GRANT CALL FOR PROJECTS (RECOMMEND)

Keith Greer, Senior Regional Planner, presented this item.

Action: Upon a motion by Supervisor Dave Roberts (County of San Diego) and a second by Deputy Mayor Pam Bensoussan (South County), the Regional Planning Committee approved (1) funding allocations totaling $4 million toward implementation of regional land management and biological monitoring activities, and (2) release of the Call for Projects for a competitive land acquisition grant program using economic benefit funding, pursuant to an executed Memorandum of Agreement with state and federal agencies on the implementation of the Environmental Mitigation Program.

4. SERIES 13 REGIONAL GROWTH FORECAST: DRAFT SUBREGIONAL FORECAST (DISCUSSION)

Kirby Brady, Associate Research Analyst Regional Models, and Clint Daniels, Manager of Regional Models, presented the results of the sub-regional forecast. Staff has worked closely with the Regional Planning Technical Working Group during the forecasting process.

Action: This item was presented for discussion only.

5. SAN DIEGO FORWARD: THE REGIONAL PLAN: DEVELOPMENT OF DRAFT UNCONSTRAINED TRANSPORTATION NETWORK (DISCUSSION)

Phil Trom, Senior Transportation Planner, presented this item and asked the Regional Planning Committee to review the current Unconstrained Network as used in the 2050 Regional Transportation Plan/Sustainable Communities Strategy in the context of changing demographic, jobs, housing, and population trends from the draft subregional growth forecast.

Action: This item was presented for discussion only.

6. SAN DIEGO FORWARD: THE REGIONAL PLAN: DRAFT TRANSPORTATION PROJECT EVALUATION CRITERIA (DISCUSSION)

Rachel Kennedy, Senior Regional Planner, presented the item and asked the Regional Planning Committee to discuss and provide input on the preliminary draft transportation project evaluation criteria.

Action: This item was presented for discussion only.

7. SAN DIEGO FORWARD: THE REGIONAL PLAN: SUMMARY OF INPUT RECEIVED FROM 2013 POLICY WORKSHOP SERIES (INFORMATION)

Phil Trom, Senior Transportation Planner, presented this item and announced a workshop to be held in mid-October on the scenario planning efforts.

Action: This item was presented for information only.

8. UPCOMING MEETINGS (INFORMATION)

The next the Regional Planning Committee is scheduled for Friday, October 4, 2013, at 12 noon.

9. ADJOURNMENT

Regional Planning Committee Chair Sessom adjourned the Regional Planning Committee meeting at 1:59 p.m.

Attachment: Attendance Sheet

Meeting Start Time:12:02 p.m.
Meeting Adjourned Time: 1:59 p.m.

CONFIRMED ATTENDANCE
SANDAG REGIONAL PLANNING COMMITTEE MEETING
SEPTEMBER 6, 2013

GEOGRAPHICAL AREA/ ORGANIZATION	JURISDICTION	NAME	MEMBER/ ALTERNATE	ATTENDING
North County Inland	City of Escondido	Sam Abed	Member	Yes
	City of Vista	John Aguilera	Alternate	Yes
South County	City of Coronado	Mike Woiwode	Member	No
	City of Chula Vista	Pamela Bensoussan	Alternate	Yes
North County Coastal	City of Solana Beach	Lesa Heebner, Vice Chair	Member	Yes
	City of Oceanside	Gary Felien	Alternate	Yes
East County	City of Lemon Grove	Mary Sessom, Chair	Member	Yes
	City of Lemon Grove	Jerry Jones	Alternate	No
City of San Diego	----	Lorie Zapf	Member	Yes
	----	Mark Kersey	Alternate	No
County of San Diego	----	Dave Roberts	Member	Yes
	----	Bill Horn	Alternate	Yes
Advisory Member	Caltrans, District 11	Laurie Berman	Member	No
		Bill Figge	Alternate	Yes
		Maurice Eaton		No
Advisory Member	San Diego Unified Port District	Dan Malcolm	Member	Yes
		Bob Nelson	Alternate	No
Advisory Member	San Diego County Water Authority	Farrah Douglas	Member	No
		Elsa Saxod	Alternate	Yes
Advisory Member	MTS	Mona Rios	Member	Yes
		Al Ovrom	Alternate	No
Advisory Member	NCTD	Dan Mosier	Member	Yes
		Ed Gallo	Alternate	No

CONFIRMED ATTENDANCE
SANDAG REGIONAL PLANNING COMMITTEE MEETING
SEPTEMBER 6, 2013

GEOGRAPHICAL AREA/ ORGANIZATION	JURISDICTION	NAME	MEMBER/ ALTERNATE	ATTENDING
Advisory Member	Regional Planning Technical Working Group (TWG)	Bill Chopyk	Member	Yes
		Manjeet Ranu	Alternate	No
Advisory Member	Southern California Tribal Chairmen's Association	LaVonne Peck (La Jolla)	Member	No
		Allen Lawson (San Pasqual)	Alternate	No
Advisory Member	Department of Defense	Steve Chung	Member	Yes
		Kim N. Peacher	Alternate	No
Environmental Mitigation Program Advisory Member	Wildlife Conservation Board	Dave Means	Member	No
		Vacant	Alternate	---
Environmental Mitigation Program Advisory Member	California Department of Fish and Game	***Vacant***	Member	---
		David Mayer	Alternate	No
Environmental Mitigation Program Advisory Member	US Army Corps of Engineers	Therese Bradford	Member	No
		Michelle Matson	Alternate	No
Environmental Mitigation Program Advisory Member	US Fish and Wildlife Service	***Vacant***	Member	---
		Susan Wynn	Alternate	No

San Diego Association of Governments

REGIONAL PLANNING COMMITTEE

October 4, 2013

AGENDA ITEM NO.: **3**

Action Requested: INFORMATION

TransNet ENVIRONMENTAL MITIGATION PROGRAM: File Number 3200100
LAND MANAGEMENT GRANT PROGRAM QUARTERLY STATUS UPDATE

Introduction

The Board of Directors entered into a Memorandum of Agreement (MOA) with state and federal agencies on the implementation of the Environmental Mitigation Program (EMP). The MOA was originally signed on February 22, 2008, and recently amended on April 26, 2013.

A provision of the MOA allocates $4 million annually for ten years to implement regional habitat management and monitoring efforts to help maintain the region's biological integrity, thus avoiding the future listing of endangered species. Allocation of the $4 million is done on an annual basis by the Board of Directors pursuant to a Five-Year Funding Strategy (originally approved on December 15, 2006, and last updated by the Board on December 21, 2012).

The Five-Year Funding Strategy is designed to strategically allocate funding for land management and monitoring activities under the EMP, as approved annually by the Board. The Board of Directors allocates a portion of the $4 million annually for the *TransNet* EMP Land Management Grant Program. The purpose of this report is to provide information to the Regional Planning Committee on the quarterly status of active land management grant projects (Attachment 1).

Discussion

The *TransNet* Extension Ordinance and Expenditure Plan, approved by the voters in November 2004, includes the EMP, which provides funding to mitigate habitat impacts from regional and local transportation projects, and provides funding for regional land management and biological monitoring. A portion of this funding is distributed through a competitive land management grant program, which is administered consistent with the requirements identified in Board Policy No. 035: Competitive Grant Program Procedures.

Seventy land management grants totaling $11.5 million in *TransNet* funding have been provided to land management entities in the region through a competitive grant program. Eligible applicants include land managers from private, non-profit organizations; local jurisdictions; and other government agencies. Twenty-eight grants were completed as of May 3, 2013, when the FY 2013 3rd Quarter status report was presented to the Regional Planning Committee. Subsequently, three more grant projects have been completed, including one project that was on the "watch list."

Projects under the EMP Land Management Grant Program are placed on the "watch list" if a grantee is not making timely progress toward their milestones (which are defined in Board Policy No. 035) and the grantee has not yet sought corrective action. Delays in tasks leading up to either the award of a contract or project completion may place grantees on the "watch list." As noted in Attachment 1, one grantee, the City of San Diego, was placed on the "watch list" for the

San Pasqual Valley Weed Management Project due to delays that would potentially result in the grantee not meeting its project deadlines. The delay is due to a more time-intensive contracting process than previously planned which delayed completion of invasive plant eradication that had already begun. On August 5, 2013, after this grant reporting period, SANDAG staff met with the grantee to discuss corrective actions. SANDAG and the grantee have worked out a timeline that will conclude the project within six months of its current contract deadline without additional cost to SANDAG. As such, the grantee has requested, and SANDAG is administratively processing, a six-month time-only extension for approval by the SANDAG Executive Director, or designee, pursuant to Board Policy No. 035. The results of this corrective action will be documented in the next quarterly update.

Attachment 1 provides the FY 2013 4th Quarter status report of the 24 active land management grants as of June 30, 2013. The Board of Directors approved 15 projects under the FY 2013 Call for Projects that are in the process of contract execution, and will be added to the next quarterly status report.

Grant Oversight

SANDAG staff provides ongoing oversight of projects under the *TransNet*-funded EMP Land Management Grant Program through review of quarterly reports and invoices. Annual and quarterly status updates are provided to the *TransNet* Independent Taxpayer Oversight Committee (ITOC) and Regional Planning and Transportation Committees.

Staff reviews quarterly reports to ensure that grantees are making timely progress with respect to Board Policy No. 035 provisions (described below), and to ensure that the project submission of deliverables matches the scopes of work in their grant contract agreements.

Policy Governing Timely Use of Grant Funds (Board Policy No. 035)

The applicable Board Policy No. 035 states that all projects must be completed according to the project schedule provided in the grantee's respective grant agreement, and that at the latest, operations projects (the category which EMP Land Management Grant Program projects fall under) must award any necessary services contracts within one year of an executed grant agreement with SANDAG, and start the project within six months of an executed contract. Board Policy No. 035 also states that, if no services contract for operations is necessary, the operations project must start within one year of execution of the grant agreement.

Schedule extension requests of up to six months may be approved by the SANDAG Executive Director, or designee, per Section 2.1 of Board Policy No. 035. However, per Section 3.1, *TransNet* grant project schedule extension requests require approval by the appropriate Policy Advisory Committee if the request exceeds six months and/or causes the project to miss a Board Policy No. 035 milestone deadline. Additionally, if sufficient time is available, grants utilizing *TransNet* funds must first submit their schedule extension requests to the ITOC for recommendation to the appropriate Policy Advisory Committee, which is currently the Regional Planning Committee for EMP Land Management Grant Program projects.

Next Steps

The FY 2014 1st Quarter status report (covering July to September 2013) is expected to be presented in the December 2013/January 2014 timeframe to the ITOC, Regional Planning Committee, and Transportation Committee.

CHARLES "MUGGS" STOLL
Director of Land Use and Transportation Planning

Attachment: 1. Status of Land Management Grants FY 2013 4th Quarter: Reporting Period through June 30, 2013

Key Staff Contact: Katie Levy, (619) 699-7312, katie.levy@sandag.org

Status of Land Management Grants FY 2013 4th Quarter

Reporting period through June 30, 2013

	Grantee	Project	Description of Project Activities	Grant Amount	Contract Execution Date	Contract / Project Expiration Date	Watch List*	Status
FY 2008								
1	U.S. Fish and Wildlife Service	Shinohara Vernal Pools	Continuation of existing vernal pool project. Needs continued weeding to keep weeds from invading created vernal pools. Thirty new pools to be created.	$ 308,238.00	07/02/09	12/31/14	No	Project IS making timely progress toward their milestones.
2	City of Chula Vista	Cactus Wren Restoration	Coastal cactus wren habitat enhancement project - active management of suitable cactus wren habitat, restore degraded and/or fragmented cholla patches, and initiate activites to reduce edge effects.	$ 373,048.00	01/01/09	09/30/14	No	Project IS making timely progress toward their milestones.
3	U.S. Fish and Wildlife Service	SDNWR Cactus Wren Habitat Enhancement	Enhance coastal cactus wren habitat in high priority area in San Diego National Wildife Refuge.	$ 180,070.00	07/02/09	12/31/14	No	Project IS making timely progress toward their milestones.
4	San Dieguito River Park Joint Powers Authority	Invasive Species Removal and Habitat Restoration	Invasive control, habitat restoration, and access control and management.	$ 347,090.00	01/01/09	11/01/13	No	Project IS making timely progress toward their milestones.
5	County San Diego	Salt Creek Cactus Wren Habitat Restoration	Enhance, restore, expand, and monitor coastal cactus wren habitat in the Salt Creek area	$ 125,000.00	01/01/09	05/30/15	No	Project IS making timely progress toward their milestones.
FY 2009								
6	City of Carlsbad	Calavera Preserve Planning Area	Provide access control, habitat restoration, and public outreach for the 735-acre Calavera Preserve Planning Area.	$ 286,667.00	09/30/09	12/31/14	No	Project IS making timely progress toward their milestones.
FY 2010								
7	San Diego River Conservancy	San Diego River Habitat	Invasive species control, re-treatment, restoration of native species, access control, increased park patrol and landowner outreach along the river in San Diego, Santee, and El Monte Valley.	$ 527,736.15	02/15/11	03/01/15	No	Project IS making timely progress toward their milestones.
8	County of San Diego	Lusardi Creek	Removal and treatment of non-native grasslands in order to restore ecological and hydrological functions of riparian areas of the Lusardi Creek Preserve that were burned in the 2007 wildfires.	$ 107,060.00	04/12/11	01/31/15	No	Project IS making timely progress toward their milestones.
9	City of San Diego, Public Utilities Department	San Pasqual Valley Weed Management	Geographic Information System (GIS) database and an Integrated Weed Management Plan for San Pasqual Valley through data collection, mapping, and plan preparation.	$ 184,623.00	04/01/11	09/30/13	**YES**	Project is NOT making timely progress toward their milestones.

*Watch List Projects are those grantees not making timely progress toward their milestones (which are defined in Policy No. 35 and Use-It-or-Lose-It) and not yet sought corrective action. Delays in tasks leading up to either the award of a contract or project completion may place grantees on the watch list.

Status of Land Management Grants FY 2013 4th Quarter

Reporting period through June 30, 2013

	Grantee	Project	Description of Project Activities	Grant Amount	Contract Execution Date	Contract / Project Expiration Date	Watch List*	Status
FY 2010								
10	Conservation Biology Institute	South County Grassland	Develop detailed habitat assessments and conceptual models to control invasive grasslands and standardize invasive species removal protocols and prioritization of management actions. Determine cost per acre of alternative invasive control and restoration techniques.	$ 283,292.00	02/01/11	09/30/13	No	Project IS making timely progress toward their milestones.
11	County of San Diego	Lakeside Linkage	Plant coast prickly pear cactus on 5 acres adjacent to cactus wren populations, and control invasive plant species.	$ 200,824.00	04/12/11	01/31/17	No	Project IS making timely progress toward their milestones.
12	City of Chula Vista	Chula Vista Tarplant	Restoration and enhancement for San Diego thornmint and Otay tarplant. Invasive control, dethatching, fencing, and monitoring.	$ 268,428.00	05/03/11	11/30/14	No	Project IS making timely progress toward their milestones.
13	Rocks Biological Consultants	Crest Canyon Invasive Removal	Invasive species mapping, and native species planting in Crest Canyon Open Space Park. Access control of unauthorized trail use through public outreach.	$ 74,480.00	03/28/11	10/31/13	No	Project IS making timely progress toward their milestones.
FY 2011								
14	San Elijo Lagoon Conservancy	Carlsbad Hydrologic Unit	Throughout the Carlsbad Hydrologic Unit treat and monitor invasive plants, plant, and restore habitat. Map invasive plant infestations within the MHCP Core and Linkage Areas identified in Carlsbad Habitat Management Plan.	$194,455.00	04/06/12	01/31/14	No	Project IS making timely progress toward their milestones.
15	San Diego Audubon Society	Mission Bay Park	Use habitat evaluation program to establish baseline habitat health to implement invasive species control and habitat restoration in Mission Bay Park.	$98,200.00	04/06/12	12/01/14	No	Project IS making timely progress toward their milestones.
16	Chaparral Lands Conservancy	Proctor Valley Vernal Pools	Restore and ehnance quality of vernal pools and habitat at a 6-acre site in Proctor Valley.	$183,605.00	05/09/12	09/30/15	No	Project IS making timely progress toward their milestones.
17	Conservation Biology Institute	Brachypodium Removal	Develop and implement treatment strategies for the emerging invasive plant species *Brachypodium* . Restore impacted habitat on South Crest properties within the San Diego National Wildlife Refuge and Crestridge Ecological Reserve.	$233,975.00	04/05/12	06/30/14	No	Project IS making timely progress toward their milestones.

*Watch List Projects are those grantees not making timely progress toward their milestones (which are defined in Policy No. 35 and Use-It-or-Lose-It) and not yet sought corrective action. Delays in tasks leading up to either the award of a contract or project completion may place grantees on the watch list.

Status of Land Management Grants FY 2013 4th Quarter

Reporting period through June 30, 2013

	Grantee	Project	Description of Project Activities	Grant Amount	Contract Execution Date	Contract / Project Expiration Date	Watch List*	Status
FY 2011								
18	Groundwork San Diego-Chollas Creek	Radio-Encanto Canyons Restoration	Maintain, monitor, and diversify recently created habitat. Restore and revegetate recently cleared areas and prepare plan for long-term stewardship.	$154,965.00	04/05/12	11/01/13	No	Project IS making timely progress toward their milestones.
19	Zoological Society of San Diego	San Pasqual Valley	Develop and begin initial implementation of a subwatershed-level management plan to restore and manage native habitat to supportCoastal Cactus Wren population in the San Pasqual Valley/Lake Hodges region of the San Dieguito Watershed.	$269,339.00	05/31/12	12/31/13	No	Project IS making timely progress toward their milestones.
20	City of Chula Vista	Salt Creek Canyon	Restore and enhance degraded habitat for the Coastal Cactus Wren within the Salt Creek Canyon of the Otay Ranch Preserve. Conduct invasive species control, propagate cacti, and monitor Coastal Cactus Wren.	$182,282.00	04/30/12	08/31/15	No	Project IS making timely progress toward their milestones.
21	U.S. Geological Society	Western Pond Turtle	Conduct habitat suitability surveys for the Western Pond Turtle (WPT) on Marine Corps Base Camp Pendleton. Remove aquatic invasives and trap WPT.	$133,263.79	06/27/12	06/27/14	No	Project IS making timely progress toward their milestones.
22	Center for Natural Lands Management	Acanthomintha	Assess sites and collect plant materials, conduct local adaptation genetic study. Use the most appropriate molecular techniques to determine the genetic differences among occurrences.	$41,250.00	04/01/12	04/30/14	No	Project IS making timely progress toward their milestones.
23	U.S. Fish and Wildlife Service	SDNWR Golden Eagle	Enhance two existing rock ledges to be used as nest sites for Golden Eagles in the Jamul area. Monitor the area for eagle use.	$23,865.00	08/31/12	03/31/14	No	Project IS making timely progress toward their milestones.
24	Chaparral Lands Conservancy	Proctor Valley Vehicle Barriers	Install Off-Road-Vehicle barriers to close section of fencing between City of San Diego and CA Dept. of Fish and Game fencing in order to improve effectiveness of barriers in reducing illegal access.	$155,780.00	05/09/12	06/30/14	No	Project IS making timely progress toward their milestones.

*Watch List Projects are those grantees not making timely progress toward their milestones (which are defined in Policy No. 35 and Use-It-or-Lose-It) and not yet sought corrective action. Delays in tasks leading up to either the award of a contract or project completion may place grantees on the watch list.

San Diego Association of Governments

REGIONAL PLANNING COMMITTEE

October 4, 2013

AGENDA ITEM NO.: **4**

Action Requested: INFORMATION

SAN DIEGO FORWARD: THE REGIONAL PLAN:
UPDATED POLICY OBJECTIVES

File Number 3102000

Introduction

In May, the Board of Directors approved the vision and goals for San Diego Forward: The Regional Plan. In June, the Regional Planning and Transportation Committees provided input on topic areas to inform the development of policy objectives to support the vision and goals. Based on the Committees' discussion and on direction provided by the Board at its July meeting and at its September meeting based on public comments relating to social equity made by various community based organizations, the policy objectives have been updated as shown in Attachment 1.

Discussion

The adopted vision and goals for San Diego Forward: The Regional Plan are shown below:

Vision: *To provide innovative mobility choices and planning to support a sustainable and healthy region, a vibrant economy, and an outstanding quality of life for all.*

Goals:

Updated Policy Objectives

Based upon Board discussion in July and public comments made at the September Board meeting by various community based organizations that are participating in the development of the plan, the Board provided direction to update the policy objectives and present them to the Regional Planning Committee at its October 4, 2013, meeting. Attachment 1 shows the updated Policy Objectives for San Diego Forward: The Regional Plan.

CHARLES "MUGGS" STOLL
Land Use and Transportation Planning

Attachment: 1. San Diego Forward: The Regional Plan Updated Policy Objectives

Key Staff Contact: Phil Trom, (619) 699-7330, philip.trom@sandag.org

Topic Area	
Mobility Choices	Provide safe, healthy, affordable and convenient travel options with access to jobs, goods, services, health care, food, ~~and~~ education, ~~and~~ recreation and housing; maximize the use of the system; reduce travel time and cost while increasing reliability; provide transportation solutions that maximize public health benefits, foster social interaction and community cohesion, promote economic prosperity and social equity and reduce GHG emissions. Explore and invest in existing and emerging technologies to increase mobility and improve traveler experience.
Regional Economic Prosperity	Promote transportation investments that support and provide equitable access to a variety of jobs for all communities with competitive wages to facilitate a rising standard of living and facilitate sustainable freight and goods movement opportunities to promote regional economic prosperity.
Complete Communities	Collaborate with others to create great places for all to live, work and play near existing and planned infrastructure investments. Support healthy, active, ~~and~~ walkable and bikable communities with safe and equitable access to jobs, goods, services, health care, food, education~~housing, shopping services,~~ and recreation.
Habitat and Open Space Preservation	Focus growth in urbanized areas to facilitate preservation, management, and restoration of open space, natural topography, and urban canyons; provide access and connections through these resources where feasible; promote clean water and resources for coastlines and healthy beaches; and encourage urban forestry and tree planting in the urbanized areas.
Partnerships and Collaboration	Collaborate with ~~Native American~~ tribal nations ~~governments~~, Mexico, military communities, ~~and~~ our neighboring counties and local communities in an inclusive planning process to ensure our regional transportation system connects to the megaregion and national network; and collaborate with other regional infrastructure providers and the private sector to ensure our infrastructure investments meet regional needs for a healthy environment, a diverse economy and recognize the importance of equity ~~,~~ and high quality of life for all.
Binational Collaboration with Baja California	Recognize the vital economic, environmental, cultural and community linkages between the San Diego region and Baja California. Support relationships with partner agencies and organizations, coordinate shared infrastructure, promote equity and invest in transportation that connects the binational region while maximizing the unique opportunities available to the growing megaregion.
Preservation and Safety of the Transportation System	Maintain the transportation system to maximize travel benefits, protect the public's investment, and enhance public safety while maintaining security.
Environmental Stewardship	In the coordination of transportation and infrastructure planning, work to meet or exceed standards for clean air, respect the environment, emphasize conservation and efficiency and live more sustainably.
Energy and Climate Change Mitigation and Adaptation	Prepare for local climate change impacts; reduce GHG emissions through energy ~~efficiency and cleaner~~efficiency, cleaner energy and transportation investments.~~;~~ S~~s~~upport existing energy programs that promote a vibrant economy and healthy environment; and encourage infrastructure investments that take advantage of emerging technologies.

San Diego Association of Governments

REGIONAL PLANNING COMMITTEE

October 4, 2013

AGENDA ITEM NO.: **5**

Action Requested: DISCUSSION/POSSIBLE ACTION

SAN DIEGO FORWARD: THE REGIONAL PLAN: File Number 3102000
DRAFT TRANSPORTATION PROJECT EVALUATION CRITERIA

Introduction

In past Regional Transportation Plans (RTPs), SANDAG has utilized transportation project evaluation criteria and performance measures informed by the plan goals as elements of a multistep process to prioritize and evaluate transportation projects in the development of the preferred revenue constrained transportation network. The SANDAG Board of Directors accepted the vision and goals for San Diego Forward: The Regional Plan on May 10, 2013, which provide policy guidance for this process.

The evaluation criteria for highway corridors, transit services, connector projects, active transportation, and rail grade separations will be used to evaluate projects for each of those categories and develop lists of ranked projects. Project evaluation criteria are applied to each modal category of projects in the Unconstrained Transportation Network, which is under development. The ranked lists of projects, along with other factors such as funding availability, project readiness, and overall network connectivity, will be utilized when developing the initial revenue constrained transportation network scenarios for the Regional Plan. Performance measures will be used to provide comparative assessments between these network scenarios, and will be presented to the Transportation Committee and Regional Planning Committee at future meetings for discussion.

At the September 6, 2013, Transportation Committee and Regional Planning Committee meetings staff provided a comprehensive overview of the project evaluation criteria for discussion and feedback. The two primary points that were raised by both committees related to the rationale of the criteria weightings and further clarification regarding potentially duplicative criteria elements that make up the cost-effectiveness criterion. To address these comments, this report elaborates on proposed criteria weighting and the cost-effectiveness criterion.

Regional Planning Committee members are asked to discuss the draft Transportation Project Evaluation criteria and review the attached comment summaries. The Committee may take action to recommend the criteria to the Board of Directors, or may request additional changes to the Project Evaluation Criteria. The draft Transportation Project Evaluation Criteria are anticipated to be presented to the SANDAG Board of Directors in October for action.

Transportation Project Evaluation Criteria Development

Using the evaluation criteria from the 2050 RTP and its Sustainable Communities Strategy (SCS) as a starting point, staff initiated the review and refinements of the transportation project evaluation criteria for San Diego Forward: The Regional Plan in February 2013 and retained a consultant team

with strong technical expertise to assist in the development of the draft criteria. Revisions to the criteria and methodologies were made to align them with the vision and goals accepted for the Regional Plan and to take advantage of the recently enhanced modeling tools, the Activity Based Model, and the economic and land use microsimulation model - Production, Exchange, and Consumption Allocation System.

Staff received input on the draft project evaluation criteria from regional stakeholders at meetings of the Active Transportation Working Group, Cities and County Technical Advisory Committee, community-based organization partners, Freight Stakeholders Working Group, Independent Taxpayer Oversight Committee (ITOC), Public Health Stakeholders Working Group, Regional Planning Technical Working Group, and the Tribal Transportation Working Group. Staff also sought input from partner agencies including Caltrans, the Metropolitan Transit System, and the North County Transit District. Input on the prioritization of transportation projects also was solicited from the public at the San Diego Forward: The Regional Plan workshops held throughout the region and at Caltrans in June and August 2013.

A peer review panel also was convened to review and assess the criteria, and to consider feedback and input that is proposed to be incorporated into the criteria. The panelists, which include experts from academia, other metropolitan planning organizations, and the private sector, met on August 22, 2013, and provided recommendations for revision and enhancement to the draft criteria.

Draft Project Evaluation Criteria

Each individual criterion is nested into the three focus areas that reflect the Regional Plan's goals: Innovative Mobility and Planning, Healthy Environment and Communities, and Vibrant Economy. The draft Transportation Project Evaluation Criteria are included in this report as Attachment 1.

The refinements that have been incorporated in the draft project evaluation criteria for San Diego Forward: The Regional Plan can be organized into three broad areas: model enhancement-related, new criteria, and reorganized criteria. The majority of proposed changes to the draft criteria have resulted from newer capabilities of the model enhancements, which allow greater analysis of household travel. Other new modal draft criteria are proposed, including *physical activity*, and *access to schools, recreational areas, and beaches*.

Draft active transportation criteria are proposed to be included as a modal category for the first time in the Regional Plan, and were developed through similar combined efforts with local jurisdictions, partner agencies, SANDAG working groups, other stakeholders, consultants, and the general public. The majority of the draft criteria are consistent with other modal categories, including *serves daily trips, safety, greenhouse gas (GHG) and pollutant emissions, serves RCP Smart Growth areas, physical activity, accessibility*, and *cost-effectiveness*.

GHG reductions, communities of concern[1] *served by the project*, and *cost-effectiveness* criteria have been added to the rail grade separation category to provide greater consistency of analysis across modal categories.

Project Cost-Effectiveness Criterion

A more comprehensive cost-effectiveness criterion has been proposed that builds upon the 2050 RTP/SCS method, which evaluated the person hours saved or ridership of the project relative to its capital costs and operating and maintenance costs. For the Regional Plan, the revised draft *cost-effectiveness* criterion proposes to monetize the travel time savings benefits as well as potentially incorporate other factors such as fuel costs, GHG emissions, smog-forming pollutants, health and physical activity, and safety, which would result in a more comprehensive cost-benefit approach. While analyses such as the proposed cost-effectiveness criterion attempt to capture the economic effects of the projects as comprehensively as possible, such analyses may not fully reflect the importance of individual factors to the project prioritization process. As a result, some components of the proposed cost-effectiveness criterion are also reflected in other proposed evaluation criteria, to capture the relative importance of these factors. Person-hours saved traditionally represents the largest component of benefit-cost results. Staff received significant comments of support for the enhanced cost-effectiveness calculation from the public health and active transportation stakeholders, community-based organization partners, workshop participants, and the peer review panelists.

Proposed Project Evaluation Criteria Weightings

In early 2013, the Board of Directors provided input to frame questions for a statistically significant telephone survey intended to gauge public opinion and to inform the development of the vision and goals as the policy foundation for the Regional Plan. Based on the results of the telephone survey, the broad categories with the most support, in order of overall preference, included:

- Improving the regional economy, business climate, and local job opportunities
- Maintaining what we've built, including streets, highways, and public facilities
- Protecting the environment, reducing air pollution, and making better use of renewable energy sources
- Improving the transportation system to improve the flow of people and goods
- Locating future housing and new businesses near major employment centers and transit services to reduce commute times and traffic congestion

After discussion of the survey results, the Board crafted the vision and three goals for the plan: Innovative Mobility and Planning, Healthy Environment and Communities, and Vibrant Economy.

[1] Working with the *San Diego Forward* community-based organization network, staff proposes to define "Communities of Concern" as low-income (200% of Federal Poverty Rate), minority, seniors (75+), and single-parent households with children under 18 years of age.

The proposed project evaluation criteria weighting allocates roughly one third of the total possible points for each of the goal focus areas. These proposed weightings reflect the highest regional priority areas, which are nested in the accepted goals.

Therefore, the draft project evaluation criteria weightings take into account the accepted vision and goals for the Regional Plan and new criteria proposed to be added. All mode categories have a 100-point scale, with each individual criterion allocated a specified maximum score. Feedback from the ITOC, as well as other SANDAG working group members, stakeholders, and the general public, was considered during the development of the proposed criteria weightings. As a result, additional weight was given to the greenhouse gas and pollutant emissions and cost-effectiveness criteria in the active transportation evaluation criteria, providing greater consistency with weighting of these criteria across modes.

Public Outreach

Public input on the draft project evaluation criteria was solicited as part of the Regional Plan workshop series held in June 2013 throughout the San Diego region and at Caltrans. In addition to the workshop series, a public workshop was held on August 5, 2013, at Caltrans, with more than 75 participants. The comments received at the August workshop are included as Attachment 2.

Over 400 comments were collected from local jurisdictions, partner agencies, stakeholders, and the general public. This feedback provided valuable information that was considered for the development of the draft project evaluation criteria. Based on comments received at the public workshop, the *provides access to communities of concern* criterion was removed from the Highway Corridor criteria, as it was felt that the travel time savings for community of concern users was captured in the *provides congestion relief* criterion and the *accessibility* criterion might result in awarding points to highway projects located in low-income and minority communities regardless of these communities' ability to access the project. The *facilitates Fastrak/carpool and transit mobility* criterion was expanded to also include pedestrian and bicycle access. A more comprehensive *cost-effectiveness* criterion, which will evaluate the project travel time, safety, health, and air quality benefits, is also proposed.

Peer Review

A five-person peer review panel was created to review and assess the draft project evaluation criteria. A meeting was held at SANDAG on August 22, 2013, concluding with a session open to the general public. Prior to the meeting, the panelists were provided with the 2050 RTP/SCS project evaluation criteria, the proposed revisions/modifications to the Regional Plan draft project evaluation criteria, and a public outreach comment matrix. Attachment 3A includes a summary of the peer review panel's findings and recommendations and Attachment 3B provides the panelists' biographies.

Based on the panel's review and comments received from working groups and the public, the following refinements were made: the *serves daily trips* criterion was eliminated from the highway corridor criteria, as traveler volumes also are captured in the *provides congestion relief* criterion. Similarly, the highway corridor and freeway connector *serves goods movement* criterion was revised to focus on the total time savings for medium- and heavy-duty trucks; a measure that evaluated the number of medium- and heavy-duty truck trips was eliminated, as the travel time savings measure

accounts for truck volumes. A *provides access to evacuation routes* criterion was added to the transit services projects. Additionally, individual criterion weightings were adjusted to provide greater consistency of common measures across modal categories. These refinements are included in the draft criteria shown in Attachment 1.

During the public session the panel shared its findings and recommendations, and participants posed questions to the panel and SANDAG staff as to how the panel's recommendation for fewer criteria might be accomplished. Clarifications on the inclusion of health impacts in the *cost-effectiveness* criteria and inquiries as to the modeling methods also were made. Comments also were received regarding minimizing impacts, including air quality on communities of concern with respect to highway corridor projects and connector projects, and the consistency of transportation projects with local plans.

Next Steps

The draft Transportation Project Evaluation Criteria are anticipated to be presented to the Board of Directors in October for action.

CHARLES "MUGGS" STOLL
Director of Land Use and Transportation Planning

Attachments: 1. Preliminary Draft Project Evaluation Criteria
2. San Diego Forward: The Regional Plan: Draft Transportation Project Evaluation Criteria Public Workshop – August 5, 2013, Summary of Comments
3A. SANDAG Peer Panel Review Discussion - August 23, 2013
3B. Draft Transportation Project Evaluation Criteria - Peer Review Panel Biographies

Key Staff Contact: Rachel Kennedy, (619)-699-1929, rachel.kennedy@sandag.org

Preliminary Draft Project Evaluation Criteria - Highway Corridors

San Diego Forward: The Regional Plan Goals	No.	Criteria	Description	Proposed Calculation	Max Score	Total Percent
Innovative Mobility & Planning	1	Provides Congestion Relief	A) What is the number of daily person-hours saved from implementing the project?*	Change in daily person-hours saved	10	35
			B) What is the number of daily person-hours saved for communities of concern?	Change in daily person-hours saved for communities of concern population	5	
	2	Project Safety	How does the project compare against the statewide average for collisions?*	Project percentage of collisions measured against statewide average	5	
	3	Provides Access to Evacuation Routes	How will the project provide evacuation access for regional hazard areas?	Proximity analysis of hazard areas (dam failure, earthquake, flood, landslide, liquefaction, tsunami, and wildfire), weighted by population and employment	5	
	4	Facilitates FasTrak/Carpool/Transit, Pedestrian and Bicycle Mobility	How will the project facilitate FasTrak/carpool/Managed Lane facilities and/or regional or corridor transit services and/or pedestrian and bicycle access?	Projects will receive points if they include FasTrak/carpool/Managed Lane facility, and/or regional or corridor transit services, and/or pedestrian and bicycle facilities, which is then weighted by combined carpool person volume + transit person volume	10	
Healthy Environment & Communities	6	Minimizes Habitat and Residential Impacts	How will the project minimize negative habitat and residential impacts?*	Proximity analysis of preserve areas, native habitats, and housing (more than 2 dwelling units per acre)	5	30
	7	GHG and Pollutant Emissions	A) What is the reduction in CO2 emissions from implementing the project?*	Reduction in CO2 emissions	5	
			B) What is the reduction in smog forming pollutants from implementing the project?*	Reduction in smog-forming pollutants	5	
	8	Serves RCP Smart Growth Areas	What are the share of trips on the facility serving RCP Smart Growth Areas (Metropolitan Center, Urban Center, and Special Use Center)?*	Share of trips on facility serving existing/planned or potential Metropolitan Center, Urban Center, and Special Use Center is calculated, using select link analysis	10	
	9	Physical Activity	What is the increase in physical activity?	Increase in time engaged in moderate transportation-related physical activity	5	
Vibrant Economy	10	Accessibility	A) What is the improved access to jobs and schools?	Weighted average number of jobs and school enrollment accessible in 30 minutes by auto	4	35
			B) How will the project support access to recreational areas and beaches?	Acres of parkland/recreational areas and beaches within 1/4 mile of project	4	
			C) What percentage of users of the project access Indian reservations?	Select link used to determine origins and destinations served, total trips to/from Indian reservation areas	2	
	11	Serves Goods Movement and Relieves Freight System Bottlenecks/Capacity Constraints	What is the improved average travel time for freight?*	Total travel time savings for medium and heavy truck classes	5	
	12	Project Cost-Effectiveness	What is the cost-effectiveness of the project?*	Enhanced cost-effectiveness measure may incorporate the following components: - Project cost - Generalized delay costs - Fuel costs - GHG emissions - Smog-forming pollutants - Health and physical activity - Safety	20	

*Note: Provides dual evaluation for both passenger vehicles and trucks

Preliminary Draft Project Evaluation Criteria - Transit Services

San Diego Forward: The Regional Plan Goals	No.	Criteria	Description	Proposed Calculation	Max Score	Total Percent
Innovative Mobility & Planning	1	Provides Time Competitive/Reliable Transit Service	What is the percentage of the route located in priority treatment?	Analysis of percentage of transit route within dedicated transit guideway; dedicated arterial lane, interrupted rail, or Managed Lane; or HOV lane or arterial spot treatment	10	35
	2	Serves Daily Trips	What is the number of additional daily transit trips resulting from the project?	Change in daily transit linked trips	15	
	3	Provides Access to Evacuation Routes	How will the project provide evacuation access for regional hazards?	Proximity analysis of hazard areas (dam failure, earthquake, flood, landslide, liquefaction, tsunami, and wildfire), weighted by population and employment	5	
	4	Daily System Utilization	What is the daily transit utilization?	Daily passenger miles/daily service seat miles (system wide)	5	
Healthy Environment & Communities	5	GHG and Pollutant Emissions	A) What is the reduction in CO2 emissions from implementing the project?	Reduction in CO2 emissions	5	30
			B) What is the reduction in smog forming pollutants from implementing the project?	Reduction in smog forming pollutants	5	
	6	Serves RCP Smart Growth Areas	What are the share of trips on the transit service serving RCP Smart Growth areas?	Share of trips on transit service serving all existing/planned or potential Smart Growth Areas is calculated, using select link analysis	10	
	7	Physical Activity	What is the increase in physical activity?	Increase in time engaged in moderate transportation-related physical activity	10	
Vibrant Economy	8	Accessibility	A) What is the increase in job and school trips by transit?	Change in daily transit linked work and school trips	4	35
			B) How will the project support access to recreational areas and beaches?	Acres of parkland/recreational areas and beaches within 1/4 mile of project	3	
			C) What is the increase in transit trips by communities of concern?	Change in total transit trips by communities of concern population	3	
			D) How will the project facilitate pedestrian and bicycle access?	Project located within 1/4 mile of pedestrian and bicycle facilities	3	
			E) What is the increase in transit trips to federally recognized Indian reservations?	Change in total transit trips to/from Indian reservations	2	
	9	Project Cost-Effectiveness	What is the cost-effectiveness of the project?	Enhanced cost-effectiveness measure may incorporate the following components: - Project cost - Generalized delay costs - Fuel costs - GHG emissions - Smog forming pollutants - Health and physical activity - Safety	20	

Preliminary Draft Project Evaluation Criteria - Active Transportation

San Diego Forward: The Regional Plan Goals	No.	Criteria	Description	Proposed Calculation	Max Score	Total Percent
Innovative Mobility & Planning	1	Serves Daily Trips	What is the change in the number of active transportation trips?	Change in active transportation mode trips or transit accessed by active transportation mode trips	15	35
	2	Project Safety	Is the project located in an area with a high bicycle and pedestrian traffic incident rate?	Number of bicycle and pedestrian traffic incidents within 1/4 mile of project	5	
	3	System Connectivity	Does the project provide enhanced connectivity to/from transit station/stop areas, highway project areas, or rail grade separations?	Project located within 1/4 mile of transit, highway, or rail grade separation project areas.	10	
	4	Consistency with local plans	Is the improvement identified in a locally adopted plan?	Project is in a locally adopted plan	5	
Healthy Environment & Communities	5	Reduced Bicycle/Pedestrian Stress Level	Does the project result in a safer facility for bicyclists and pedestrians?	Project area is currently unsafe for pedestrian and bicycle activity due to speeds, vehicular traffic volumes, conflict points such as freeway on/off-ramps, etc.	10	35
	6	GHG and Pollutant Emissions	A) What is the reduction in CO2 emissions from implementing the project?	Reduction in CO2 emissions	5	
			B) What is the reduction in smog forming pollutants from implementing the project?	Reduction in smog forming pollutants	5	
	7	Serves RCP Smart Growth Areas	Is the project located near population and employment?	Population and employment in all smart growth areas within 1/4 mile distance of project	5	
	8	Physical Activity	What is the increase in physical activity?	Increase in time engaged in moderate transportation-related physical activity	5	
	9	Range of Users/Skill Levels Served	For major arterial street, are alternative routes attractive to all riders considered, or are the arterial or alternative routes traffic calmed?	Project results in route attractive to all riders	5	
Vibrant Economy	10	Accessibility	A) Does the project support access to jobs and schools?	Employment and schools within 1/4 mile of project	4	30
			B) Does the project support access to recreational areas, parks, and beaches?	Acres of parkland/recreational areas and beaches within 1/4 mile of project	3	
			C) What percentage of the project users are from communities of concern?	Communities of concern population within 1/4 mile of project	3	
	11	Project Cost-Effectiveness	What is the cost-effectiveness of the project?	Enhanced cost-effectiveness measure may incorporate the following components: - Project cost - Generalized delay costs - Fuel costs - GHG emissions - Smog forming pollutants - Health and physical activity - Safety	20	

Preliminary Draft Project Evaluation Criteria - HOV Connector

San Diego Forward: The Regional Plan Goals	No.	Criteria	Description	Proposed Calculation	Max Score	Total Percent
Innovative Mobility & Planning	1	Provides Congestion Relief	What is the number of daily person-hours saved from implementing the project?	Change in daily person-hours saved	15	35
	2	Provides Access to Evacuation Routes	How will the project provide evacuation access for regional hazard areas?	Proximity analysis of hazard areas (dam failure, earthquake, flood, landslide, liquefaction, tsunami, and wildfire), weighted by population and employment	5	
	3	Facilitates FasTrak/Carpool/Transit, Pedestrian and Bicycle Mobility	How will the project facilitate FasTrak/carpool/Managed Lane facilities and/or regional or corridor transit services and/or pedestrian and bicycle access?	Projects will receive points if they include FasTrak/carpool/Managed Lane facility, and/or regional or corridor transit services, and/or pedestrian and bicycle facilities, which is then weighted by combined carpool person volume + transit person volume	15	
Healthy Environment & Communities	4	Minimizes Habitat and Residential Impacts	How will the project minimize negative habitat and residential impacts?	Proximity analysis of preserve areas, native habitats, and housing (more than 2 dwelling units per acre)	15	30
	5	GHG and Pollutant Emissions	A) What is the reduction in CO2 emissions from implementing the project?	Reduction in CO2 emissions	10	
			B) What is the reduction in smog forming pollutants from implementing the project?	Reduction in smog forming pollutants	5	
Vibrant Economy	6	Project Cost-Effectiveness	What is the cost-effectiveness of the project?	Enhanced cost-effectiveness measure may incorporate the following components: - Project cost - Generalized delay costs - Fuel costs - GHG emissions - Smog forming pollutants - Health and physical activity - Safety	35	35

Preliminary Draft Project Evaluation Criteria - Freeway Connector

San Diego Forward: The Regional Plan Goals	No.	Criteria	Description	Proposed Calculation	Max Score	Total Percent
Innovative Mobility & Planning	1	Provides Congestion Relief	What is the number of daily person-hours saved from implementing the project?*	Change in daily person-hours saved	20	35
	2	Project Safety	How does the project compare against the statewide average for collisions?*	Project percentage of crash rates measured against statewide averages	5	
	3	Provides Access to Evacuation Routes	How will the project provide evacuation access for regional hazard areas?	Proximity analysis of hazard areas (dam failure, earthquake, flood, landslide, liquefaction, tsunami, and wildfire), weighted by population and employment	10	
Healthy Environment & Communities	4	Minimizes Habitat and Residential Impacts	How will the project minimize negative habitat and residential impacts?*	Proximity analysis of preserve areas, native habitats, and housing (more than 2 dwelling units per acre)	15	30
	5	GHG and Pollutant Emissions	A) What is the reduction in CO2 emissions from implementing the project?*	Reduction in CO2 emissions	10	
			B) What is the reduction in smog forming pollutants from implementing the project?*	Reduction in smog forming pollutants	5	
Vibrant Economy	6	Serves Goods Movement and Relieves Freight System Bottlenecks/Capacity Constraints	What is the improved average travel time for freight?*	Total travel time savings for medium and heavy truck classes	15	35
	7	Project Cost-Effectiveness	What is the cost-effectiveness of the project?*	Enhanced cost-effectiveness measure may incorporate the following components: - Project cost - Generalized delay costs - Fuel costs - GHG emissions - Smog forming pollutants - Health and physical activity - Safety	20	

*Note: Provides dual evaluation for both passenger vehicles and trucks

Preliminary Draft Project Evaluation Criteria - Rail Grade Separations

San Diego Forward: The Regional Plan Goals	No.	Criteria	Description	Proposed Calculation	Max Score	Total Percent
Innovative Mobility & Planning	1	Peak-Period Exposure Index (PPEI) Factor	Product of the existing high directional traffic and the total measured blocking delay during the same three hours of the day experiencing the highest congestion at the crossing	Calculation based on vehicle traffic during a selected three-hour period, total blocking delay during same period, and mathematical constant for time period	11	34
	2	Peak-Day Total Delay Exposure Index (PDEI) Factor	Product of the existing average daily traffic (ADT), the total number of trains, and an average train crossing delay time factor	Calculation based on average daily traffic, total number of trains, train crossing delay factor, and mathematical constant	11	
	3	Pedestrian and Bicycle/ Communities of Concern Benefits	A) Number of pedestrians and bicyclists served in top 4 hours	Grade separation pedestrian bicycle crossing counts	4	
			B) What is the share of communities of concern population in the proximity of the project?	Ratio of communities of concern share of population within 1/2 mile of project compared to community of concern share of regional population		
	4	Bus Operations Benefits	Number of buses served an hour, as well as proximity to transit center	Number of buses served by the grade separation	4	
	5	Benefit to Emergency Services	Proximity to emergency service provider and lack of nearby alternative grade-separated crossing	Proximity analysis based on emergency service providers and alternative grade separation crossing	4	
Healthy Environment & Communities	6	Accident History	Accident history in the past five years	Number of qualifying accidents involving vehicles, pedestrians, and bicycles with trains, not including accidents involved in attempted suicides	11	26
	7	Proximity to Noise Sensitive Receptors	Proximity to sensitive receptors	Proximity analysis based on rail crossing located within 200-500 feet of sensitive receptors	4	
	8	GHG Emissions	What is the reduction in CO2 emissions from implementing the project?	Reduction in CO2 emissions	4	
	9	Serves RCP Smart Growth Areas	Is the project located near RCP Smart Growth Areas?	Population and employment in all smart growth areas within 1/4 mile distance of project	8	
Vibrant Economy	10	Truck Freight Operations	Percentage of daily truck traffic	Percentage of daily traffic of Class 4-Class 13 (as defined by FHWA)	4	15
	11	Funding Request	Percentage of total project costs contributed by the local agency including funds already committed from state, federal, or other source	Percentage of local contribution	4	
	12	Project Cost-Effectiveness	What is the cost-effectiveness of the project?	Enhanced cost-effectiveness measure may incorporate the following components: - Number of trains per day - AADT - Gate down time - Percent truck traffic - Safety	8	
Regional Housing Needs Assessment (RHNA)	13	Regional Housing Needs Assessment (RHNA) (per Board Policy No. 033 adopted January 2012)	RHNA-related criteria as described in Board Policy No. 033. Eligibility for Policy 33 points requires housing element compliance and submittal of Annual Housing Element Progress Reports to SANDAG.	Based on Board Policy No. 033 Criteria: RHNA Share Taken; Regional Share of Cumulative Total of Lower-Income Units Produced; Total Number of Affordable Housing Units; Percent of Lower Income Households	25	25

San Diego Forward: The Regional Plan: Draft Transportation Project Evaluation Criteria
Public Workshop – August 5, 2013, Summary of Comments

Active Transportation

General Comments:

- Access to food, medical care, recreation on weekends/summer
- Affordability
- Criteria to identify benefits for bike & pedestrian separately
- Explicitly from houses to transit stops
- Safe access, comfortable waiting areas
- Public facilities/parking at major transit stations, shopping centers, entertainment centers
- Access to colleges/universities & military bases
- Project education
- Minimizes travel time
- Employment/employer's involvement/support
- Pedestrian friendly signals
- Does the project provide access and/or improvements to locally-adopted community trail plans?
- There should be a criterion that includes public wants; i.e., if SANDAG presents a projects and a vast majority of the community living within the project area does not want the project to be constructed, there should be points against it. However, if the public was for the project and wants to see it built, then I think more points should be given to that specific project.
- Weighting: #1 (10 pts), #4 (10 pts), and 10 (25 pts)
- Active transportation – proposed calculations should be based on Federal Transit Administration catchment area guidance – 0.5-mile walking radius; 3-mile bicycle radius
- Bike lanes at Virginia Avenue
- More weight for smart growth areas

Criterion 3: Consistency with Local Plans

- Does it include consistency with community plans or city plans? What about community support?

- Description should also include "community demand"

Criterion 4:

- Make changes as "located in a high-crash area and poorly designed corridors"
- It may be more useful to use 0.5-mile radius for bike/pedestrian crash, etc., if the proposed facility is expected to consolidate trips from adjacent corridors due to improved facilities

Criterion 8: Physical Activity

- Add – does the project support multi users?

Criterion 9: Range of Users/Skill Levels Served

- Modify the description to "balance needs of all users"

Criterion 10B: Accessibility

- Does the project support access to the county's regional trail system (per county-adopted general plan)?

Criterion 10D: Accessibility

- Define more clearly; and break community of concerns into different groups – low income, disability, etc.

Freeway and HOV Connectors:

General Comments:

- Storm water re-use
- Consider life-cycle costs and operations
- Prioritize "bang for the buck"
- Consider health impacts in the area where the project is built, in particular with communities of concern
- Connectors should address jobs access for Communities of Concern
- Emphasize goods movement and cost-effectiveness
- Facility design should encourage active transportation users (pedestrian/bike)
- Add attractive bike/ped crossings and access to all connectors (High Occupancy Vehicle [HOV]/Freeway) projects
- Include bike parking at stations

- Consider combining the HOV and Freeway connector criteria

Freeway Connectors:

General Comments:

- Increase "Healthy Community & Environment" weighting
- Emphasize greenhouse gas (GHG)/pollutant emissions

Criterion 1: Provides Congestion Relief

- Ensure model looks at surface streets (key corridors) and how can we prioritize projects to alleviate congestion on these vital corridors for transit and active transportation

Criterion 4: Minimizes Habitat and Residential Impacts

- Calculation does not specify if success will be defined by increase or decrease in percentage of people accessing Smart Growth Areas using Hwy. Criteria should rank Hwy. projects that promote sprawl and easy vehicle access to these areas lower than projects that reduce vehicle trips

HOV Connectors:

General Comments:

- Increase "Healthy Community & Environment" weights
- Emphasize GHG/pollutant emissions
- Consider safety in ped/bike access to HOV connectors and secure bike parking at those transit stations and park-and-ride lots

HOV Connectors continued:

Criterion 3: Facilitates FasTrak/Carpool and Transit Mobility

- #3 is most important (and automatically impacts #1, #5, #6)

Goods Movement:

General Comments:

- Otay Mesa truck routing – treat truck route as "route". Like Cesar Chavez in Barrio Logan. Treat La Media as trade
- Consider emissions from diesel
- Route trucks from I-15 via 805/163 (avoid City Heights)

- Keep trucks off narrowly constrained I-15 through City Heights
- Otay Mesa – doorway to nation – congestion dangerous for people – carbon monoxide particulate matter
- Flooding in October: Caltrans contributing - Otay Mesa
- Projects that have community support get more points
- Desert line – looking for benefits/planning + analysis for freight – existing/future (potential)
- Mountain Empire region – look at potential for rail – three tribal areas in rural east
- Include "excursion" line on Desert Line
- Consider multimodal evaluation criteria
- Was there a report done about this? (on multimodal criteria) – make this available
- Invite Otay Planning group and property owners
- Restricting trucks during certain hours
- Cleaner trucks in urban areas
- Encourage/incentivize smaller electric vehicles – charging stations
- Air quality impacts/Port of Entry (POE) drift, particulates – private industry
- Freight train impacts (pollution) to communities – noise, vibration, at grade crossing impacts)
- Sound walls/quiet zones
- Recuperate revenue from commercial users on freeways (via commercial license)
- FasTrak for trucking movement
- Include active transportation projects in project development
- More bikes on Trolley/bike lockers (no inspection needed)
- Bike lockers at stations
- Expansion of Desert Line
- Quit fighting the 2050 Regional Transportation Plan and its Sustainable Communities Strategy lawsuit
- Improve La Media Road

Goods Movement Air Cargo:

Criterion 4: Minimizes Community Impacts

- Residential buffer – more points for bigger buffers

Criterion 6: Minimizes Communities of Concern Impacts

- Attention to communities of concern

Goods Movement Maritime:

Criterion 4: Minimizes Community Impacts

- Residential buffer – more points for bigger buffers

Criterion 6: Minimizes Communities of Concern Impacts

- Attention to communities of concern

Goods Movement Rail:

General Comments:

- Goods movement – rail: "pedestrian benefits" and "accident history" should be added as criteria if there are crossings that intersect with local streets, arterials, or highways

Criterion 4: Minimizes Community Impacts

- Residential buffer – more points for bigger buffers

Criterion 6: Minimizes Communities of Concern Impacts

- Attention to communities of concern

Highway:

General Comments:

- Rank Healthy Environment greater than Innovative Mobility/Planning
- Increase the weighting for the Healthy Community goal
- Safety for all users and ranked highways
- Where is system preservation?
- Highway Regional Comprehensive Plan (RCP) Smart Growth Areas not clear, on transit focus on Smart Growth

- Highway construction induces sprawl & each project should be analyzed on this
- Highway projects reduce viability of transit
- SR 905 storm water issues need more consideration
- Consider a 'FasTrak' like fee/charge for trucks on highways (commercial users). Also charge trucks by time (more time = higher fee charged)
- Pay attention to sensitivities of the Mid-City community for I-15 projects in the area
- Thank you for meeting and lunch. Please study the impact of lead from airplanes, especially Gillespie Field. Planes run their engines on "full rich" when practicing touch and go's in El Cajon, Santee, Lakeside; install monitors in Santee, Lakeside
- Whether planes are hauling cargo or teaching student pilots. The planes are putting out emissions, please study emissions, heavy touch and go's put emissions in one spot. Lead does not dissipate
- Please give me more information on the status of the Bradley exchange from Highway 67. Also what criteria will be used for that exchange?
- The HOV's freeway criteria should include an overriding criterion that provides greater service to low and moderate income areas, even if that means continued congestion for middle and upper-middle class commuters. In particular, the HOV lane project proposed for SR94 from downtown San Diego to the I-805 connectors should be abandoned. The money not spent - $450 million or so – should be spent in the surrounding communities instead
- The highway corridor criteria must have an overriding criterion to propose only projects that conform to the community plans of the communities within which the projects are proposed
- A new criterion: Community demand and consistency with local plans
- Highways facilitate sprawl. That should be reflected in a criteria
- Highways take away from transit ridership, which reduces resources for adequate transit. That should be a criterion

<u>Criterion 1: Provides Congestion Relief</u>

- Should be weighted 10 points

<u>Criterion 1A: Provides Congestion Relief</u>

- Maximum score should be 5 points
- Decrease weight

Criterion 1B: Provides Congestion Relief

- Should be removed because these increases the likelihood that freeways will be located in communities of concern
- A criterion should be "minimize impact to community of concern"

Criterion 4: Facilitates FasTrak/Carpool/Transit, Pedestrian and Bicycle Mobility

- What does "facilitate" mean? How is bike/pedestrian access considered? The criteria is not clear
- Should be weighted more
- Remove "Fastrak"
- Should be weighed 10 points

Criterion 7A: GHG and Pollutant Emissions

- Should be at least 15 points
- Increases in GHG emissions should get negative points
- Highway and connectors criteria include how much GHGs and pollutants are avoided. But they should actually get negative number.

Criterion 8: Serves RCP Smart Growth Areas

- Should be 10 points
- Should be at least 15 points

Criterion 9: Physical Activity

- Should be weighted higher. Also because it relates (replaces) to #5, #7, #9, #10, #12
- Should be weighted 10 points

Criterion 10C: Accessibility

- Current criterion is not clear how success will be measure to positively impact of community of concern
- Make criteria "what is increase in trips by communities of concern" - similar to criteria under transit
- Should be removed because these increase likelihood that freeways will be located in communities of concern. A criterion should be "minimize impact to community of concern"

Criterion 11: Serves Goods Movement and Relieves Freight System Bottlenecks/Capacity Constraints

- Should be weighed 5 points

Criterion 12: Project Cost-Effectiveness

- Proposed calculation should be expanded to be multimodal and address how many jobs are accessible by transit, walking and bicycle too

Rail Grade Separations:

General Comments:

- Incorporate transfer speed – station design
- Top 4 hours for bikes? Cars?
- Convert Bus Rapid Transit (BRT) to Rail in future
- Add criteria: improvements in rail efficiency
- Rail under-crossings: coastal access should be weighted as it is a statewide and statutory goal. Rail under-crossing encourages mode splits to the beach, reducing parking demand and exacerbated traffic. Reductions in auto mode shift with positively influence economy and give business more ability to attract patronage.
- The points awarded to Board Policy No. 033 for undercrossing should be low as it does not relate to propensity of undercrossing use. Also, the incentive for housing element compliance should be reconsidered since the state has stepped up the risks to local agencies for noncompliance, and for jurisdictions in San Diego that don't satisfy Board Policy No. 033 – grant funding is not the silver bullet.

Criterion 3A/B: Bicycle and Pedestrian Benefits

- Weight of pedestrian/bike = 11 points, take from Peak Period Exposure Index factors
- Higher weight for pedestrian and bike
- Move to Healthy Environment
- 3B should be separate from 3A

Transit:

General Comments:

- Under mobility – add in connections to other transport services (e.g. Amtrak, medical shuttles)
- Consider ferry services

- Take into account access to transit stops/centers (walk, bike, park-n-ride). First mile concept
- Shade and benches at transit stops
- Restrooms at transit centers
- Better bus feeders (local bus) to large transit centers (Trolley, BRT long dist.)
- Promotional fares (e.g., Sunday transit for shopping)
- Lower transit fares, tiered for seniors, students etc.
- All buses should have racks for 3 bikes (like in North County) – especially ones going to beach areas/Coronado
- Peer panel should include person w/expertise in public/population health
- Neighborhood integrity – potential impacts
- How a transit projects decreases auto trips/vehicle miles traveled should be considered
- Serving areas of high senior population
- Increase access for seniors (also children) that are dependent on transit
- More direct service, fewer transfers should score higher
- Service – more service to rural communities
- Degree of connectivity w/local/feeder bus
- Weighting (total max score = 125): #1 (5), #2 (10), #3 (15), #4 (1), #6 (5 pts), #7 (20 points)
- This format was confusing and difficult to get more suggestions and we could not hear ideas of others
- I am interested in better access to transport from neighborhoods where people live
- Safe bike routes
- Streets and roads that are safe and convenient for pedestrian
- Cheaper fares for public transportation
- Trees for shade and beauty at transit stop centers
- Thanks for having this. I understand better the complexity and magnitude of the issues
- We need more buses in East County

- Saturday and Sunday routes in the rural areas
- Lakeside and further out need buses to add pick-up times
- The "transit services" require two overriding criteria: (1) to provide services that take low and moderate income workers to the better jobs north of Clairemont Mesa Blvd, and (2) the transit planning agency should ask people who don't use transit to say where they might want a bus trip to begin, to end, at what time(s) of which days. Then we can design an intelligent public transit system.
- Focus on design – easy connections between transit and active transportation modes
- Could there be a criteria for minutes served in transfer between modes/buses?
- Accommodate bikes
- Transit concerns: Affordability (low-income); accessibility (seniors and disabled); connectivity to food, healthcare, education, and employment
- There should be a criterion that connects to other transit/bus lines. The more connections, the higher the points. (Side comments: (1) interior of buses are often dirty and MTS needs to clean the bus at the end of the route at-least once a day, (2) many people on the bus do not follow the rules. The bus driver should enforce the rule; i.e., people putting both feet on the seats, (3) more signs to advise transit riders to respect elders and keep the bus clean, similar to disabled sign, (4) many people, who are not using a trained aid dog, bring their pets on the bus and Trolley in El Cajon. The dogs sit in the seats allocated for regular riders. There should be some regulation about dogs sitting on the floor of the buses and Trolleys.)
- Discuss and develop assessments for transitioning from BRT (fossil fuel) to rail/electric buses

<u>Criterion 1: Provides Time Competitive/Reliable Transit Service</u>

- Consider higher weighting

<u>Criterion 2: Serves Daily Trips</u>

- Redundancy between #2 (daily trips) and #7 (accessibility)? Should #7 be a substitute of #2?

<u>Criterion 3: Daily System Utilization</u>

- Include weekend and after hours

<u>Criterion 7A: Accessibility</u>

- Access – add in affordability (fares), medical care & food
- Connectivity to major job centers (not covered enough with increase in work trips criteria)
- Give more points to this criterion

- In "access" category, add access to beach areas and transit destinations - airport

Criterion 7B: Accessibility

- Proximity to recreational spaces should also consider the intensity of that space (example: lagoon w/no active recreation vs. major destination beach

- Proximity to recreational spaces should also consider: a. the intensity of the potential mode split resulting from project

Criterion 7E: Accessibility

- Clarify that this means bike/pedestrian facilities allow bike/pedestrian access

Criterion 8: Cost-Effectiveness

- Cost-effectiveness should also consider: (a) Long-term effectiveness, not just short;
  (b) Maintenance assumed over the life of the project

Additional General Comments:

- I live in Talmadge (zip code 92115) and it is practically impossible to get to the airport or train station or Trolley, without a private car or taxi…and then there is no parking. What a mess! I suggest more buses, north to south, and vice-versa, going into residential neighborhoods.

- SANDAG should give highest project priority to bicycle transportation projects! Use recreational dollars for recreation projects. These are transportation dollars. Thanks!

- The list of candidates for the expert review panel should be available to the public. Please include an email address to which comments should be returned. Finally, please include a link to the meeting dates/times/locations for the expert review panel. Some of us would like to attend.

- Overlapping criteria. Too many criteria. Private/public match of funds should be considered.

- Increase maximum available points for active transportation and transit to 125 and leave highway corridor projects at 100.

- Active transportation criteria should be more comprehensively incorporated into criteria for other modes such as Highway Corridor.

- Thank you for lunch. The format of this workshop was not conducive to soliciting public input. The cramped quarters made it difficult to hear comments/responses or give feedback. The criteria sheets should have been distributed first to all participants to digest before proceeding to the boards. The presentation should have summarized content of the criteria, rather than more general information, to prepare and engage the audience. The pens don't work.

- This format was not very productive. I would have preferred whole group and small group input. The tables were too crowded and the lead person at each table was overly occupied. Perhaps there were more people here than expected.

- We did not like your format today.

- Question: How do we evaluate varying factors in ranking future transportation projects?

- The San Ysidro Trolley Terminal, currently under project expansion study, has the highest ridership volume, by far, in the entire MTS Trolley System. It is reportedly the only light rail platform in the United States serving an international border. Accessibility and mobility surrounding this station has deteriorated due to the largest POE expansion in U.S. history. The San Diego Trolley is an icon at the San Ysidro Pedestrian Port of Entry.

- Important criteria in planning and ranking future transportation projects must involve a measure of overall benefits to society. An evaluation needs to undergo a comprehensive assessment of all interrelated factors, including intended functions, goals and further reaching issues.

- Public Safety, Mobility & Accessibility: is project readily and conveniently accessible to its users and community? In high volume locations, does it increase public safety and eliminate vehicle-pedestrian conflicts for efficient flow of public transit-pedestrian-vehicle travel?

- Economy: how can the project help create jobs, directly and indirectly, and spawn new economic growth? Can public-private collaboration play a key role in beneficial development?

- Environment: will the project promote mass transportation as a strong alternative to help reduce traffic congestion, concrete highway sprawl and improve the quality of urban life?

- Public Health: the project should be instrumental in reducing vehicle use/gas emissions by utilizing alternative mixed-uses such as smart parking structures, people movers and pedestrian friendly open spaces in order to encourage non-motorized healthy activity.

- Social Equity: In underserved communities and regions, does project incorporate new public infrastructure and large scale transit oriented development to stimulate the local economy? Is public infrastructure needed, or is community adversely impacted by public right-of-ways?

- Smart Growth Planning: It must build on previous research, related studies, reports and modern transportation culture to utilize global best practices that yield future social benefits.

- National & Local Security: Intelligent design should promote high security technology and surveillance measures in prioritizing law and order for public safety.

- Binational Mega Region: The project should facilitate crossborder travel and access to jobs, business centers, school, shopping and tourism.

- International Symbolism: The project should showcase our diverse San Diego – Tijuana culture and symbolize our unique reputation as home of the world's busiest border crossing.

- Historical: The current San Ysidro Intermodal Transportation Center Study involves a historic window of opportunity. It should focus on how best we can celebrate our closest international alliance and brand for the first time a meaningful historic footprint on a cornerstone of the Americas, right here in San Diego, as the world's finest international gateway.

SANDAG Peer Panel Review Discussion – August 23, 2013

Key Strengths of SANDAG Approach

- Goal structure
- Data-driven, rather than qualitative
- Moving towards cost-effectiveness approach, while still recognizing value of Board priorities

Recommendations for Improvement

Overall Comments

- Fewer measures would be better
    - Suggested measures for removal include: measures of existing or new volumes (already captured elsewhere), superfluous accessibility measures (such as access to beaches or Native American reservations)
    - Removal of volume-based measures would avoid potential bias towards low-benefit projects on high-volume facilities
- Ranking approach: ranking based on top project is flawed
    - Could pursue alternative approach to avoid "outlier introduction bias"
- Adverse impacts should be considered whenever applicable
    - Doesn't highlight drawbacks of certain modes
    - Could consider both positive and negative point scale for some criteria

Modal Silos

- Need to have consistent criteria across modes
    - Reduce modal silos, particularly between highway and transit
    - Even within highway category, too many categories, consider combining highway corridors, High Occupancy Vehicle (HOV) connectors, and freeway connectors into one list
    - Improved criteria could simplify approach
    - Merged criteria would help to minimize mode-specific criteria's excessive weights
    - If you start measuring the right things, do you need the FasTrak/HOV/transit criteria for highways?
    - Active transportation and rail grade crossing excluded

- Need to consider corridor improvements, regardless of mode
    - Can't see which project is best for corridor, regardless of mode
    - Benefits from all modes, not just mode being analyzed
    - Broad concept of mobility, rather than hours of auto time saved
- Remove congestion - instead mobility
- Add or remove consistently for both highway and transit projects
- Have consistent weightings for criterion that are featured in multiple modal categories

Cost-Effectiveness and Benefit-Cost

- Scale benefits in points system based on cost
- Differences between benefit-cost and cost-effectiveness for identified metrics
- Need benefit/cost ratio if cost-effectiveness for each measure?
    - Folks will want to see this
    - Business folks will want to see benefit/cost ratio return to analysis
    - Need to fix cost-effectiveness weight (make the same across modes)
- Pull benefit/cost ratio out and display in conjunction with points score

Land Use

- Need more emphasis on smart growth/land use; need to prioritize smart growth areas
    - May not be at the point to incorporate land use/Regional Housing Needs Assessment across them
    - Focus on improved accessibility for focused growth area
    - But need to encourage live/work in same areas – improve their ability to travel
    - Projects should be regional-serving in Regional Transportation Plan
    - Internal capture not important
    - Smaller smart growth areas have lower numbers of people/jobs, lower scores

Arterials

- Lack of inclusion of arterials is shortcoming for road-based smart growth

Reliability

- Add reliability measure
- Qualitative measure for now
- Transition to quantitative measures next time
- Lack of Intelligent Transportation Systems in analysis recognized as shortcoming

Design Elements

- How to deal with this via policies
- Transit has better impacts on smart growth via design
- Need to consider these categories but recognize shortcomings when reporting results

Lower-Cost Projects

- Time intensive for minimal analysis
- Don't separate multimodal elements from major projects; e.g., highways

Safety

- Relates to urban design issue
    - Behavioral, not engineering, challenge
    - Current approach and weight is satisfactory
    - Data source is decent
    - No satisfactory solution
- Vehicle technology is also critical
- Active transportation adequately captures traffic safety issues
- Collision forecasting is difficult

Accessibility

- Sub-measures should not be equally weighted
- Native American tribes should be communities of concern

Peer Review Panel: Public Comments and Questions

- Why does the Active Transportation category have an evaluation criterion for consistency with local plans but other modes do not?

- Would the panel's recommendation be expected to result in a significant shift in the currently projected transportation mode use for the population?

- Could you please elaborate on the comment related to superimposing highway projects and subtracting transit projects and how this will help create better performance measures?

- Will the cost/benefit (cost-effectiveness) analysis consider health impacts?

- You said adverse impacts are not considered, please define "adverse impacts" or how should SANDAG define.

- The criteria currently awards a highway corridor project points for proximity in communities of concern. Would it be more appropriate for a highway corridor project to be awarded points for minimizing impact on communities of concern? What is the reasoning behind incentivizing highway corridor projects in communities of concern where air quality is the worst?

- You recommended fewer measures so which would you take out and which would you leave in?

- We support the panel's recommendation to combine the highway corridor, HOV connector, and freeway connector criteria into one category. We'd appreciate it if the recommendation would be accepted by SANDAG.

San Diego FORWARD The Regional Plan

Draft Transportation Project Evaluation Criteria

PEER REVIEW PANEL BIOGRAPHIES

Dr. Jennifer Dill

Professor, Nohad A. Toulan School of Urban Studies & Planning, Portland State University

Dr. Jennifer Dill is a professor in the Nohad A. Toulan School of Urban Studies and Planning at Portland State University and Director of the Oregon Transportation Research and Education Consortium (OTREC). Dr. Dill's research interests include the relationship between transportation policy and planning and land use, health, and the environment, with a focus on non-motorized travel behavior. Prior to entering academia, Dr. Dill worked as an environmental and transportation planner for the Bay Area Air Quality Management District and US Environmental Protection Agency. She was also research director at the Local Government Commission, where she worked on energy, land use, and transportation issues. Dr. Dill has a Ph.D. in City and Regional Planning from UC Berkeley, an MA in Urban Planning from UCLA, and a BS in Environmental Policy Analysis and Planning from UC Davis.

Joel Freedman

Manager, Systems Analysis Technical Resource Center, Parsons Brinckerhoff

Joel Freedman is a manager in the Systems Analysis Technical Resource Center at Parsons Brinckerhoff. He specializes in the development of travel demand forecasting models, software applications, and the analysis of travel demand modeling results. He is also an expert in developing integrated land-use/transport models. He has successfully applied models for transportation planning, toll and revenue studies, as well as major Federal Transit Administration New Starts projects. His experience estimating and/or applying travel demand models spans metropolitan areas throughout the United States, including San Diego, Atlanta, Honolulu, Houston, Las Vegas, Phoenix, Portland, San Francisco, and Tucson. Joel has served as adjunct faculty to the School of Urban Planning at Portland State University, and is the lead instructor for the National Highway Institute course on travel demand forecasting.

Charlie Howard

Transportation Planning Director,Puget Sound Regional Council

Charlie Howard is the Transportation Planning Director for the Puget Sound Regional Council, a position that he has held since February 2005. Prior to joining PSRC, Charlie worked with the Washington State Department of Transportation for 18 years, most recently as the Director of Strategic Planning and Programming. Charlie has been involved in state and regional transportation issues for the past 30 years, including an active role in developing and implementing the state's growth management act.

David Vautin

Associate Transportation Planner, Metropolitan Transportation Commission

David Vautin is a Transportation Planner at the Metropolitan Transportation Commission (MTC) in Oakland, California, specializing in transportation performance assessment. His analytical work informs regional policy decisions by monitoring adherence to adopted goals and targets and by identifying high-performing transportation investments that support the region's sustainability objectives. As part of Plan Bay Area, the region's first Sustainable Communities Strategy, David's work on project-level performance assessment helped policymakers to prioritize the region's top transit expansion priorities for future New Starts and Small Starts funding opportunities, in addition to highlighting cost-ineffective and sprawl-inducing projects as low performers.

Martin Wachs

Senior Principal Researcher at RAND,
Distinguished Professor Emeritus in Urban Planning, UCLA Luskin School of Public Affairs

Martin Wachs is a senior principal researcher at RAND. He formerly served as director of the RAND Transportation, Space, and Technology Program. Prior to joining RAND, he was professor of civil and environmental engineering and professor of city and regional planning at the University of California, Berkeley, where he was also director of the Institute of Transportation Studies. Prior to this, he spent 25 years at UCLA. Wachs is the author of 160 articles and four books on subjects related to relationships between transportation, land use, and air quality; transportation finance and policy; transportation needs of the elderly; techniques for the evaluation of transportation systems and performance measurement in transportation planning. His research also addresses issues of equity in transportation policy.

San Diego Association of Governments

REGIONAL PLANNING COMMITTEE

October 4, 2013

AGENDA ITEM NO.: **6**

Action Requested: DISCUSSION

SAN DIEGO FORWARD: THE REGIONAL PLAN:
DRAFT OUTLINE OF WHITE PAPER ON ECONOMIC PROSPERITY File Number 3102000

Introduction

SANDAG is preparing a white paper on economic prosperity as part of the process for San Diego Forward: The Regional Plan. Staff will present a proposed outline (Attachment 1) and solicit Committee input on topics and key considerations. Staff expects to have a draft white paper ready by December.

Discussion

In a survey conducted by SANDAG last spring, respondents rated economic development as their highest concern. The economic prosperity white paper is intended to present a background of SANDAG's role in regional economic development and initiate discussion on key economic considerations and policies to be included in the Regional Plan.

A draft outline is attached that presents general discussion points and the overall format of the white paper. In a general sense, the paper will be challenging in that it will be limited in length, and the topics for discussion are many. Recognizing SANDAG's appropriate role in economic development will be key to a fruitful discussion.

Next Steps

SANDAG staff is working to solicit input from economic stakeholders and working groups. An initial meeting with Economic Development Corporations, Chambers of Commerce, and municipal economic development staff was held on August 23, in addition to the Regional Plan public workshop on July 19, which focused on the economy, borders, and public facilities. During September and October, the outline will be presented to SANDAG working groups, policy advisory committees, and economic stakeholders for discussion and comment, and will then be used to draft the white paper and inform the economic component of the Regional Plan. Work on the economic analysis for the Regional Plan also is beginning, with the analysis including four areas: an economic impact component to measure the effects of construction activity on the regional economy; a benefit-cost analysis to examine the ratio of benefits such as time savings versus the costs of scenarios; an economic competitiveness analysis to investigate the broader economic effects of transportation improvements on the San Diego economy; and a fiscal analysis to focus on the costs to infrastructure providers from geographic outcomes of the Regional Plan. The white paper should provide valuable context for conducting and communicating the economic analysis.

KURT KRONINGER
Director of Technical Services

Attachment: 1. Draft Outline: Economic Prosperity White Paper

Key Staff Contact: Jim Miller, (619) 699-7325, jim.miller@sandag.org

DRAFT OUTLINE:
ECONOMIC PROSPERITY WHITE PAPER

Purpose: To provide opportunities to review existing plans, policies, and accomplishments in the region, and to update and adjust priorities. Will include background information and summary data, describe interrelationships between economic prosperity and other Regional Plan topic areas, and initiate discussion on key economic considerations and policies to be included in the Regional Plan. Approximately 10 pages in length.

A. Introduction

Discussion of the intersection between land use/transportation planning and economic prosperity, including historical context. Explain how implementation of San Diego Forward: The Regional Plan could influence the region's economy. Introduce contents of White Paper.

B. Current Economic Conditions in San Diego

- **Existing Setting**: Brief and not overly quantitative discussion of regional economic strengths and weaknesses (backed by and referring to the Regional Economic Prosperity Strategy, Indicators of Sustainable Competitiveness, etc.). Discuss differences among subregions and the impact of the 2008 economic downturn. Highlight changing demographics.

- **Existing Plans, Programs, and Policies**: Include list of historical and current SANDAG (and maybe other) initiatives on economic development.

- **Emerging Concepts**: Brief review of current research in regional planning and economics and list of some of the region's major economic concerns. Some that have been identified include: cooperation with Mexico, housing costs, job training, and redevelopment agency dissolution.

C. Interrelationships

- **How Transportation and Regional Planning can Influence the San Diego Economy**: Explore the concept of viewing the region's transportation infrastructure (transit, freeways, airports, ports) as economic 'habitat,' enabling economic activity and providing essential freedom of choice. Examples include: transit-oriented development, revitalization of local downtown areas, housing affordability, commercial/industrial activity centers, border-related employment and trade opportunities, research/healthcare activity in the region, industrial land preservation, "Smart Growth" and economic growth, and the differences between economic development and economic growth. Highlight the importance of public investment to economic prosperity. Describe the economic analysis to be performed on the Regional Plan.

- **Communities of Concern from an Economic Perspective**:

  Explore inequity as a threat to prosperity, equity of opportunity, "Communities of Concern" as having high potential for economic development, and education and mobility "access" as a requirement for economic growth and public health.

- **Relationships between the Economy and Environment**:

  Explore environment as an asset (maybe some discussion of 'externalities'), Sustainable Communities Strategy, and unique nature of the San Diego region as an example of how the economy and environment can both prosper.

D. Future Funding, Trends, and Possibilities

Discuss SANDAG's ability to directly influence economic prosperity, long-term global and regional trends, and San Diego's position and opportunities in the global economy. Explore potential strategies for influencing the region's economic prosperity.

E. Key Policy Questions for Discussion

Summarize and identify key questions for further discussion.

San Diego Association of Governments

REGIONAL PLANNING COMMITTEE

October 4, 2013

AGENDA ITEM NO.: **7**

Action Requested: INFORMATION

DRAFT SAN DIEGO REGIONAL PLUG-IN ELECTRIC VEHICLE READINESS PLAN File Number 3200800

Introduction

The San Diego Regional Electric Vehicle Infrastructure (REVI) working group was formed through a California Energy Commission grant awarded to SANDAG in March 2012. Collaborative planning for regional charging infrastructure is being done at the regional level throughout the state. Regional planning helps to establish a cohesive and interconnected charging network and support state goals for electric vehicle deployment. REVI members include representatives from local and regional public entities, nonprofit organizations, utilities, educational institutions, labor and contractor associations, and the business community. One of the primary functions of the REVI is to develop a regional readiness plan that identifies, reduces, and addresses regional barriers to the deployment of private and public plug-in electric vehicle (PEV) charging infrastructure.

Background

The benefits of electric vehicles and regional planning for charging infrastructure were established in the 2050 Regional Transportation Plan and Sustainable Communities Strategy (RTP/SCS), the 2004 Regional Comprehensive Plan (RCP), and the Regional Energy Strategy (RES).

The 2050 RTP/SCS includes a number of actions for implementation that align directly with the purpose and deliverables of the REVI Working Group. Specifically, the REVI offers a forum for regional planning and infrastructure development of PEV chargers and coordinates stakeholders to discuss and mitigate potential impacts to the electric grid from the increase in electric vehicles in the region.

The REVI also supports the air quality policy recommended actions in the RCP for the implementation of programs and needed infrastructure to increase the availability and usage of energy-efficient vehicles such as hybrid electric vehicles, electric vehicles, or those that run on alternative fuels.

The transportation fuels section of the RES describes alternatives to petroleum-based fuels and funding available to support the advancement of alternative fuels, and regional planning for the siting of fueling and charging infrastructure. The REVI facilitates the deployment of alternative transportation fuels and vehicles fortifying the transportation fuels goal.

Discussion

The REVI has been meeting for the last year to share experiences to address regional barriers to PEV infrastructure and discuss potential best practices for incorporation into a PEV readiness plan. The resulting Draft San Diego Regional PEV Readiness Plan (Readiness Plan) discusses and addresses barriers to the deployment of PEV infrastructure in the San Diego region. This Plan is designed for local government officials, such as planners and building staff, as a resource to assist them in helping their local governments prepare their community for a growing PEV market.

Through earlier PEV planning and siting efforts, several barriers had been identified as obstacles to charging infrastructure installation and PEV adoption. The REVI has built upon these efforts and identified challenges, successes, and outstanding issues for continued PEV adoption and charging infrastructure deployment.

By the end of 2012, more than 22,000 PEVs were on California's roads. The San Diego region has become a leader in the adoption of these vehicles, and accounts for roughly 20 percent of all California PEV ownership. The REVI has developed the Draft San Diego Regional PEV Readiness Plan as a guide to foster a regional charging infrastructure network for the San Diego region. Comments are currently being solicited on the Draft Readiness Plan attached to this report and available for download at the following link: https://energycenter.org/programs/pev-planning/san-diego.

CHARLES "MUGGS" STOLL
Director of Land Use and Transportation Planning

Attachments:
1. Draft San Diego Regional Plug-In Electric Vehicle Readiness Plan
2. Appendix A – San Diego REVI Working Group Members
3. Appendix B – Fact Sheets
4. Appendix C – Tools and Summaries
5. Appendix D – Resources and Terms

Key Staff Contact: Anna Lowe, (619) 595-5603, anna.lowe@sandag.org

DRAFT - September 2013

San Diego Regional
PLUG-IN ELECTRIC VEHICLE (PEV) READINESS PLAN

Preparing the San Diego Region for Plug-in Electric Vehicles

SANDAG

Center for Sustainable Energy CALIFORNIA

Table of Contents

Introduction

By the end of 2012, more than 22,000 plug-in electric vehicles (PEVs) were on California's roads. The San Diego region has become a leader in the adoption of these vehicles, and accounts for roughly 20% of all California plug-in electric vehicle ownership. PEVs are improving air quality, reducing local pollution and greenhouse gas emissions while saving consumer's money and helping new companies grow and create jobs. As more San Diegans purchase PEVs, a regional charging infrastructure network will be necessary for supporting this growing market. Building this infrastructure in the San Diego region requires a coordinated effort among local governments, the contractor community, businesses, residents, and our local utility.

The San Diego PEV Readiness Plan (Readiness Plan or Plan) identifies barriers to the deployment of PEV charging infrastructure and includes recommendations and resources for overcoming those barriers. This Plan is designed for local government officials, such as planners and building staff, as a resource to assist them in helping their local governments prepare for a growing PEV market.

Why Develop This Plan

There are a number of factors that motivated the development of this Readiness Plan. The State of California established legislative directives for PEV adoption and regionally, SANDAG has identified a number of Actions for Implementation within the 2050 Regional Transportation Plan and Sustainability Communities Strategy (RTP/SCS) that supported this effort. The adoption rate of PEvs in the San Diego region also was a strong catalyst for coordinating this Plan.

Legislation

The State of California has taken steps to expand and support the adoption of Zero Emissions Vehicles (ZEVs) and the deployment of charging infrastructure throughout the state. The following is a list of just some of the legislation guiding California's PEV market:

- California's ZEV Regulation: First adopted in 1990 by the California Air Resources Board (ARB), the ZEV Regulation requires car manufacturers to produce a proportional number of ZEVs and advanced technology vehicles to total sales volumes in California. Amended in 2012, as part of California's Advanced Clean Cars Program, the requirements for ZEVs was increased between 2018 and 2025, to an estimated 15% of all new cars sold in California by 2025.
- Assembly Bill 118 (Nuñez, Chapter 750, Statutes of 2007): Provides $1.4 billion through the Alternative and Renewable Fuel and Vehicle Technology Program (ARFVTP) for clean vehicles and their associated infrastructure from 2008 to 2015 which enables the state's vehicle rebates for ZEVs, infrastructure and grants for ZEV-technology companies.
- Executive Order B-16-2012 (March 2012): Governor Brown's Executive Order calling for 1.5 million ZEVs on California roadways by 2025 and directs state government to begin purchasing ZEVs with a goal of 10% of state departments' light-duty fleet purchases be ZEVs by 2015 and 25% of light-duty purchases be ZEVs by 2020.

SANDAG

SANDAG has demonstrated the importance of regional planning and infrastructure development for electric vehicles and charging stations. The following is a list of some of the approved actions:

- The RTP/SCS includes a number of actions for implementation including providing a forum for regional planning and infrastructure development of plug-in electric vehicle chargers and coordinating stakeholders to discuss and mitigate potential impacts to the electric grid from the increase in electric vehicles in the region.
- The air quality policy recommended actions in the RCP identify the implementation of programs and needed infrastructure to increase the availability and usage of energy-efficient vehicles such as hybrid electric vehicles, electric vehicles, or those that run on alternative fuels.
- The transportation fuels section of the RES describes alternatives to petroleum-based fuels and funding available to support the advancement of alternative fuels, and regional planning for the siting of fueling and charging infrastructure.

Regional Adoption

The San Diego region is a leader in PEV adoption. The demand and integration of PEVs into the lifestyles of numerous residents and business owners highlights the shared desire and commitment by the region to expand the PEV market.

The San Diego Regional Electric Vehicle Infrastructure (REVI) Working Group and Stakeholders

Background and Purpose

In February 2012, the San Diego Association of Governments (SANDAG) established the Regional Electric Vehicle Infrastructure Working Group (REVI) with funding awarded by California Energy Commission. One of the primary functions of the REVI is to develop a regional readiness plan that identifies, reduces and addresses regional barriers to the deployment of private and public PEV charging infrastructure. The working group builds on previous PEV readiness efforts dating back to 2009.[i] REVI was established in March 2012 and continued through December 2013. REVI members discussed and addressed barriers to PEV infrastructure deployment.

[i] The EV Project, funded by the Department of Energy, provided subsidies for public and residential charging equipment and installations in the San Diego region. As of September 2013, over 1,400 residential and non-residential charging units had been installed under the project.

Organization and Stakeholder Engagement

San Diego REVI working group members include representatives from local and regional public entities, nonprofit organizations, utilities, universities and community colleges, labor union representatives and contractor associations, and the business community. All REVI meetings were free and open to the public.

Each of the 19 jurisdictions in San Diego County was invited to participate as REVI Advisory Member. SANDAG's six sub-regions were asked to provide one voting member each: North County Coastal, North County Inland, East County, South Bay, the City of San Diego and the County of San Diego. A complete list of REVI Members and Advisory Members is available as Appendix A of this document.

Regional Barriers to PEV Infrastructure

The REVI identified the following barriers to PEV infrastructure deployment. The barriers identified by the REVI are included in the table below. The table also lists the relevant sections of the Readiness Plan, and the fact sheets and resources developed by the REVI for each barrier.

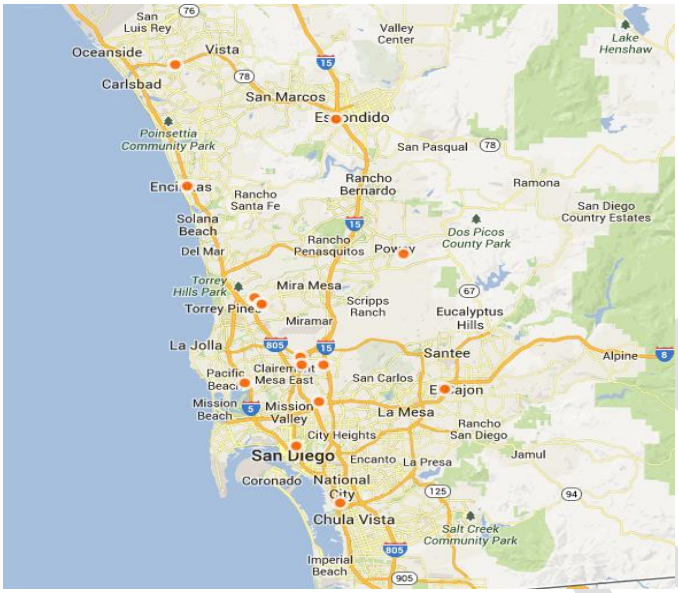
Barrier	Description	REVI Tools and Resources
Permitting/ Inspection	Lack of streamlined permitting and inspection processes and inconsistent (high) costs across jurisdictions.	Section : Permitting for EVSE (Page 17) Fact Sheet: *Electric Vehicle Charging Station Installation Guidelines: Residential and Commercial Locations* (Appendix B, Page 14)
Building Codes	Lack of standard building codes that accommodate charging infrastructure or dedicate circuits for charging infrastructure in new construction and major renovations.	Section : Permitting for EVSE: Building Code Changes (Page 23) Resource: *Building Codes Summary* (Appendix C, Page 29)
Zoning and Parking Rules	Lack of standard regional ordinances that facilitate the installation and access to publicly available charging infrastructure.	Section : Permitting for EVSE: Zoning and Parking Policies (Page 22) Resource: *San Diego REVI Comments on the Plug-in Electric Vehicles: Universal Charging Access Guidelines and Best Practices* (Appendix C, Page 1)
Training and Education for Municipal Staff and Electrical Contractors	Lack of knowledge about PEVs and EVSE.	Section : EVSE Permitting: Lack of Public Knowledge (Page 24) Fact Sheet: *Resources for Public Agencies in San Diego* (Appendix B, Page 2) Fact Sheet: *Resources for Electrical Contractors in San Diego* (Appendix B, Page 12) Resource: *San Diego Plug-in Vehicle Community Seminar: The Electric Vehicle Infrastructure Training Program (EVITP) Summary* (Appendix C, Page 34) Resource: *Towing Alternative Fuel Vehicles Presentation Summary* (Appendix C, Page 32)

Lack of Public Knowledge of PEV and EVSE	Municipal outreach to Local Residents and Businesses.	Section : Permitting for EVSE: Education and Outreach (Page 24) Fact Sheet: *Plug-in Electric Vehicles & Charging: Getting Started* (Appendix B, Page 1) Resource: *San Diego Regional Clean Cities Coalition Dealership Outreach Pamphlet* (Appendix C, Page 22) Resource: *CCSE Guide to Plug-in and Get Ready* (Appendix C, Page 26)
EVSE at Multi Unit Dwellings	Consumer lack of knowledge regarding EVSE installation in these buildings. Need to educate and work with HOAs to identify and find solutions to unique building challenges.	Section : Permitting for EVSE: Charging at Multi-unit Dwellings (Page 19) Fact Sheet: *Charging at Condos, Apartments and Community Living Areas* (Appendix B, Page 8)
Regional Planning for Public EVSE Siting	Regional land use and transportation plans served as a basis to identify optimal public EVSE sites.	Section : Regional Planning for Public EVSE (Page 12) Fact Sheet: *Regional Planning for Public Charging in San Diego* (Appendix B, Page 4)
On Peak Charging – TOU Utility Rates	A. Need to discourage charging when electricity supplies are in high demand and cost more. Support of time of use (TOU) pricing. B. High demand charges that impact EVSE host utility bills. Expensive metering options to access TOU rates.	Section : Utility Solutions (Page 26)
Public Agency EVSE Installations	Contracting issues have stalled many public agencies from taking part in EVSE installations.	Section : Regional Planning for Public EVSE: Public Electric Vehicle Charging Stations (Page 16) Resource: *Request for Proposals Template: Installation and Operation of Electric Vehicle Charging Stations* (Appendix C, Page 16) Resource: *Electric Vehicle Charging for Regional Park-and-Ride Lots and Transit Stations* (Appendix C, Page 27)
Commercial and Workplace Charging	Lack of understanding regarding benefits and approaches to understanding workplace charging.	Section : Permitting for EVSE: Charging at Commercial and Public Sites (Page 21) Fact Sheet: *Workplace Charging for Businesses in San Diego* (Appendix B, Page 10) Resource: *San Diego Regional Non-Residential Charging Infrastructure Study* (Appendix C, Page 39)
PEVs in Government Fleets	Procurement justification needed for local public fleets. Need to describe PEV benefits, including role in reducing municipal GHGs for Climate Action Plans.	Section : Regional Planning for Public EVSE Siting: PEVs in Local Government Fleets (Page 15) Fact Sheet: *Resources for Fleet Managers in San Diego* (Appendix B, Page 6)

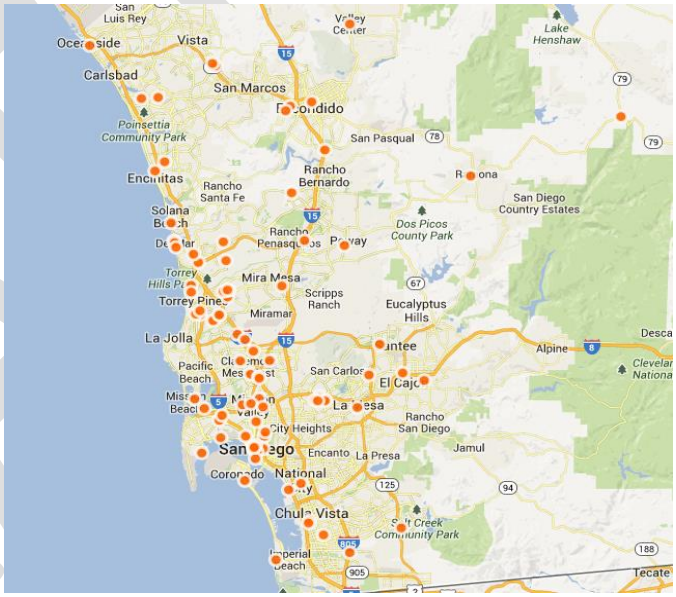
PEVs and Public Charging Infrastructure in the San Diego Region

The following maps illustrate the growth of public charging infrastructure and PEVs in the San Diego region from 2011 through 2013.

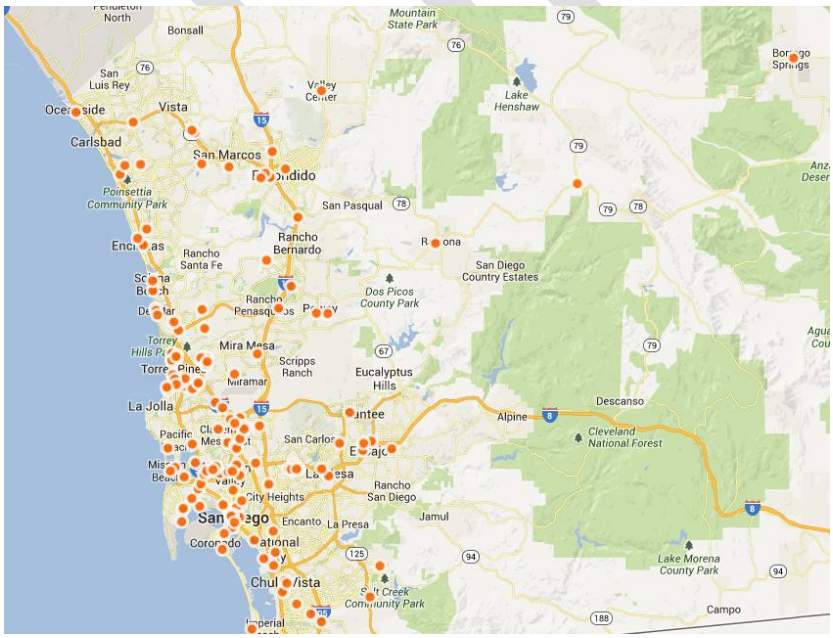
2011 – 50 Public Level 2 Charging Stations



2012 – 293 Public Level 2 Charging Stations



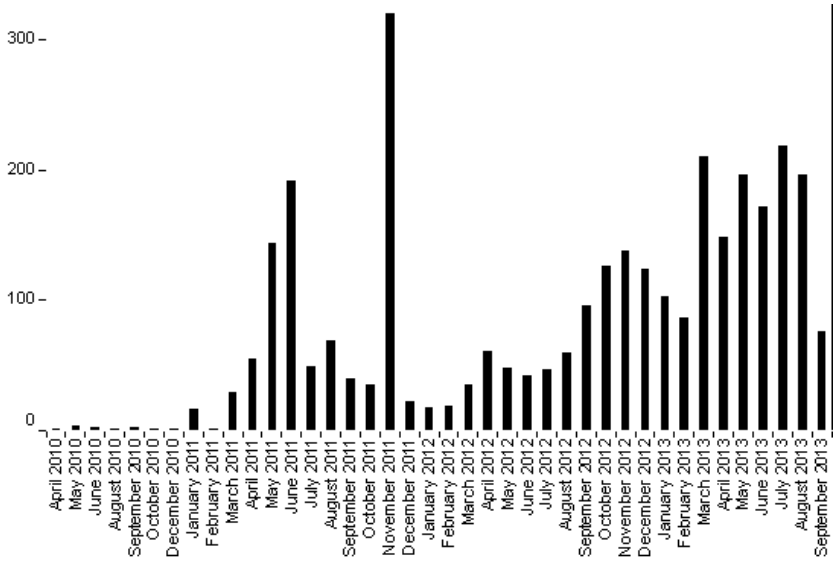
2013 – 455 Public Level 2 Charging Stations



This graph indicates the growth of PEV sales in the San Diego region.

The spikes in May and June 2011 coincide with the large delivery of PEVs and with the installation of free charging stations.

Note that the spike in November 2011 is due to the introduction of an all-electric car sharing fleet, car2go.



The chart below shows the number of commercially available vehicles beginning from pre-2011 to September 2013. Before 2011, there was only one PEV on the market, the Tesla Roadster, now there are over 16 PEVs on the market. [i]

Commercially Available Vehicle Models			
2010	2011	2012	2013
1	3	9	16

December 2010

February 2012

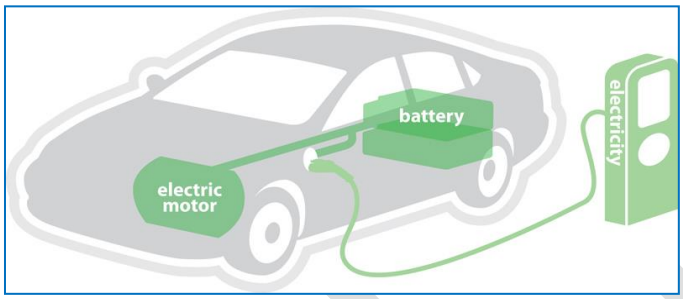
July 2012

The Basics of Plug-in Electric Vehicles and Charging Infrastructure

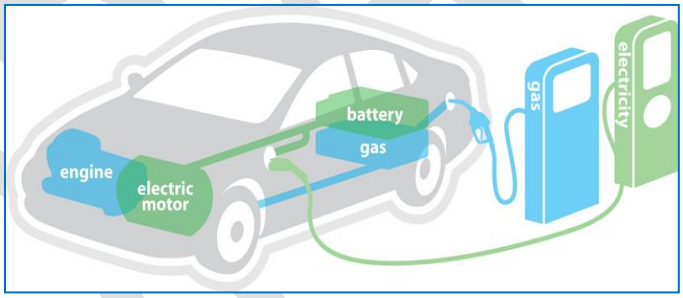
There are two main types of PEVs: battery electric vehicles and plug-in hybrid electric vehicles.

Vehicle Types

Battery electric vehicles (BEVs) are fueled entirely by electricity stored in the on-board battery. These vehicles are often also referred to as zero-emission vehicles. BEVs typically have a range of 60-120 miles on a single charge.



Plug-in hybrid electric vehicles (PHEVs) are fueled by both a battery and another fuel source, usually gasoline powering an internal combustion engine. These vehicles run on electricity from the on-board battery until the battery is exhausted, then switch to an alternate power source. PHEVs typically have a much shorter electric range than fully electric BEVs, and a standard wall outlet may be sufficient for overnight charging.



The table below includes most of the available light-duty PEVs on the market as of September 2013.

Battery Electric Vehicles		Plug-in Hybrid Vehicles
BMW Active E	Honda Fit EV	Chevrolet Volt
Chevrolet Spark	Scion IQ EV	Ford C-MAX Energi
Toyota RAV4 EV	Tesla Model S	Ford Fusion Energi
Fiat 500e	Mitsubishi i-MiEV	Honda Accord Plug-in
Ford Focus Electric	Nissan LEAF	Toyota Prius Plug-in
Ford/Azure Dynamics Transit Connect Electric	Smart fortwo electric drive	
For a complete list of available vehicles go to: www.electricdrive.org		

Charging Infrastructure

There are three types of vehicle charging available. The table below describes the type of vehicle charging in relation to the number of miles per hour of charge and where to charge. The time needed to charge a PEV depends on two primary factors, the size of the battery and the size of the onboard charger. As a rule of thumb, BEVs have a larger battery compared to PHEVs. The onboard charger is located in the vehicle and determines the amount of power that can enter the vehicle.

Type of Vehicle Charging	Miles of Driving Range per Hour of Charge	Where to Charge?	How long to Charge?
Level 1 (120 volt)	3 to 4	Standard three-pronged outlet	7 – 17 hours
Level 2 (240 volt)	8 to 20	At home, workplace, or public charging	1.5 – 7 hours
DC Fast Charger	50 to 60	Public or commercial sites only	10 – 45 minutes

Types of charging equipment

Level 1 charging infrastructure consists of a charging cord set provided as standard equipment with every plug-in vehicle (see image to the right of the page). This charging cord can plug into any standard 120 volt outlet.

Level 2 charging infrastructure is a designated unit that plugs into or is hardwired into a 208/240 volt circuit. Level 2 charging consists of a dedicated charging unit, which is often referred to as electrical vehicle supply equipment (EVSE). Pictured on the left of the page, is an EVSE and below is a table that displays the most common types of Level 2 installation styles:

Level 2 Installation Style	Installation Method	Considerations
Floor-mount (Bollard style)	Mounted to the ground and wired through the base	Generally requires concrete work along with underground trenching
Wall/Pole mount	Installed on any wall or pole and can be wired through a garage wall	Offers flexible placement options and takes up less floor space than a floor mount

The Electric Drive Transportation Association (EDTA), a U.S. industry association, maintains a website of over 40 UL-certified EVSE products at http://goelectricdrive.com/index.php/find-an-ev-charger. EVSE manufacturers may also provide a contact list of certified contractors for installing charging equipment.

Typically, the least expensive charging infrastructure is the slowest to charge. Conversely, the same can be said for the fastest charging infrastructure; the fastest to charge can be the most costly to install. There is a wide range of reasons for the huge disparity in charging station costs; location, construction and permitting requirements and electrical capacity are all factors in estimating installation costs for charging infrastructure (spectrum illustrated below).

Slower charge - lower cost

Faster charge - higher cost
(Primarily commercial locations)

Access to public charging infrastructure

Many publicly available charging stations require membership cards to access the charging equipment. ChargePoint and Blink are examples of membership networks that require card access.

Finding public charging infrastructure

Drivers typically utilize websites or mobile applications to locate public charging stations. PEV drivers can find these charging locations by using several online sources including:

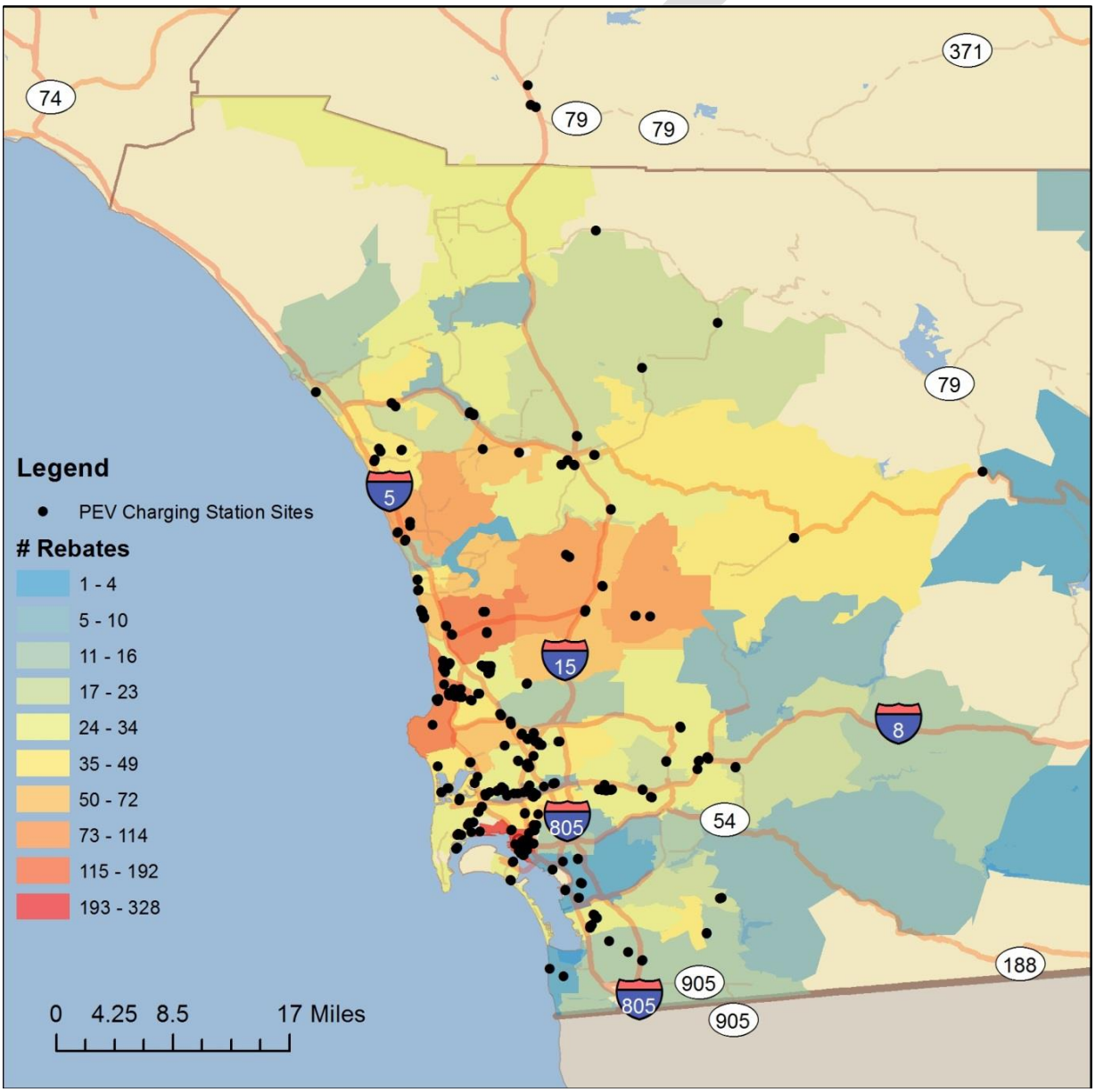
Charging Infrastructure Source	Description	Website
Alternative Fuels Data Center Station Locator	Displays hours of availability and number of charging units per site. Allows end users to add new stations.	http://www.afdc.energy.gov/locator/stations/
PlugShare	Available online or by a mobile application. Users can leave reviews on public chargers and have their own residential chargers displayed on the map.	http://www.plugshare.com/
Recargo	Available online or by a mobile application.	http://www.recargo.com/search
CarStations	Drivers can filter their search by charger type or brand. Available online or by a mobile application.	http://www.carstations.com

Each branded charging network (i.e., Blink, ChargePoint, eVgo, etc.) has its own application to help its members find network-specific charging locations. Some networks are working together to offer a single source of information. One example is Collaboratiev.com, a website being developed to include both Blink and ChargePoint locations and is scheduled to be released in 2014.

Locations of public charging stations in the San Diego region

As of September 2013, there are 455 public Level 2 charging sites, four public DC Fast Chargers and two Level 1 charging sites serving the San Diego region.

The map below reflects the CVRP rebates density and EVSE clusters.



Source: Alternative Fuels Data Center

Regional Plug-in Electric Vehicle Infrastructure Existing Conditions

The San Diego region's plug-in electric vehicle infrastructure has evolved since 2009. Local governments, home owners, multi-unit property managers, and local businesses have all played a critical role in influencing the current PEV landscape.

Local Governments

Local governments continue to influence the rate of adoption and infrastructure expansion for PEVs. This influence isn't always deliberate, but in fact is often unintentional or secondary to other activities, planning efforts, or regulatory compliance, such as activities or measures to reduce greenhouse gas emissions or as part of the steps take to achieve a green certification for a facility.

As regional and local land use planning, design criteria development, and GHG emissions reduction plans are developed, PEVs continue to be integrated into these efforts in a number of different ways. This integration has resulted in building permit streamlining, training for staff, and public charging stations. The San Diego region has worked collaboratively to leverage resources, opportunities, and to better understand and overcoming challenges to institutional and public PEV adoption and EVSE installations.

Local governments can influence EVSE installations by continuing to improve and streamline building permit processes and by integrating EVSE installations or pre-wiring for installation into project conditions or through public charging stations. Public agencies can help disseminate and distribute available training and collateral informing staff, contractors, property owners and residents of existing opportunities. As infrastructure becomes increasingly more readily available and permitting time and costs are reduced, PEV adoption will continue to grow; therefore local governments play a critical role in PEV adoption.

Single-Family Residences

The EV Project charging behavior data clearly indicated that most PEV drivers charge their vehicles at home. Many PEV drivers with single-family homes will find a standard household outlet (120 VAC) available for charging near where their vehicle will be parked. However, some PEV owners install a dedicated Level 2 (240 VAC) EVSE to charge their vehicle. The installation of a Level 2 charger requires a permit from the local jurisdiction and San Diego Gas & Electric (SDG&E) notification.

Expediting the EVSE permitting and installation process for home owners and approving new construction projects with infrastructure already in place, will help to reduce barriers to home charging and will further PEV adoption. Training and information tailored for home owners is also essential to easing concerns and informing PEV drivers.

Multi-Unit Dwellings

Multi-unit dwellings, or MUDs, continue to present barriers to PEV drivers. As noted above, most drivers charge their PEVs at home; however MUDs offer a unique set of challenges. Shared utilities, parking designations or restrictions, as well as design and infrastructure hurdles, make EVSE installations more complex.

SDG&E has worked with local property managers and MUD PEV drivers to establish best practices, offer workshops, and to develop case studies of local MUD EVSE installations.

MUD EVSE installations will continue to be a challenge for all of the reasons already listed, but with continued work by SDG&E and by integrating EVSE into permitting and planning processes and language this process will become more streamlined. As EVSE installations become easier, PEV adoption rates among MUD residents should increase.

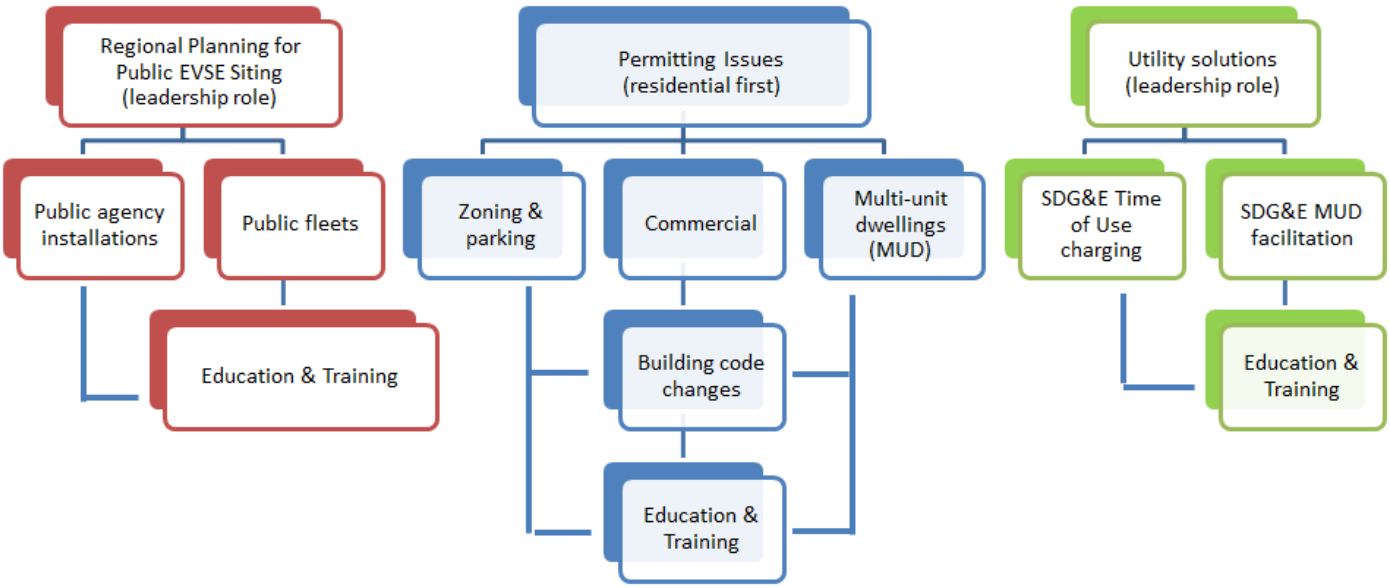
Workplaces, Retail and Public Locations

PEV drivers can be limited to the range of their vehicle. Although most veteran PEV drivers are aware of the range of their vehicle, others are plagued with range anxiety, which can stifle one's use of or even decision to purchase a PEV. A number of local retailers, workplaces and public destinations now have EVSE available to their customers, employees and the public. Expanding charging options for PEV drivers will continue to play a critical role in broadening the range and number of PEV adopters.

EVSE installations at workplace, retail and public locations will continue to expand the existing charging network and will give PEV drivers options similar to those available to traditional vehicles. Local governments, SDG&E, contractors, business and property owners continue to work together to address installation barriers. Contractor and business owner training, education and outreach continue to be crucial to making the business decision for EVSE. The permitting processes and construction and electricity costs also are concerns for local business owners and can hinder EVSE installations. Local governments can also provide infrastructure on public property as a means to lead by example (for employees and customers) and to help fill gaps in the charging network.

Regional Barriers to EVSE Deployment & Key Recommendations

Through earlier PEV planning and siting efforts (i.e., EV Project) several barriers had already been identified as obstacles to regional charging infrastructure installation and PEV adoption (see *Regional Barriers to PEV Infrastructure* section). The REVI defined these and discussed new or expanding barriers to PEV deployment and grouped the eleven barriers into three priorities categorizing complementary or parallel efforts together. The flow chart on the following page illustrates the prioritization of the barriers. This section defines the priority categories and the activities, resources and outstanding hurdles to addressing each of the barriers.



Regional Planning for Public EVSE Siting

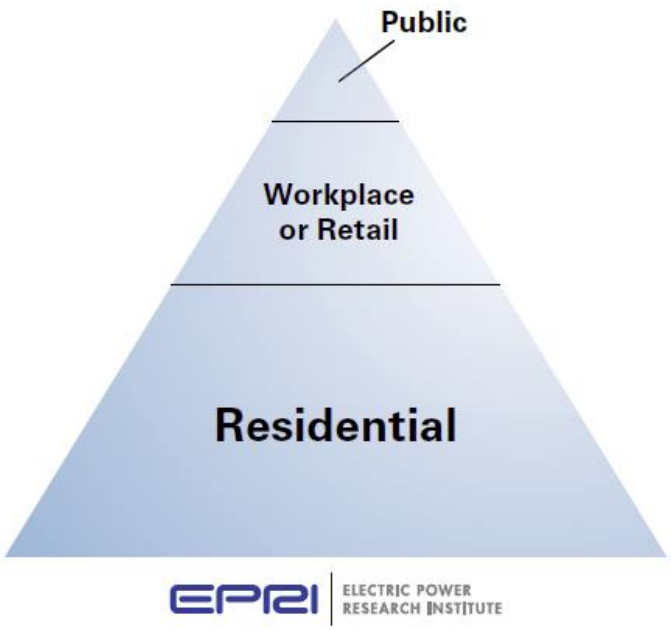
Overview

The EV Project established a stakeholder working group for regional collaboration and prioritization for public charging planning and siting. This was the first regional planning effort to establish priorities for installation of PEV charging infrastructure. Together, the EV Project Stakeholder Advisory Committee (ESAC) was able to produce infrastructure siting maps that guiding the EV Project efforts in placement of public charging stations (*Regional Planning for Public Charging in San Diego* fact sheet is included in Appendix B, page 4).

The REVI has built upon the regional planning efforts initiated by the EV Project and identified challenges, successes and outstanding issues for continued PEV adoption and EVSE deployment. Collaborative planning for regional charging infrastructure is necessary to establishing a cohesive and interconnected charging network. Assessing priority siting locations, establishing optimal land use, access, and understanding driving behaviors isn't limited to the boundaries of a single city or public agency. Defining the needs and establishing ideal locations to support EVSE and benefit PEV drivers has to be done on a larger scale to be effective and functional.

The Electric Power Research Institute (EPRI) pyramid below illustrates charging priorities for PEV drivers and aligns with regional sitting to date. The base of the pyramid shows that PEV drivers primarily charge at home; this is the most reliable, comfortable and cost effective option. The region has seen the most infrastructure installed at residential locations.

Secondary to home, work is the most common driving destination. Workplace charging offers PEV drivers a reliable charging option during the work week at a location already part of their daily routine; charging at work won't add new stops or change existing travel patterns and allows for more charging options. The REVI has recognized the challenges and barriers associated with workplace and retail charging as a result of the EV Project and continue to try and facilitate more EVSE opportunities through new or innovative possibilities; often using local or statewide examples and resources.



Lastly and most necessary for continued PEV adoption, is public charging. Public charging makes up the smallest portion and sits at the top of the pyramid. Public charging represents the least available charging option for PEV drivers. Public charging stations offer PEV drivers the same conveniences that traditional gas vehicles drivers have. Making EVSE publicly available in more locations also helps to reduce range anxiety and makes transitioning to PEVs easier. Public charging is faced with the most barriers to both PEV adoption and regional planning and installations. Working together with other local public agencies has expanded the resources and experience available to address regional EVSE availability.

Classifying local land use statistics for PEVs

Understanding local land uses and driving habits helps to identify optimal locations for charging stations and appropriate type of charging equipment (EVSE). The following table describes the different charging equipment, and the type of venue or destination a PEV driver would use the charging stations.

EVSE	User Profile	Typical Venues	Charging Time	Miles/1 Hr Chrg
Level 1 (EVSE)	Parked for 6-8 hours	Street/Meters Parking Garages Cultural/ Sports Centers Airport (long-term)/Hotels	1-2 hours 2-10 hours 2-5 hours 8-72+ hours	3-4
Level 2 (EVSE)	Parked for 2-4 hours	Shopping Centers Airport (short-term) Street/Meters Parking Garages Cultural/ Sports Centers Airport (long-term)/Hotels Highways & Commuting Roads	0.5-2 hours < 1 hour 1-2 hours 2-10 hours 2-5 hours 8-72+ hours < 0.5 hours	8-20 (depending on vehicle on-board charger)
DC Fast Charge (DCFC)	Quick stop for 5-30 minutes	Shopping Centers Airport (short-term) Highways & Commuting Roads	0.5-2 hours < 1 hour < 0.5 hours	50-60

Adopted from the Bay Area and Monterey Bay Area—Plug-In Electric Vehicle Readiness Plan (p. 24)

Land use/parking analysis for EVSE

Parking requirements specific to individual land uses are established by local jurisdictions and are often determined through a formula relative to the use or service being provided at the site and the size of the use, in conjunction with state and federal mandates, such as those addressing accessibility. All of these factors are important to consider when assessing the potential parking availability for charging stations. The following chart was developed by the UCLA Luskin Center and describes the steps in assessing parking opportunities for consideration in PEV land use planning.

Source: UCLA Luskin Center, Southern California PEV Readiness Plan

PEVs in local government fleets

The REVI has identified public fleets as having a critical role in the adoption of PEV technology. To support fleet managers and assist policy makers with this transition REVI has developed tools to help guide agencies through the adoption process. Further, converting some or all of a government's fleet and establishing best practices for vehicle replacement can help local governments attain their municipal GHG emissions reductions goals and strategies. Converting local agency fleets to cleaner vehicles is one way to encourage PEV adoption throughout the region. Institutions such as the Port of San Diego and University of California-San Diego are leading by example; they have already begun replacing fleet vehicles with PEVs.

PEV adoption can be an attractive option for government fleets for a variety of reasons. Fleet managers are motivated by reduced fuel and maintenance costs; planners and policy makers may identify with the reduction in municipal GHG emissions reductions. PEVs in government fleets play an important role in meeting emissions reduction targets established by Assembly Bill 32: Global Warming Solutions Act (AB32). Climate Action Plans and other sustainability plans and goals include GHG reductions from municipal operations, including fleet emissions, as a means to achieving their GHG reduction targets. PEVs are one way to help reduce such emissions. The Sustainable Communities and Climate Protection Act of 2008 (SB375), specifically targets GHG emissions from passenger vehicles, California's single largest emissions source. SANDAG's Sustainable Community Strategy includes increased use of

alternative fuels in local government fleets as well as expanded charging infrastructure. The governor's Zero Emissions Vehicle (ZEV) Action Plan also calls on local governments to increase PEV adoption.

Despite the high up-front costs of PEVs and charging infrastructure, integrating PEVs into a fleet can actually save the agency money in long-term maintenance and fuel costs. Many financial incentives are also available to help offset the costs for PEVs such as the CVRP and Hybrid Truck and Bus Voucher Incentive Project (HVIP). To establish whether the investment for PEVs is the best option for a fleet, it is important for fleet managers to carefully consider which vehicles fit their needs. This choice will depend on these factors:

- Route predictability
- Distance travelled by each vehicle per day
- Vehicle maintenance and service costs
- Use of central parking facilities

Consideration of these factors can assure fleet managers that new PEV additions to their fleet will help optimize their fleet's operations and meet the local government's sustainability goals.

Public agency fleets should work with SDG&E to plan for PEV adoption and charging. The utility can help fleet managers determine charging speed and demand charge fees to keep costs down while meeting operation needs. SDG&E is also crucial for siting and installing EVSE for fleet charging. Placing EVSE strategically near electrical utility equipment can reduce the cost of installation and knowing the impacts of increased demand on local distribution equipment will ensure uninterrupted service.

The REVI developed a fact sheet that includes *Resources for Fleet Managers in San Diego* and is included in Appendix B, page 6.

Public electric vehicle charging stations

Public charging stations and an integrated charging network are critical to regional PEV adoption. Reducing range anxiety and providing more opportunities for drivers to charge their vehicles will support increased PEV adoption rates. The REVI has identified the lack of available public charging station as a barrier to regional EVSE deployment and PEV adoption. Local governments play a crucial role in expanding the regional charging network and ensuring connectivity among major driving corridors.

Public EVSE installations have proven to be more challenging than originally anticipated by the EV Project. Infrastructure, electricity costs, accessibility, operation and maintenance needs have all hindered the installation of public EVSE.

The REVI developed an RFP template (see Appendix C, page 16) to aid local governments, public agencies and businesses with the procurement for installation and operation of electric vehicle charging stations. PEVs are an emerging technology to many agencies. San Diego's local governments are in varying stages of integrating PEVs into their fleets, planning or operational processes and facilities. The REVI developed equipment specifications, contractor minimum qualifications and a general scope of

work as a means to help minimize work, reduce risk and liability to the agency, and provide consistent language vetted through other local agencies for the installation and maintenance of public charging stations.

Education and Outreach

Public agency knowledge or understanding of PEVs has historically been limited. The REVI identified this as a barrier and has developed a number of fact sheets as tools for local government staff as they begin to integrate this technology in their planning documents, building permitting processes and policy development. In addition to those already listed, fact sheets for *Getting Started* and *Resources for Public Agencies in San Diego* have been included in Appendix B (pages 1 and 2).

Permitting for EVSE

Overview

The permitting process can be very influential in encouraging or hindering the installation of EVSEs. The San Diego region does not currently have a single, region-wide standard permitting process. Differences among local jurisdictional processes and requirements for electrical permits and building inspections have been acknowledged by the REVI as a barrier to EVSE installations.

Obtaining a permit for EVSE installation is often an owner's first step to establish their PEV ecosystem after purchasing a vehicle. Public and commercial sites wishing to host EVSE must also begin the installation process with permitting. Cities and jurisdictions want to make sure that PEV drivers safely install their equipment. And drivers or organizations wishing to install EVSE at their workplace should have access to all available information permitting and building officials need when reviewing an application. Easy access to information and guidance documents should be available through a website or handout.

Although much has been done to support streamlined permitting, inspection and installation processes for EVSE, a number of issues remain. The REVI continues to support efforts for further permitting and installation process streamlining.

This section describes critical components of the permitting and installation processes as well as identifies opportunities to expand EVSE installations and best practices for specific charging situations.

Permitting EVSE installations at single-family residences

PEV drivers primarily choose to charge their vehicles at home. Installing EVSE at a single family home most often requires a permit issued from the local permitting agency. Proper permitting helps to inform SDG&E of the additional electrical needs on local infrastructure and ensures the safety of the equipment.

The REVI has developed *Electric Vehicle Charging Stations Installation Guidelines: Residential and Commercial Locations* (Appendix B, page 14) as a resource and provides detailed information on the permitting and inspection process for single-family EVSE installations.

It is important to note that there are often fees required when applying for a permit. PEV drivers should always check with the local permitting agency for specific permitting and inspection costs.

The following table outlines the permitting application process.

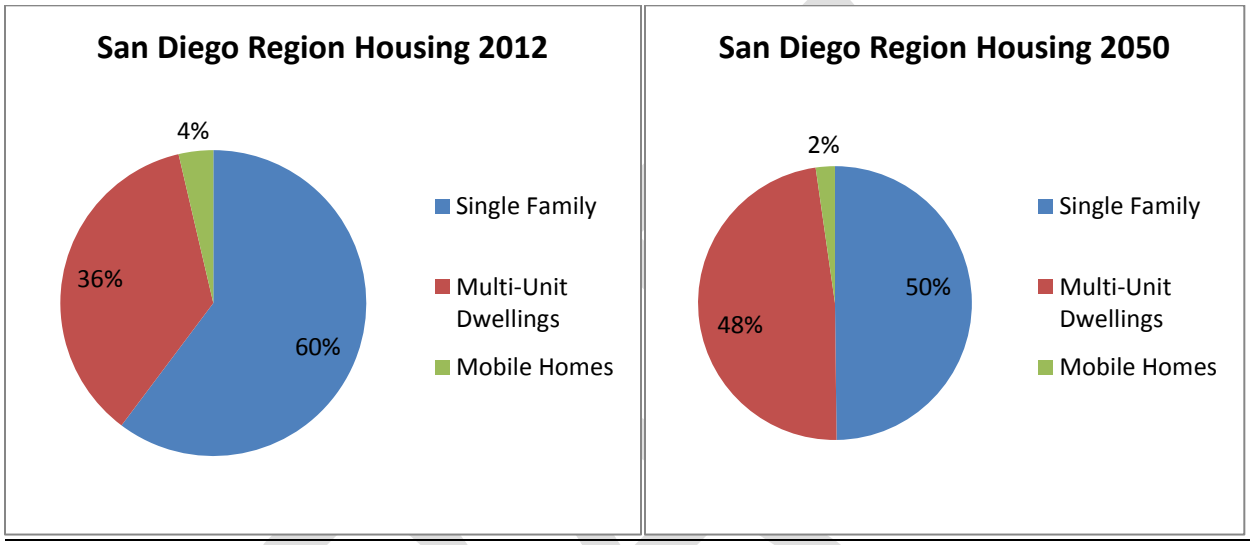
Documentation*	Description
Permit application	Electrical permit or special permit for EV chargers [to be identified by jurisdiction]
EVSE Manufacturer's Information	The manufacturer's installation instructions and EV charger specifications.
Site Plan	Identify the complete layout of existing parking space(s) and proposed location of EVSE parking space(s) with respect to existing building and structures.
Electrical Load Calculations	Home electrical load calculation that estimates if an existing electrical service will handle the extra load from a residential EVSE and wiring methods based on the California Electrical Code (CEC). Note that CEC Article 220 requires load calculations if the existing service panel is rated less than 200 amps.
Electrical Plans	Single line diagrams showing the system, point of connection to the power supply and the EVSE.
*** Documentation will be specific to each jurisdiction**	

The permitting process for residential chargers in the San Diego region has been considerably streamlined since the early days of the EV Project. Most notably, the City of San Diego adopted Information Bulletin 187 *How to Obtain a Permit for Electric Vehicle Charging Systems* (May 2012). The City of Oceanside also issued guidelines (January 2013) to assist permit applicants in streamlining the permitting, installation and inspection process for residential EV Chargers. Both of these resources have been recognized as a regional best practice by the REVI (and are included in the *Permitting and Installation Guidelines* in Appendix B, page 16).

San Diego and Oceanside are the only two jurisdictions in the region that developed this type of guidance and standardized permitting process. The lack of standard permitting requirements impedes the EVSE installation process for homeowners, electrical contractors and property managers. REVI has recommended that streamlined installation and inspection processes be adopted throughout the region.

Charging at multi-unit dwellings

Multi-unit dwelling (MUD) is a generic term for a spectrum of multi-unit residences including but not limited to apartment buildings, attached and detached housing units within a community, high rise buildings, mobile home communities and others. In 2012, multi-unit dwellings made up 36% of the housing stock in the San Diego region. By 2050, SANDAG predicts this number to increase to nearly half of the housing stock. With roughly 80% of PEV charging taking place at home, reducing the barriers to installing EVSE at MUDs will be critical for supporting future PEV adoption.



Barriers to EVSE at MUDs

Installing an EVSE at a MUD presents a number of challenges. The following is a table summarizing barriers faced for EVSE installations at MUDs, some of these barriers are being addressed directly through support from SDG&E, while others are challenges to be address on the customer side of the meter. SDG&E has been a leader in supporting MUD EVSE installations and tackling utility-side barriers. The utility holds quarterly workshops on MUD EVSE installations, participates in statewide and national efforts, and serves as a resource for property owners, local governments, and residents.

Barriers Facing EVSE installations at Multi-Unit Dwellings	
Barrier	**Description**
Cost	Installation costs can range anywhere from $2,000 to $10,000. A building that has sufficient panel capacity and an existing conduit running from the panel to the PEV parking space will likely only incur charging station, permit, and electrician installation/assessment costs, resulting in a lower cost installation. On the other hand, a building with limited panel capacity, no conduit, and a parking space located a significant distance from the electrical panel, will likely incur higher installation costs.
Power Supply	Transformers supplying multifamily buildings typically have 10% to 15% excess capacity, or overhead, which is enough to sustain a few electric vehicles. However, as PEV adoption grows and vehicles are equipped with higher charging loads, these transformers may be insufficient to handle wide scale conversion to electric vehicles.
Proximity to Metering Equipment	Service panels for MUDs can be located at substantial distances from where the charging station is to be installed.
High Rise Units	In downtown San Diego, meter rooms are often located on the upper floors of high rise units and conduit space is limited. Challenges are faced in installing additional conduit and/or encountering physical limitations (e.g., drilling through concrete floors).
Parking	Parking is not standard across MUD building types. In some MUDs parking is bundled into the rent or sale price of the unit. In other buildings it is unbundled or paid for separately. Unbundled parking spaces can be assigned on a first-come first-serve basis, or they can be unassigned. A charging station tied to a bundled parking space could be added value to a future tenant; however, a charging station on an unbundled or unassigned spot may pose challenges for assigning costs to individual owners. Choice of spaces also must address issues with proximity to metering equipment as addressed above.
Electricity Rates and Meters for Common Areas	Parking garages/lots are typically on a common meter. This means, electricity provided in parking garages and other common areas is paid by the property manager or homeowner association (HOA) and then billed to residents through HOA fees or rent. This creates a challenge in allocating charging costs to individual owners.
Homeowner Associations (HOAs)	HOAs cannot prohibit or restrict the installation of a PEV charging station. Senate Bill 880 codified this and other provisions for charging installations in common areas. However, HOA boards may still resist installations. Lack of information regarding charging station installations remain a significant barrier.

REVI has developed a fact sheet to help address the barriers to EVSE installations at MUDs that are outside of the utility's role. This factsheet is a resource for local governments that are assisting with the siting of EVSE at MUDs, residents, building managers, homeowner associations, and apartment associations.

Charging at Condos, Apartments, and Community Living Areas fact sheet can be found in Appendix B, page 8.

Charging at commercial and public sites

While most charging for PHEVs and BEVs happens at home and work, charging stations at commercial and public locations complements a driver's daily commute needs, offers flexibility in their travels during the day, and maximizes electric miles driven. As PEVs become more prevalent, the demand for diverse EVSE options will increase. Some factors for consideration when determining the feasibility of providing chargers at commercial and public locations are detailed in the REVI *Workplace Charging for Businesses in San Diego* (Appendix B, page 10) and the *Electric Vehicle Charging Station Installation Guidelines: Residential and Commercial Locations* fact sheets (Appendix B, page 14).

Some examples for Publicly-owned and retail EVSE sites where vehicles tend to be parked for an average of two hours include:

- Government workplaces
- Transportation stations (e.g., light rail, subway, bus, ship/ferry terminals, airports)
- Public parking facilities
- Recreational, natural, and cultural facilities (e.g., sports parks, pools, parks, beaches, museums, libraries, theaters, etc.)
- Non-profit sites (e.g., houses of worship, clubs, cultural centers)

The financial viability, motivations and benefits, of hosting EVSE have been analyzed by CCSE and documented in the *San Diego Regional Non-Residential Charging Infrastructure Study* (see Appendix C, page 39).

Charging at the workplace

The San Diego region has a large and still growing population of PEV drivers likely to require charging during the workday. The workplace is where drivers spend most of their time outside of the home. Expanding workplace charging opportunities for PEV drivers will allow more commute flexibility and maximize their electric vehicle miles traveled. Employers may consider several reasons for offering charging stations at work. The REVI developed *Workplace Charging for Businesses in San Diego* (Appendix B, page 10) as a resource for local businesses to use when assessing the potential for installing charging stations.

Workplace charging continues to be burdened when weighing determining the value proposition of EVSE to their business, employees, and customers in relation to the immediate and ongoing costs for the charging stations. CCSE has developed a report assessing the value proposition for San Diego businesses to offer charging stations, *San Diego Regional Non-Residential Charging Infrastructure Study* and has been included in Appendix C, page 39. Documenting and sharing workplace charging experiences; lessons learned with regional stakeholders can help encourage other employers to offer workplace charging.

Charging station installations

Workplace charging installation is first and foremost a cooperative effort. The California Plug-in Electric Vehicle Collaborative has developed the *Workplace Charging Communication Guide* (www.evcollaborative.org/communication-guides) as a communication tool. The REVI developed *Electric*

Vehicle Charging Station Installation Guidelines: Residential and Commercial Locations with details for streamlining and understanding the EVSE installation process (Attachment B, page 14).

Standardized regionally-recognized standard permit processes and procedures for commercial and workplace EVSE installations and expedited permitting could reduce the time, costs and confusion associated with workplace charging. This is an opportunity for further consideration by the REVI.

Zoning and parking policies for PEVs

Zoning and parking policies help prescribe where and what types of development can occur within each jurisdiction. Zoning and parking requirements play a critical role in the adoption of EVSE. Parking requirements defined by individual zoning ordinances or existing developments offer challenges to property owners or project developers when trying to identify optimal charger locations and capacity for such stations. Often parking spaces are limited and can't be specified for PEVs only due to minimum parking requirements or accessibility.

Zoning ordinances

As described above, zoning ordinances offer an ideal mechanism for local governments to define opportunities for EVSE installations through development. Currently, none of the jurisdictions in San Diego County have mandatory EVSE development requirements. The REVI identified the need for statewide requirements to adequately incorporate such language into local zoning ordinances.

The City of Los Angeles (Article 9, Division 4, 99.04.106.6 and Division 5, 99.05.106.5.3.1) and the City of Lancaster (Ordinance No. 958, 10.2.2) both have adopted language addressing EVSE in their zoning ordinances and are used as examples by other jurisdictions for integration into their own policies.

The Office of Planning and Research has developed the ZEV Guidebook (available October 2013). The Guidebook provides ZEV information to local and regional governments, communities, and residents about planning and infrastructure, permit streamlining, general plans and zoning, greening the fleet, and incentives and outreach. The overarching goal of the Guidebook is to synthesize several existing ZEV publications into one easy-to-use resource (http://opr.ca.gov/s_transportation.php).

Accessibility for PEV parking

The Americans with Disabilities Act (ADA) has specific access requirements to ensure all drivers have access to parking. ADA requirements have presented a number of challenges to EVSE installations. There are currently no mandatory requirements for incorporating EVSE specific parking spaces in development projects. Individual jurisdictions can develop standards for application within their own boundaries if they so choose.

The state Office of Planning and Research (OPR) issued draft Accessibility Guidelines for public comment and review. The REVI discussed the draft guidance documents and submitted comments in response (included within Appendix C, page 1). This guidance was the first offered by the state but still doesn't include mandatory language for EVSE installations.

The City of San Diego has developed Technical Policy 11-B which addresses parking accessibility to electrical vehicle charging stations. The REVI has identified this guidance as a best practice for use in the region.

PEV signage

The California Manual on Uniform Traffic Control Devices (CA MUTCD) has been updated by Caltrans (Traffic Operations Policy Directive 13-01) to include PEV signage. The policies included within the policy standardize the signage and pavement markings for zero emission vehicles (ZEV). Although this policy does not mandate parking requirements for ZEVs or other PEVs it does regulate the way they are identified.

Zoning and parking policies will continue to be a regional barrier to PEV adoption. The REVI will continue to monitor activities in state and local government activities although has determined that until there is mandatory state direction, this will continue to be an ongoing challenge.

Building code changes

Updating local building codes to accommodate EVSE is a long-term regional goal. Costly retrofits and infrastructure requirements for PEV charging can be a significant barrier to adoption. Mandatory building codes can help support PEV adoption by requiring pre-wiring for charging equipment and a percentage of parking spaces dedicated to PEVs.

The first step toward making building codes more EVSE-friendly is to increase the level of understanding of how building codes are updated among jurisdictions. Local governments have also expressed interest in learning from best practices deployed elsewhere across the state. Existing statewide code can be utilized strategically to avoid the difficult process of writing new code.

California's Green Building Standards Code (CALGreen) is Part 11 of Title 24, California's statewide building code, and provides guidance on voluntary measures that public agencies and municipalities can adopt to encourage PEV charging readiness in new construction. It is at the discretion of local governments to adopt any or all of these measures as mandatory. Currently, no jurisdictions in the San Diego region have adopted the voluntary EVSE-specific code. Future updates to CALGreen and Title 24 will likely inform regional building code policy in the long-term.

CALGreen is California's first set of statewide green building standards. It was developed as a result of the California Green Building Initiative and the Global Warming Solutions Act of 2006 (AB 32), which aimed to reduce GHG emissions to 1990 levels by 2020. Because buildings are the second largest contributor to GHG emissions in California, next to the transportation sector, CALGreen seeks to reduce their environmental impact. Appendix C, page 29 includes a list of EVSE specific CALGreen building code sections and examples of mandatory building codes.

Local jurisdictions can support EVSE deployment through changes to their building code. An effective first step would be to adopt the established voluntary EVSE-specific CALGreen code. This would require pre-wiring for EVSE for all newly constructed residential and non-residential buildings. All commercial development would require designated PEV-only or low-emission vehicle parking spaces. Standard project conditions or conditions of approval language are another means to integrate codified mechanisms that support EVSE installations.

The following are recommended actions for local government officials to facilitate PEV charging:

- Adopt the CALGreen EVSE codes for residential and non-residential new constructions.
- Redefine a "low-rise" building to be six stories or fewer when adopting CALGreen.[ii]
- Require new construction projects to pre-wire or lay conduit with the capacity for future wires or cables.
- Require new commercial and industrial construction to provide a minimum number of parking spaces be PEV-ready.
- Require new single-family or MUD construction to provide a minimum number of parking spaces be PEV-ready.

Education and Outreach

To facilitate increased EVSE installations in single-family residences, multi-unit dwellings, retail locations and at the workplace, it is important that all relevant stakeholders (e.g., electrical contractors, property owners, the utility, and local government staff) are fully aware of EVSE infrastructure installation requirements and potential challenges. The permitting process requires local government staff and electrical contractors to be fully trained and informed to ensure a rapid and seamless inspection and installation processes. Easily accessible and simple information about PEVs and PEV charging is also crucial for public understanding and adoption (*Plug-in Electric Vehicles & Charging: Getting Started* Appendix B, page 1; *CCSE Guide to Plug-in and Get Ready* Appendix C, page 26).

PEV training for local government staff

A number of training and workshop opportunities have been available and tailored to the specific needs and interests of local government staff. The PEV readiness workshop (June 2012) and the PEV Community Readiness training session (EVITP, January 2013) are just two opportunities that were available to local public agencies. As training needs are identified, the REVI has worked with training providers and other knowledgeable resources to bring information to the region. Detailed training resources and opportunities for municipal staff are included in the REVI developed fact sheet *Resources for Public Agencies in San Diego* (Appendix B, page 10).

Training opportunities for local contractors

Local contractors are often exploring opportunities to expand the scope of their services to remain current and capable of meeting the needs of the existing market. Learning how to install EVSE is one way of doing this. Electrical contractors are an important part of the EVSE deployment process, and as PEV adoption rates increase, local contractors should be able to support these installation tasks.

The Electrical Vehicle Infrastructure Training Program (EVITP) provides training and certification for contractors and electricians interested in installing EVSE. The program is coordinated by the DOE and the IBEW/NECA and is being offered at community colleges and local electrical training centers. The

[ii] CALGreen code pertains to "low-rise" buildings, which are defined as three stories or fewer. Extending this building designation to six stories or fewer would increase the number of eligible buildings to accommodate EVSE.

main curriculum focuses on training electricians on the best industry practices for EVSE installations (EVITP January 2013 training summary available in Appendix C, page 34).

Clean Cities offers informational videos to learn more about EVITP and EVSE installations on their YouTube channel, which can be found on their website: www1.eere.energy.gov/cleancities/evitp.html.

Details on the EVITP and other training opportunities available to local contractors are available in the REVI developed fact sheet included in Appendix B.

First responders

First responders encounter PEVs, whether it is on the scene of an accident or to assist a stranded motorist. Knowledge about the technology and how to safely remove a passenger or tow it off the road is vital.

The Freeway Service Patrol (FSP) is a free service provided by SANDAG, Caltrans, and the California Highway Patrol that helps get stranded motorists back on the highway. The Advanced Transportation Technology and Energy Program (ATTE) at Miramar Community College administered a specialized training to the FSP drivers to ensure they were properly equipped when they encounter a PEV on the road. The *Towing Alternative Fuel Vehicles Presentation Summary* is available in Appendix C, page 32.

A number of training resources and opportunities are available for first responders and included in the *Resources for Public Agencies in San Diego* fact sheet developed by the REVI (Appendix B, page 2).

Utility Solutions

Overview

As more PEVs are being plugged in at home, work and fleet facilities, the volume and distribution of electricity load demand will be affected. Current estimates show existing infrastructure as sufficient to accommodate off-peak charging in the near-term; however, electricity transmission and distribution may face challenges as demand increases in areas where there is a high concentration of PEV adoption. Transformers and local distribution equipment may require upgrades in certain neighborhoods or near fleet facilities or workplaces with a high volume of charging.

Utility notification protocol

Establishing protocols for utility notification is vital to ensuring safe and reliable electricity service. Early PEV adoption has historically been in neighborhood clusters, increasing demand on the local transformer and the likelihood that it will be affected. Communication with SDG&E can guarantee the appropriate steps are taken to ensure electrical service is uninterrupted.

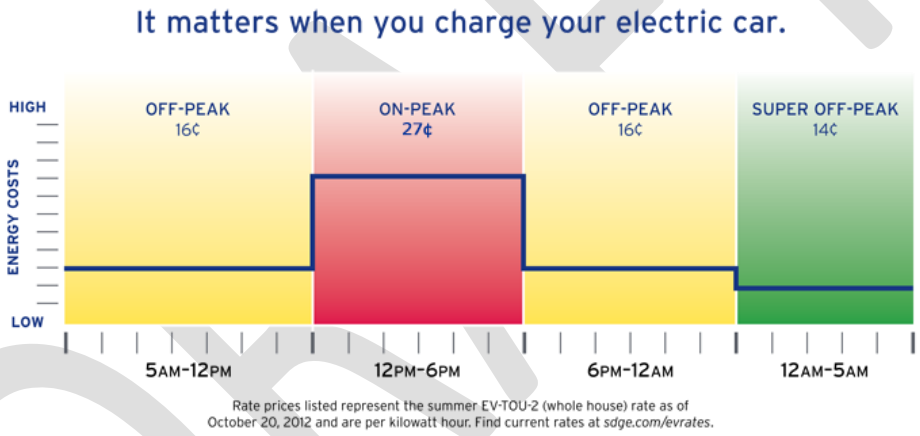
Utility notification also is crucial to measuring PEV charging behavior. Though SDG&E does not require residential customers to notify them of their PEV purchase, they do have two methods for establishing communications with PEV owners: 1) PEV owners can opt-in at time of purchase through the vehicle manufacturer, or 2) When PEV owners apply to change their utility rate. Utility notification is not

required for commercial EVSE installations either. However, it is common practice for commercial property owners and local contractors to contact SDG&E early on in the installation process.

SDG&E Time-of-use rates

To minimize the impact of PEV charging to the grid, utilities can implement various rate structures to incentivize off-peak charging. The added electricity demand of charging a PEV may drastically increase electricity costs to residential customers with traditional tiered pricing. It also does not address the time of energy use. Time of Use (TOU) rates incentivize night or off-peak charging. Some utilities offer TOU rates specific to PEV owners, which allow them to charge early in the morning or late at night to avoid adding further demand to the grid during peak use.

SDG&E offers customers two EV TOU rates: 1) EV TOU 2 combines all electricity consumed by a household on a single meter; all PEV and household electricity would use the same meter and benefit from high electricity usage during off-peak hours, and 2) EV TOU allows households to install a separate meter for their PEV, tracking PEV electricity usage separately from the rest of the home. The following chart reflects SDG&E's TOU rates.



To fully benefit from TOU rates, it is beneficial for PEV owners to install a second meter dedicated to the EVSE; it helps to differentiate electricity used by household electronics and appliance and PEV charging. A California investor-owned utility report has found that there are significant energy benefits when PEVs can set an "end charge" time. Customers that program their vehicle's "end charge" time allows the vehicle start charge times to be staggered throughout the evening minimizing grid impacts and increasing system reliability.

Minimizing grid impacts

Consumer Outreach

For any of these strategies to be effective, it is vital that consumers receive the information they need to feel comfortable participating. Consumer outreach and education must align with the rate of PEV adoption to be effective. Partnerships with local governments, Original Equipment Managers (OEM), dealerships and other stakeholders can help disseminate and provide consumers with the resources

they need to make safe, cost effective, and sustainable choices. These partnerships also establish the collaborative relationships needed to further PEV readiness in the region.

Renewable Energy Options for PEV owners

PEV owners may have alternative electricity generation options. There are renewable and smart grid technologies that could lessen the impact of EVSE's on the electricity grid.

Using battery storage from solar panels is a common way for PEVs to reduce their grid impact and electricity costs. The San Diego Zoo has installed ten stand-alone solar canopies with a 90 kilowatt solar voltaic system and five EV chargers. The solar voltaic system also has 100 kilowatt hours of battery storage, which helps to charge electric vehicles and offset peak power demands on the grid.

Owners of solar photovoltaic systems can pre-wire their system to allow EVSE to draw power directly from the battery storage.

Remaining Questions

Predicting the future of utility policies remains challenging, however, the integration of PEV charging with renewable energy sourcing may not be far off. Many utilities have already implemented or explored the possibility of a separate "green" energy option. Smart grid technologies continue to evolve and are an ideal sector for growth. SDG&E has been involved in pilot projects to explore these and other possibilities to managing PEV charging into the future.

Education and Outreach

As described previously, the safe, reliable and cost-effective integration of PEVs in the region requires continued effort in informing and training PEV drivers, fleet managers, government staff and others about electricity rates and other opportunities available and of interest to all regional EVSE stakeholders about SDG&E's solutions for PEVs. Consumers and local government officials should be encouraged to visit SDG&E's website to learn more about electric vehicle rates. SDG&E is actively pursuing outreach through its website, public education workshops, informational inserts with the statewide Clean Vehicle Rebate Project (CVRP), and brochures for San Diego car dealerships selling PEVs. SDG&E has been at the forefront of MUD property management and tenant outreach and education, and developed best practices for MUD stakeholder engagement.

For more information on how SDG&E can help PEV owners and local government officials, visit: http://www.sdge.com/electric-vehicles.

The Road Ahead

Overview

The San Diego region has taken great strides towards integrating PEVs and EVSE into existing policies, processes, and lifestyles, but there is still a long way to go. The EV Project was the critical building block to establishing the San Diego region's charging network. The REVI provided a platform for expanding that effort and for identifying and overcoming barriers for installation and obstacles to broader PEV

adoption. There are still a number of challenges and barriers stifling EVSE installation and hindering PEV adoption. To ensure progress continues to be made, continued collaboration is crucial for a cohesive regional charging network and for consistent and streamlined deployment.

Charging equipment and vehicle technologies continue to evolve at a rapid pace and it is necessary to understand the equipment demands as well as the needs and wants of the public. Monitoring and applying policies uniformly will help all of the public agencies, contractors, PEV drivers, local businesses and manufacturers address gaps, emerging trends and future needs.

Increased PEV Presence

The San Diego region has taken great strides in becoming a leader in PEV adoption and in establishing a charging network. The wide adoption of this technology offers industry leaders an incentive for continuing to use the region's well established infrastructure for new opportunities. Further, with such a strong PEV market, emerging concepts or technologies could easily be tested on a regional scale for a more realistic trial.

Estimating Future Demand for EVSE in the Region

The future demand for EVSE in the San Diego region directly correlates with the estimated future adoption of PEVs. It is clear that PEV ownership has witnessed a rapid increase in the past three years. In 2010, eight rebates were issued through the CVRP in San Diego County. More than 650 San Diego rebates were issued in 2011, over 780 in 2012, and as of July 2013, San Diegans (regional) have accounted for more than 960 rebate applications. Though the number of rebates may not be entirely representative of PEV adopters, it serves as an excellent indicator of the PEV adoption rate.

Future PEV growth estimates vary; some projections indicate that the California PEV population could reach 100,000 by 2014-2015 and 500,000 by 2018-2020. A critical factor in asserting future PEV adoption is the decline in PEV purchase prices associated with falling battery costs. In addition, the California Air Resources Board (CARB) ZEV mandate affirms that State PEV sales should reach 50,000 per year by 2019 and 150,000 per year by 2022.[15]

If these predictions are correct, there is a strong case for more EVSE in public spaces. Charging with Level 1 equipment at home will likely satisfy the average daily driving needs of a PHEV driver, according to National Household Travel Survey data. However, BEV drivers must be allotted more diverse options for charging. Level 2 charging at home is critical for a BEV driver, but may not be accessible for those that live in multi-unit dwellings. Therefore, it is vital to place EVSE at locations in which BEV drivers will stay for long periods of time: workplaces and other public places such as schools, retail centers, gyms, and medical locations. This will enable BEV drivers to complete their daily commute and possible side trips without fear of depleting their battery.

DC fast charging infrastructure would also need to be expanded throughout highway corridors in order to better suit the long-range driving needs of PEV owners. According to a University of California, Irvine study, DC fast charging provides a "safety net" for BEVs that need charging immediately.[16] The study estimates that a network of 290 strategically located fast chargers throughout California would enable 98% of drivers to adopt BEVs based on average daily vehicle miles traveled.

SAN DIEGO REGIONAL PLUG-IN ELECTRIC VEHICLE (PEV) READINESS PLAN

APPENDIX A

Contents:

SAN DIEGO REGIONAL ELECTRIC VEHICLE INFRASTRUCTURE WORKING GROUP

REPRESENTATION	MEMBER	ALTERNATE
South County Subregion	Brendan Reed City of Chula Vista	Chris Helmer City of Imperial Beach
North County Coastal Subregion	Ramsey Helson City of Del Mar	Mike Grim City of Carlsbad
North County Inland Subregion	Kathy Winn City of Escondido	Vacant
East County Subregion	City of Santee Kathy Valverde	Scott Munzenmaier City of La Mesa
City of San Diego	Jacques Chirazi	Vacant
County of San Diego	Peter Livingston	Susan Freed
San Diego Association of Governments	Susan Freedman, Chair	Allison King
San Diego Regional Airport Authority	Paul Manasjan	Brett Caldwell
Caltrans, District 11	Chris Schmidt	Vacant
Unified Port District of San Diego	Michelle White	Jenny Lybeck
San Diego Gas & Electric	Joel Pointon	Randy Shimka
California Center for Sustainable Energy	Mike Ferry, Vice Chair	Colin Santulli
University of California, San Diego	Dave Weil	Jim Ruby
Miramar College, Advanced Transportation Technology and Energy Program	Greg Newhouse	Vacant
San Diego Electric Vehicle Network	Randy Walsh	Vacant
National Electrical Contractors Association	Karen Prescott	Tim Dudek
International Brotherhood of Electrical Workers Local 569	Micah Mitrosky	Vacant

ADVISORY MEMBERS	
San Diego Air Pollution Control District	Mike Watt Nick Cormier
Department of Defense	Chris Parry
Metropolitan Transit System	Claire Spielberg
City of Coronado	Bill Cecil
City of Encinitas	Diane Langager
City of National City	Ray Pe
City of Solana Beach	Dan King
City of Vista	Lyn Dedmon
Ecotality	Andy Hoskinson
Car2go	Mike Cully
AeroVironment	Charlie Botsford
Coulomb Technologies	Colleen Quinn
General Electric	David Wang

SAN DIEGO REGIONAL PLUG-IN ELECTRIC VEHICLE (PEV) READINESS PLAN

APPENDIX B

Contents: Fact Sheets

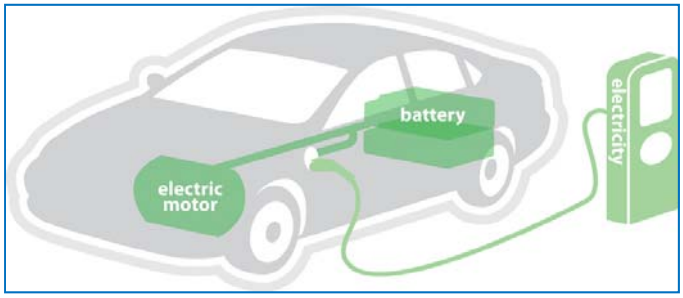
Plug-in Electric Vehicles & Charging: Getting Started

California is leading the nation in plug-in electric vehicle (PEV) adoption, and about 20% of PEVs in California are in the San Diego region. Interested in learning more about these new vehicles on our roads and highways? Here are some answers to your questions about the basics of PEVs, benefits of PEVs, charging options, and available incentives.

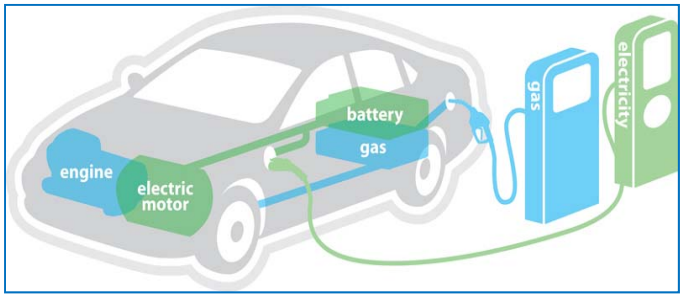
What is a plug-in electric vehicle?

A plug-in electric vehicle (PEV) is the generic term for cars that operate, fully or partially, on battery power and that are charged from the electricity grid. There are two main types of PEVs: battery electric vehicles and plug-in hybrid electric vehicles.

Battery Electric Vehicle (BEV) - Runs on electricity stored in batteries and has an electric motor rather than an internal combustion engine.



Plug-in Hybrid Electric Vehicle (PHEV) - Plugs into the grid and operates on electricity as well as an internal combustion engine.



What are all the options?

There are currently more than **20 different PEV models** on the market, offered by a variety of manufacturers. Check out an EV buying guide at http://www.driveclean.ca.gov.

How far can I drive?

Battery electric vehicles can generally go 60 – 120 miles on a full charge, which is plenty of range for most people (the average Californian travels less than 30 miles a day). If more range flexibility is needed, a plug-in hybrid might be a better choice. They can generally run on battery alone for 10 – 40 miles, and then continue for up to 400 miles as a gasoline-electric hybrid.

Why should I drive a PEV?

- Help to reduce emissions and improve air quality
- Lower fueling costs
  - ✓ Save money and charge your vehicle overnight with SDG&E's time-of-use rates. Learn more at http://www.sdge.com/evrates.
- Lower maintenance costs
  - ✓ No more oil changes, fewer tune-ups

How do I charge?

Most PEV drivers will do the majority of their charging at home, but the availability of public charging stations is growing. Public stations offer drivers more charging options. A list of public charging locations can be found at http://www.afdc.energy.gov/afdc/locator/stations.

How long does it take to charge?

Charging times depend on three primary factors: the size of the battery, the onboard vehicle charger, and the type of charging equipment. The onboard charger is located in the vehicle and determines the amount of power that can enter the vehicle from the grid. Generally, BEVs have a larger battery compared to PHEVs. Three types of charging equipment are described in the table below:

Type of Charger	Miles of Range for 1 hour of charge	Where to charge?
Level 1 (120 volt)	3 to 4	Standard three-pronged outlet
Level 2 (240 volt)	8 to 20	At-home or public charging station
DC Fast Charger	50 to 60	Few public DC Fast Chargers

Are there incentives for buying or leasing a PEV?

For a limited time, rebates and tax breaks are available for PEV purchasers and lessees. Incentives include a state rebate of up to **$2,500**, a federal tax credit of up to **$7,500**, and HOV lane access.

- Find information on PEV rebates, discounts, HOV access, tax breaks, and other incentives available in your area at http://driveclean.ca.gov/pev/Incentives.php.

Tax credits are also available for charging stations and allow consumers to claim up to 30% of the cost of hardware and installation, find out more at http://www.afdc.energy.gov/laws/law/US/10513.

Plug-in Electric Vehicles

Resources for Public Agencies in San Diego

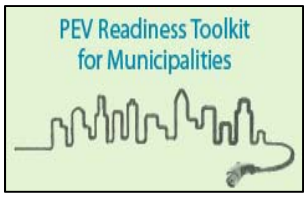
Plug-in electric vehicles (PEVs) are becoming more common, and local permitting agencies should be prepared for the growing PEV market and understand how PEVs can help agencies' achieve climate and sustainability goals. This fact sheet was developed by the San Diego Regional Electric Vehicle Infrastructure[1] (REVI) working group and offers San Diego's public agencies resources and technical training information as they become PEV ready.

Did you know?

- The San Diego region represents more than 20% of the California PEV sales market.
- Roughly 1 of every 35 new cars bought or leased in California during Q1 of 2013 was a PEV.

PEV Readiness Toolkit

The California PEV Collaborative offers numerous resources for local government officials on state and federal incentives for PEVs and electric vehicle supply equipment (EVSE). The PEV Readiness Toolkits include quick references for developing municipal planning and community development policies to support and promote PEVs. Visit http://www.pevcollaborative.org/policy-makers.



Building Support - *engineers, plan checkers, project managers, and building officials*

Permitting

Electric vehicle charging systems are relatively new to permitting departments and are often permitted through existing processes and permits. The Cities of Oceanside and San Diego have developed guidance documents to aid with the permitting, installation, and inspection processes.

- City of Oceanside *Residential Electric Vehicle Charger Guidelines* http://www.ci.oceanside.ca.us/civica/filebank/blobdload.asp?BlobID=30053
- City of San Diego *Information Bulletin 187: How to Obtain a Permit for Electric Vehicle Charging Systems* http://www.sandiego.gov/development-services/pdf/industry/infobulletin/ib187.pdf
- The PEV Collaborative has developed *Streamlining the Permitting and Inspection Process for Plug-in Electric Vehicle Home Charger Installations*, which includes statewide codes and standards, recommended permitting fees, and background information on EVSE hardware. http://www.evcollaborative.org/sites/all/themes/pev/files/PEV_Permitting_120827.pdf
- Department of Energy's Alternative Fuels Data Center EVSE permitting template for jurisdictions http://www.afdc.energy.gov/pdfs/EV_charging_template.pdf

Regional Permit Fees

From mid-2011 to early 2013, the EV Project[2] reported that the median cost for permitting a residential EVSE installation was $226. Permitting fees vary by jurisdiction, so it is a good idea to contact the permitting agency for specific fees.

Building & Electrical Codes

The National Electrical Contractors Association provides a common set of electric vehicle terminology and code in the presentation linked below[3]. Pacific Gas & Electric offers a condensed version of code requirements for EVSE installations, from disability requirements to PEV signage, at http://www.pge.com/includes/docs/pdfs/shared/environment/pge/cleanair/ev5pt3.pdf.

Planning Department Staff - *planners*

Addressing Accessibility for PEV Chargers

[1] http://energycenter.org/programs/pev-planning/san-diego
[2] San Diego REVI meeting, *The EV Project: Initial Findings On Charging Behavior,* April 18, 2013. http://www.theevproject.com/
[3] http://iaei-western.org/Files/2011/Programs/NECA%20EVSE%20Presentation%20NECA%20SD%202011%20Western%20IAEI%20Section.pdf

Assuring charging systems are accessible to all drivers is critical for public adoption. The Office of Planning and Research (OPR), in conjunction with the Department of the State Architect, is developing a guidance document to help public agencies standardize accessibility opportunities for PEV charging. To view or download copies of the draft guidelines, visit http://opr.ca.gov/docs/PEV_Access_Guidelines.pdf.

The City of San Diego has developed a comprehensive technical policy guide addressing accessibility and PEV parking at https://www.sandiego.gov/development-services/pdf/industry/tpolicy11b1.pdf.

Parking Guidelines

The California Green Building Standards Code (CALGreen) includes standard statewide Residential and Non-Residential Voluntary Measures for PEV and EVSE listed in Appendix 5A of CALGreen: http://www.documents.dgs.ca.gov/bsc/CALGreen/2010_CA_Green_Bldg.pdf

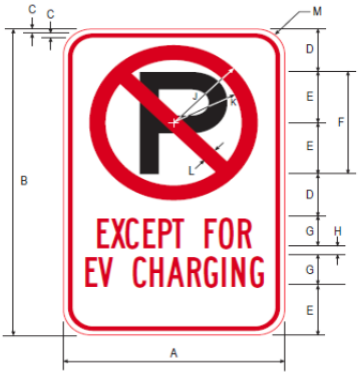
CALGreen Code Sections for PEV and EVSE:

- *A5.106.5.1* **Designated parking for fuel-efficient vehicles**
- *A5.106.5.3.1* **Electric vehicle supply wiring**
- *A5.106.6* **Parking capacity**

Parking Enforcement

The City of Santa Monica has adopted an electric vehicle parking ordinance. This ordinance offers an example for other local agencies interested in incorporating and enforcing PEV parking into existing policy documents.

- *3.12.835* **Electric vehicle parking** (adopted at Santa Monica City Council Meeting 07/24/2012)[4]



The California Department of Motor Vehicles has codified electric vehicle parking enforcement with Vehicle Code (VC) Section 22511 *Off-Street Parking: Electric Vehicle,* a standard template available for use by local jurisdictions.[6]

PEV Signage

The California Manual on Uniform Traffic Control Devices has released a statewide traffic operations policy directive on zero-emission vehicle signs and pavement markings standardizing signs and markings for PEV charging stations and parking stalls.[5]

Safety Training for First Responders

The ATTE program trained SANDAG's Freeway Service Patrol (FSP) drivers.

Firefighters, police officers and other first responders encounter PEVs when responding to incidents. For their safety and the safety of the public, it is essential that they receive PEV training.

National Alternative Fuels Training Consortium – First responder safety training
http://afvsafetytraining.com
National Fire Protection Association – Online first responder safety training
http://www.evsafetytraining.org/training.aspx
Miramar College: Advanced Transportation Technology and Energy Program (ATTE) - Technical education, training and resources
http://www.attemiramar.com/
First Responder Guides for Tesla Vehicles
http://www.teslamotors.com/firstresponders

[4] http://www.smgov.net/departments/council/agendas/2012/20120724/s2012072407-A-1.htm
[5] http://www.dot.ca.gov/hq/traffops/signtech/signdel/policy/13-01.pdf
[6] http://www.dmv.ca.gov/pubs/vctop/d11/vc22511.htm

Plug-in Electric Vehicles

Regional Planning for Public Charging in San Diego

As plug-in electric vehicle (PEV) adoption increases in San Diego region, local and regional governments and public agencies need to develop land use policies and transportation plans that integrate electric vehicle supply equipment (EVSE) into the infrastructure network. Supporting PEVs helps advance local government and public agency efforts to achieve goals for greenhouse gas emission reduction while cutting their fuel use and costs.

Why plan at all?

- Near-term needs
  - Identify method to best site PEV chargers
  - Use visual tools through GIS mapping
  - Plan for 1,500 publicly accessible chargers
- Long-term goals
  - Select public sites with the most regional benefit
  - Reduce driver range anxiety
  - Develop interregional network
  - Enhance future siting capabilities

What is the EV Project?

- ECOtality received $230M funding from Dept. of Energy and partner matches
- Deploying chargers in major cities and metropolitan areas across the U.S.
- Collecting and analyzing data to evaluate EVSE infrastructure
- Identifying lessons learned and establishing streamlined deployment strategies

What's been done?

San Diego EV Project Stakeholder Advisory Committee (ESAC)

- Participants: Local governments and public agencies, nonprofits, universities, utilities and private businesses
- Purpose: Provide input to ECOtality on the local context, history and motivation for EV adoption. Determine and rate factors to be used in siting Level 2 and DC fast charging (DCFC) EVSE.
  1. Characteristics of optimal Level 2 EVSE locations:
     - High number of users
     - High frequency of vehicle turnover (stay times of 45 minutes to 3 hours)
     - Significant availability (maximize hours and days of operation)
  2. Characteristics of optimal DCFC locations:
     - High number of users
     - Very high frequency of vehicle turnover (stay times of 5 to 30 minutes)
     - Significant availability
  3. All locations assessed against the land use suitability factor
  4. Weighted factors applied to the master geographic reference areas (MGRAs) and normalized to provide a score for each MGRA
  5. MGRAs mapped and focus placed on the highest scoring areas to identify potential locations for Level 2 EVSE – 3,333 MGRAs were targeted[1]

DC Fasting Chargers on Transportation Corridors

The ESAC provided additional guidance on DCFC along transportation corridors and determined that the following specifications should be documented and taken into account in site selections:

- Major transportation corridors are defined as freeways and highways
  1. Interstate Freeways 5, 8, 15 and 805
  2. State Highways 52, 54, 56, 67, 78, 125, 163 and 905
- Approximately half of the transportation corridor DCFCs should be located at very high volume designed interchanges, with the remaining at slightly lower volume designed interchanges
- Consider characteristics of the host site use that match the typical charge times of 5 minutes to 25 minutes, such as a coffee shop, convenience store or other such businesses
- Spacing of DCFC should consider the potential of additional travel distance (up to 80 miles in 30 minutes)

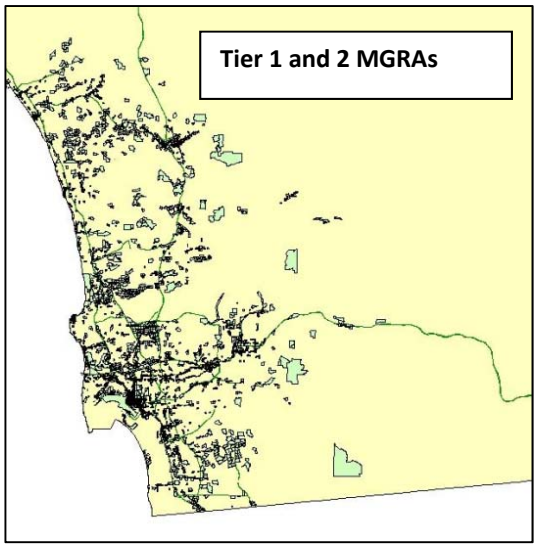
- DCFC spacing should include locations on the periphery of the San Diego EV Project boundary. In addition, DCFCs should be deployed 30–50 miles beyond the boundary along the same transportation corridors.

EV Project Installations

- Installations[1]
  - April 2011–May 2013: 435 nonresidential AC Level 2 EVSE units including 321 publicly accessible at 121 sites and 114 workplace/fleet EVSE units at 39 sites; 4 DCFC units in the region
- Installations vs Plan[1]
  - Analysis done for 3,333 units within ¼ mile (walking) of the highest scoring MGRAs
  - Several charging units were placed within ¼ mile of more than one MGRA
    - 1,138 (34%) MGRAs served by a deployed publicly accessible EVSE
    - 10 units installed in areas outside a targeted MGRA (not within ¼ mile).
    - 3 units installed far from the nearest MGRA, serving as a means to extend trips.

EV Project Conclusions to Date[2]

- Charge events per public EVSE continue to increase
- 74% of all charging events are residential
- 27% of all public charging events are from Car2Go
- 19% of all electricity consumed is from publically accessible Level 2 and DC fast charge events



What's next?

The EV Project was integral in establishing the region's EVSE infrastructure, however, a number of barriers still challenge the deployment of a complete regional EVSE network, including

- Challenges to implementation?
- Education
- Incentives/rebates — money
- Clear legislative and regulatory direction
- Better integration into local policies and activities
- More cohesive infrastructure network — connectivity between regions

We can work to overcome these obstacles by

- Further incorporating EVSE infrastructure into planning and development policies
- Considering PEVs in project design and as standard conditions of approval
- Continuing to coordinate with local, regional and neighboring communities/agencies/jurisdictions to link EVSE infrastructure networks
- Informing state agencies about regional challenges, concerns, considerations and impacts from policy and regulatory developments
- Getting the word out and continuing to educate leadership, community leaders and the public

[1]The EV Project: *Lessons Learned – The EV MICRO-CLIMATE Deployment Process in San Diego*
www.theevproject.com/cms-assets/documents/112390-451046.mcproc-sd.pdf

[2]The EV Project: *Q2 2013 Quarterly Report*
www.theevproject.com/cms-assets/documents/127233-901153.q2-2013-rpt.pdf

Plug-in Electric Vehicles

Resources for Fleet Managers in San Diego

Plug-in electric vehicles (PEVs) offer government fleet managers opportunities to decrease fuel and operating costs while supporting goals mandated by local, state and feral policies to significantly reduce greenhouse gas (GHG) emissions.

PEVs in Local Public Agency Fleets

Cleaner fleets can play a sizeable role in meeting local and state GHG emissions reductions goals. Local agency fleets that have successfully adopted PEVs include:

- Port of San Diego: http://www.portofsandiego.org/environment/1520-nissan-electric-car-debuts-in-san-diego.html
- University of California, San Diego: http://sustainability.ucsd.edu/initiatives/transportation-alternatives.html

Benefits of PEVs

Reduced petroleum use, GHG emissions and operating costs

Government incentives

Reduced dependence on imported oil

PEVs in Private Fleets

Integrating clean vehicles in private fleets can help companies achieve their sustainability goals. Private fleets that have deployed PEVs in the San Diego region include:

- Frito-Lay: http://www.fritolay.com/about-us/press-release-20120810.html
- FedEx: http://news.van.fedex.com/fedex-expands-hybrid-electric-fleet-50-percent-groundbreaking-conversion-program
- car2go: https://www.car2go.com/en/sandiego/

Vehicle Incentives and Rebates

- Local governments and public agencies can take advantage of PEV rebates offered by the Clean Vehicle Rebate Project for up to 20 vehicles per year.[1]
- The California Hybrid Truck and Bus Voucher Incentive Program is available to public entities purchasing a hybrid or electric truck or bus. Find out more at http://www.californiahvip.org/.
- The Goods Movement Emissions Reduction Program Proposition 1B provides funding for California truck owners to replace their old vehicles with newer, cleaner equipment.[2]

Choosing the Right PEV

Choosing the right PEV for your fleet requires a thorough understanding of current vehicle use.

- Fleet data logs can help determine which fleet vehicles can be replaced by PEVs.
- Fleet vehicles that travel fewer than 100 miles per day can be replaced with battery electric vehicles (BEVs-100% electric).
- Fleet vehicles that need extended range can be replaced with plug-in hybrid electric vehicles (PHEVs).
- The Department of Energy maintains a website of currently available PEVs at http://www.afdc.energy.gov/vehicles/electric_availability.html.

Charging PEVs at a Fleet Facility

An important consideration when planning for PEVs is the need for charging equipment, known as electric vehicle supply equipment (EVSE). San Diego Gas & Electric (SDG&E) can help plan for fleet charging. Learn more at http://www.sdge.com/clean-energy/business/fleet.

- SDG&E will help fleet managers understand their historic electricity use (demand and timing) to determine the most cost-effective plan for charging. Commercial customers will receive information on their facility's electrical capacity for charging.

[1] https://energycenter.org/programs/clean-vehicle-rebate-project

[2] San Diego fleet managers can keep up to date with funding for this program by visiting http://www.sdapcd.org/homepage/grants/grants.html.

- Fleet managers must determine the number, location and types of EVSE for their PEVs. The different levels of charging (Level 1: 120-volt, Level 2: 240-volt) offer different charging speeds and have different up-front and operating costs.
- Placing charging infrastructure near electrical utility equipment can reduce installation costs.

Considerations for Fleet Managers

- Collect drive cycle data to understand fleet needs and which PEV would best meet those needs.
- Determine which fleet vehicles are optimal for replacement by PEVs.
- Consider future PEV fleet size and EVSE siting/needs when installing charging infrastructure.
- Inform drivers on ways to maximize fuel efficiency/battery life (reduce speeding, use of GPS route planning).
- Offer test drive opportunities to staff members and fleet drivers to promote and exhibit new technology.
- Share successful experiences with electric fleets and infrastructure installation among other regional fleet managers.
- Take into account the capital required for EV charging equipment and installation when planning for a new electric fleet.

Resources

California Energy Commission: Resources for fleet managers interested in upgrading to a clean vehicle fleet can be found at http://www.energy.ca.gov/drive/upgrade/fleets.html.

California Air Resources Board: Resources for incentives, grants, and funding for fleet managers interested in greening their fleet can be found at http://www.driveclean.ca.gov/pev/Resources_For_Fleets.php.

Department of Energy Clean Cities: A Plug-In Electric Vehicle Handbook for Fleet Managers is available online at http://www.afdc.energy.gov/pdfs/pev_handbook.pdf

Idaho National Laboratory Report: A brief report comparing energy costs per mile for electric and gasoline-fueled vehicles by the Idaho National Laboratory is found at http://avt.inel.gov/pdf/fsev/costs.pdf.

Department of Energy: The DOE's tool, eGallon, calculates fuel savings by using electricity instead of gasoline at http://energy.gov/articles/egallon-how-much-cheaper-it-drive-electricity.

Plug-in Electric Vehicles

Charging at Condos, Apartments and Community Living Areas

By 2050, half of the San Diego region's population is expected to be living in multi-unit dwellings (MUDs). When it comes to accommodating EV chargers, each MUD has its own unique set of circumstances and challenges to address. Below are some of the most common challenges and ways that local apartment buildings, homeowner associations (HOAs) and condos have addressed them. This document is designed to be used in conjunction with SDG&E's fact sheet on installing PEV charging stations in multi-unit dwellings titled, *Prepping Multi-Units for Plug-in Vehicles*.

Reaching Out to Building Management or HOA

Since EV chargers will likely be installed in common areas, it is important to engage the building management or HOA early in the process. Identify any existing rules in the covenants, conditions and restrictions (CC&Rs) that could affect the installation of charging stations. It is best to be prepared and aware of any potential hurdles or opportunities by doing the research before approaching building management.

Tips for approaching building management about EV Charging

- Talk to other residents about their interest in EV charging and build a coalition of support
- Look for incentives for chargers available in your area: www.driveclean.ca.gov/pev/Incentives.php
- Review the parking layout in relation to electrical supply and propose possible arrangements
- Contact SDG&E to help determine necessary panel and/or meter upgrades

Determining Demand for EV Charger Installations

Survey residents to gauge their interest in purchasing a plug-in electric vehicle (PEV). This survey will help determine the number of charging units and/or amount of conduit to install and in what layout(s). Identify demand for Level 1 versus Level 2 charging. Planning ahead by installing extra capacity for future charging units can save on costs down the road.

The PEV Collaborative has developed a sample survey for MUD residents. Both print and electronic survey options are available at www.driveclean.ca.gov/pev/Charging/Home_Charging/Multi-unit_Dwellings.php#survey

Allocating Costs

It is important to establish how EV charger installation, operations, maintenance, insurance and electricity bills will be paid. How costs are allocated will depend on how the chargers are installed. Potential options include:

- **Chargers in assigned spots:** Individual meters installed for each charging station and resident covers the actual charger cost, billing, insurance and maintenance of the unit. Installation costs for the meters, panel upgrades and conduit can either be covered by management, the resident or shared.

- **Common area chargers for residents only:** Building management installs electric vehicle supply equipment (EVSE) in common area and recoups costs from residents through a billing system in the charger.

- **Common area chargers for residents and general public:** Building management installs EVSE in public common area and recoups costs from residents and public through a billing system in the charger.

Siting EV Chargers

Identify the location and type of electric metering and wiring in the parking area. Determine if existing supply is adequate or if a meter/panel upgrade is needed. If an upgrade is required, consider the capacity needed to accommodate additional PEV chargers in the future. Contact the building/planning department to discuss any permits or requirements that should be considered when siting chargers.

Power supply for EV chargers

- The closer the EVSE is to the power supply, the lower the installation costs will be.
- Installation costs will increase if a panel upgrade or meter installation is necessary. The power supply needs for Level 1 and Level 2 EVSE are as follows:
    - **Level 1:** Dedicated branch circuit with NEMA 5-15R or 5-20R receptacle
    - **Level 2:** Dedicated branch circuit hardwired to a permanently mounted EVSE with 240VAC/single phase, 4-wire

Assigned vs. unassigned parking spaces

Consider which assigned and unassigned parking spaces could accommodate PEV charging equipment. Key factors include:

- Proximity to electric meter; can avoid costly trenching through concrete. Soft landscapes or locations near the electric meter are preferred.
- Location for charging stations and bollards (short vertical post) to ensure EVSE cord does not present a tripping hazard

Accessibility to EV Chargers

See the City of San Diego EVSE accessibility guidelines for sample EVSE configurations:

www.sandiego.gov/development-services/industry/pdf/tpolicy11b1.pdf

Policy Considerations

Legislation has been adopted in California to reduce barriers to the installation of EVSE in multi-unit dwellings. SB 880 prohibits common interest developments (e.g., condo/apartments) from restricting the installation of EVSE in a deeded/contracted parking space. If the charging unit is installed in a common area, the law does state that certain conditions can be imposed, including a $1 million home owner liability policy that names the HOA as an additional insured.

Resources for MUDs

San Diego Gas & Electric
www.sdge.com/clean-energy/residential/apartments-and-condos

SDG&E Quarterly MUD Vehicle Charging Workshops - www.seminars.sdge.com

Plug-in Electric Vehicle Resources Center
http://www.driveclean.ca.gov/pev/Charging/Home_Charging/Multi-unit_Dwellings.php

eVgo for Multi-Family Buildings
www.evgonetwork.com/own-or-manage-multi-family-communities/

Plug-in Electric Vehicles

Workplace Charging for Businesses in San Diego

As the number of plug-in electric vehicle (PEV) owners grows, businesses can offer workplace charging to help employees meet their commuting needs. Making workplace charging available to employees allows them more environmentally-friendly transportation options, demonstrates commitment to the community, helps attract and retain employees, and contributes toward green certifications.

Key Considerations for Workplace Charging

The sections below describe the following key considerations for businesses interested in installing EV charging:

- Does your business own or lease its facilities?
- What type of charging is needed?
- What are different ways to pay for charging?

What are other businesses saying?

A survey of local businesses with EV Chargers revealed the following:

Why did your company decide to invest in chargers?

- Achieve goals in company's sustainability plan
- Provide additional service to customers

What benefits do you see from investing in chargers?

- Positive impact and association with the company brand
- Increased visitation
- Employee attraction and retention

Survey conducted by CCSE in 2012 of institutions in San Diego County that have installed public and workplace EVSE.

Does your business own or lease its facilities?

Building Owners

Employers that own their facility and parking area encounter fewer challenges when developing a plan for vehicle charging.

✓ Engage key stakeholders in the process, including PEV drivers, operations supervisors, building/facility manager, facility technicians, and legal counsel

Building Tenants

Employers that do not own their facility will likely be required to obtain an agreement from the building or property owner.

✓ If an agreement cannot be reached with the owner, look to partner with a neighboring parking lot owner or another business to develop a cooperative PEV charging program

Levels of Charging

Level 1 – 120 volt
(standard household outlet)

Level 2 – 240 volt
(large home appliances)

What type of charging is needed?

Employers should determine the appropriate charging levels based on the electrical capacity available at their facility.

- ✓ Vehicles generally park at the workplace for 8-9 hours, which makes Level 1 charging an easy and cost-effective option
- ✓ Consider a hybrid approach with Level 1 serving the needs of most employees, and one or two charge-per-use Level 2 chargers available for those who need a quicker charge
- ✓ Installing in proximity to existing electric utility equipment is cheaper than adding new circuits and conduit that can increase capital costs significantly
- ✓ Incorporate PEV charging in future infrastructure plans and development

Who will pay for the charging?

Employers can choose to cover electricity costs and allow employees to charge their vehicles for free, or an employer may want to recoup some or all of the electricity costs by requiring employees to pay for their charging.

Option 1: Free to employees
Many businesses offer PEV workplace charging for free to their employees. Here are some reasons why:

- ✓ It offers an incentive to employees to support PEV adoption
- ✓ It simplifies the employee charging policy and reduces administrative time and expense
- ✓ Free charging could be considered a reportable employee benefit

However, there are some risks with offering free charging:

- ✓ Businesses could incur demand charges that become prohibitively expensive with greater PEV adoption
- ✓ May create workplace friction among non-PEV owning employees not receiving reimbursement for gasoline costs
- ✓ Employees with home charging may choose to charge exclusively at work

Option 2: Employees pay for charging
Billing employees for PEV charging can help recuperate capital and operational costs over time. Some considerations:

- ✓ Bill for exact usage (kWh), which may require more expensive equipment
- ✓ Set up a monthly/yearly subscription rate based on estimated usage
- ✓ Employ a third-party administered turn-key model that fully covers installation, maintenance, operation, and employee billing

Resources

SDG&E: San Diego Gas & Electric (SDG&E) helps employers through the process of choosing and installing EV charging at their business. They offer workplace charging seminars, assistance in evaluating billing impacts, and other helpful tips for businesses. Visit: http://www.sdge.com/clean-energy/business/employers-and-property-owners.

Employer EV Initiative: Read about best practices, case studies, and more from employers across the state. Visit: http://www.evworkplace.org.

San Diego REVI: Find a Request for Proposal (RFP) template for public agencies or businesses interested in EVSE. Visit: http://energycenter.org/plug-in-and-get-ready.

eVgo: Local businesses can benefit from eVgo's Ready for Electric Vehicle (REV) Program for California office buildings and corporate complexes. They offer 100% free EV charging equipment and electricity reimbursement. Visit: http://www.eVgoNetwork.com.

Steps to Workplace Charging

1. Engage PEV owners, facility staff, managers, and legal council
2. Survey employee interest in workplace charging
3. Discuss findings and PEV charging needs among employees and company decision-makers
4. Conduct a site assessment with a contractor to determine ideal charging locations and costs
5. Contact SDG&E to determine the potential billing impacts of PEV charging
6. Examine different charger options and compare the benefits and costs (e.g. Level 1, Level 2)
7. Determine equipment ownership– building/parking lot owner, EVSE vendor or lessee
8. Establish company policies for employee access, define employee benefit and cost recovery
9. Explore existing incentives or rebates for workplace chargers
10. Select equipment, obtain multiple installation quotes
11. Present installation plan and budget to management for approval
12. Purchase equipment and hire a licensed electrical contractor for permitting, installation and inspection
13. City/county inspection of the charger installation
14. Install signage, alert employees
15. Publicize and share with the community

Adapted from the Calif. PEV Collaborative *Workplace Charging Installation Guideline*

Resources for Electrical Contractors in San Diego

San Diego accounts for more than 20% of total statewide plug-in electric vehicle (PEV) sales and has the largest all-electric vehicle car-sharing program in North America. With every PEV purchase, the need for charging infrastructure expands and the demand for local electrical contractors grows.

Electrical Vehicle Supply Equipment Training

The PEV industry and local governments want to ensure contractors are completing safe and reliable electric vehicle supply equipment (EVSE) installations for their customers and constituents.

The International Brotherhood of Electrical Workers, in conjunction with the National Electrical Contractors Association, offers statewide EVSE installation training courses. The Electric Vehicle Infrastructure Training Program (EVITP) is designed for and available to all electrical contractors addressing best practices for residential, commercial, public, and fleet installations.

EVITP training is offered at regional community colleges and electric training centers. For information and a list of EVITP training opportunities, visit http://www.evitp.org/training-programs or email *info@evitp.org*.

Training benefits to electrical contractors include:

- Learning new and emerging technologies
- Gaining competitive knowledge
- Qualifying to submit bids for RFQs and RFPs for EVSE installations
- Supporting California's goal to reach 1.5 million zero-emission vehicles on the road by 2025

Nearest EVITP training centers:

1. San Diego Electrical Training Trust
   www.positivelyelectric.org
   858-569-6633
   4675 Viewridge Ave.
   San Diego, CA 92123
2. Cuyamaca College
   http://www.cuyamaca.edu/
   619-660-4000
   900 Rancho San Diego Pkwy.
   El Cajon, CA 92019
3. Orange County Electrical JATC
   www.ocett.org
   714-245-9988
   717 South Lyon Street
   Santa Ana, CA 92705

Electric Vehicle Supply Equipment Options

There are numerous EVSE product manufacturers and retailers. Many EVSE products are safety tested and certified by Underwriters Laboratories (UL). For a complete list of currently approved EVSE, visit http://goelectricdrive.com/index.php/find-an-ev-charger.

Electrical Vehicle Supply Equipment Installation and Maintenance

Every EVSE installation is different. The following resources address EVSE safety as well as technical and consumer issues electrical contractors and inspectors may encounter.

Regulatory Compliance

The City of San Diego requires EVSE installations in public areas to be made accessible to persons with disabilities. The City of San Diego Technical Policy 11B-1 applies to the installation of EVSE in both new and existing construction. More information can be found at: https://www.sandiego.gov/development-services/pdf/industry/tpolicy11b1.pdf.

For installations outside the City of San Diego, contact the local permitting office for accessibility guidelines.

The Alternative Fuels Data Center (AFDC) lists California laws, state incentives, and regulations related to PEVs and other advanced vehicles, which is found at: http://www.afdc.energy.gov/laws/state_summary/CA .

Installation and Inspection
The EVSE installation process begins with a site assessment and identifying the EVSE.

The City of San Diego has developed an information bulletin that describes the permitting and inspection process for EVSE on an existing site or building, found here: http://www.sandiego.gov/development-services/pdf/industry/infobulletin/ib187.pdf.

Common EVSE installation steps are also included in Advanced Energy's document, Charging Station Installation Handbook for Electrical Contractors and Inspectors.[1]

Load Calculations
Load calculations are a required component of most electrical permit submittals. The National Electric Code (NEC) considers EVSE a continuous load. EVSE-specific information can be reviewed in NEC Article 625 by visiting http://www.advancedenergy.org/transportation/charging_station_forum.

The City of Oceanside has developed an EVSE load calculation worksheet and included it within the *Residential Electric Vehicle Charger Guidelines* (see *Residential Installations*).

Residential Installations
Most PEV charging takes place at home, overnight using Level 1 (120 volt) or Level 2 (240 volt) EVSE. EVSE is most often installed in a garage. EVSE installations for a single-family residence that can accommodate Level 2 EVSE is usually simple and straightforward. Installations may become more complex if an electrical service upgrade is required. Charging at multifamily developments offer additional considerations and often comes with higher cost estimates.

The cities of Oceanside and San Diego have developed guidance documents to help streamline the electric vehicle charger permitting process.

- City of Oceanside *Residential Electric Vehicle Charger Guidelines* http://www.ci.oceanside.ca.us/civica/filebank/blobdload.asp?BlobID=30053
- City of San Diego *Information Bulletin 187: How to Obtain a Permit for Electrical Vehicle Charging Systems* http://www.sandiego.gov/development-services/pdf/industry/infobulletin/ib187.pdf

Nonresidential Installations
Nonresidential EVSE locations include vehicle fleet facilities, workplaces, retail stores, parking lots, commercial garages, and other government-owned public spaces. The following sections in the EV *Project's San Diego EVSE Guidelines for public and commercial EVSE installations* provide more information about various installations[2]:

- Installation process for commercial fleet operations (p. 27)
- Installation flowchart for public charging (p. 34)

The Clean Cities Coalition *Electric Vehicle Handbook* includes detailed information on all of these topics and more at http://www.afdc.energy.gov/pdfs/51228.pdf.

[1] http://www.bc3sfbay.org/uploads/5/3/3/9/5339154/charging_handbook.pdf
[2] http://www.theevproject.com/downloads/documents/Electric%20Vehicle%20Charging%20Infrastructure%20Deployment%20Guidelines%20for%20the%20Greater%20San%20Diego%20Area%20Ver%203.2.pdf

Plug-in Electric Vehicles

Electric Vehicle Charging Station Installation Guidelines: Residential and Commercial Locations

Streamlining the Permitting and Inspection Process of Residential and Commercial Electric Vehicle Charging Station Installations[1]

Purpose

This guideline has been developed to streamline the permit and installation process of residential and commercial plug-in electric vehicle (PEV) charging stations, also known as Electric Vehicle Supply Equipment (EVSE). This guide can be used by jurisdictions as a template to provide clear information to homeowners and electrical contractors as to residential and commercial EVSE permitting requirements. Jurisdictions within the San Diego region are encouraged to use this document directly or modify it to reflect the specific requirements of their agency.

How can I charge my plug-in electric vehicle at home?

The type of PEV a person chooses to purchase may determine the way they charge their vehicle. A homeowner may plug their vehicle into a conventional 120-volt household outlet (three-pronged outlet) or install a 240-volt circuit for faster charging. PEVs come with a 120-volt charging cord that enables PEV owners to charge their PEV with a conventional 120-volt outlet. This is a very practical solution for owners of plug-in hybrid electric vehicles (PHEV), such as a Toyota Plug-in Prius or Chevrolet Volt.

Commercial Charging

Workplace Charging for Businesses in San Diego[2] offers guidance for the installation of EVSE at non-residential locations. It includes information about how to assess the charging needs and potential of a commercial site and relevant resources.

On the other hand, a person that purchases a battery electric vehicle (BEV) like a Nissan LEAF may choose to charge using a Level 2 charging station. Level 2 charging stations use 240 volts, which takes about half the time to charge compared with 120 volts. Level 2 charging generally requires the installation of a dedicated circuit and a charging station at your home (usually in the garage). In this case, the homeowner will be required to obtain a permit from their local jurisdiction.

The table illustrates the charging time associated with the most popular BEV and PHEV on the market.

Charging Level	Power Supply	Charger Power	Miles/Hour of Charge	Type of PEV	
				Nissan LEAF	Chevrolet Volt
Level 1	120 VAC	1.4 kW (onboard charger)	~3–4 miles	~17 hours	~9 hours
Level 2	240 VAC	3.3 kW (onboard charger)	~8–10 miles	~7 hours	~3 hours
		6.6 kW (onboard charger)	~17–20 miles	~3.5 hours	~1.5 hours

Source: California PEV Collaborative

[1] Adapted from the City of Riverside's *ELECTRIC VEHICLE (EV) CHARGER INSTALLATION GUIDELINES* and the City of Oceanside's *Residential Electric Vehicle Charger Guidelines.*

[2] http://energycenter.org/sites/default/files/docs/nav/programs/pev-planning/san-diego/fact-sheets/Workplace%20Fact%20Sheet.pdf

What do I need to provide to the permitting jurisdiction in order to obtain a permit?

Residential EVSE Permits

The following are submittal requirements to obtain a permit for the installation of a typical residential EVSE.

Supporting Documentation	Description
Plot Plan	Identify the complete layout of existing parking spaces and proposed location of EVSE parking space(s) with respect to existing building and structures.
Electrical Load Calculations	Home electrical load calculation that estimates if an existing electrical service will handle the extra load from a residential EVSE and wiring methods based on the California Electrical Code (See sample load calculation attached).
Electrical Plans	Single line diagrams showing the system, point of connection to the power supply and the EVSE. (See sample electrical plan attached)
EVSE Information	The EVSE manufacturer's installation instructions and charger specifications.

(Note: Jurisdictions may need to modify this list to reflect their specific requirements)

In most cases, homeowners or contractors simply need to submit the documentation outlined above to the local permitting office (usually the building and safety division) for review and permit issuance. PEV owners and contractors are encouraged to check their local jurisdiction's permitting website to see if this process is available online. If not, they will likely need to visit the permitting office for an over-the-counter review and permit issuance.

If all of the information is provided and the proposal complies with the applicable codes, the review and approval process occurs shortly thereafter. It is important to note that load calculations per California Electrical Code, Article 220, are required if the existing service panel is rated less than 200 amps. Electrical panel upgrades and electrical wiring shall be in conformance with the current edition of the California Electrical Code (CEC).

Commercial EVSE Permits

Installation of EVSE at commercial locations can be more complex than residential installations and may require additional permits or submittal documentation. The following are some additional considerations for commercial EVSE installations:

- ✓ Zoning Requirements
- ✓ Community or Design Guidelines
- ✓ Existing Use Permits
- ✓ Electrical Source / Metering
- ✓ Parking and Signage Requirements
- ✓ Permit and Inspection Fees

A simple commercial EVSE installation may have similar permitting requirements as a residential installation with the addition of a Tenant Improvement (TI) Electrical Permit. A more complex commercial installation may require a modification to an existing Use Permit or a Site Plan addressing specific community or zoning design criteria. It is important to meet with staff from the building and, if necessary, planning departments of the permitting jurisdiction to fully understand all of the necessary requirements and fees prior to permit/s are submitted.

Do I need to get my charging station inspected by the permitting jurisdiction?

All jurisdictions in the San Diego region require an inspection of an installed EVSE. When the installation is complete, an inspection of the work is scheduled with the Building Inspector upon request. Generally, inspections occur less than one week after the request. Typically, the home or property owner (or tenant) will need to be present during the inspection so that the Inspector can access the location of the charging station and any other electrical or structural change. Please see the attached *EVSE Inspection Checklist*, which has been designed to serve as a guide for local Building Inspectors and has been endorsed by the National Electrical Contractors Association. A residential checklist being used in the cities of Oceanside and San Diego is also included.

How do I install a charging station?

Residential Installations

Installing a residential EVSE may require changes to the home's electrical wiring and utility electricity rates.

- For a step-by-step installation guideline, please view the attached *Plug-in and Get Ready* document. For more information on PEV charging stations currently available on the market, visit www.GoElectricDrive.com.

Commercial Installations

Commercial EVSE installations are often location and use specific. It is advisable to consult the permitting and/or planning agency before breaking ground.

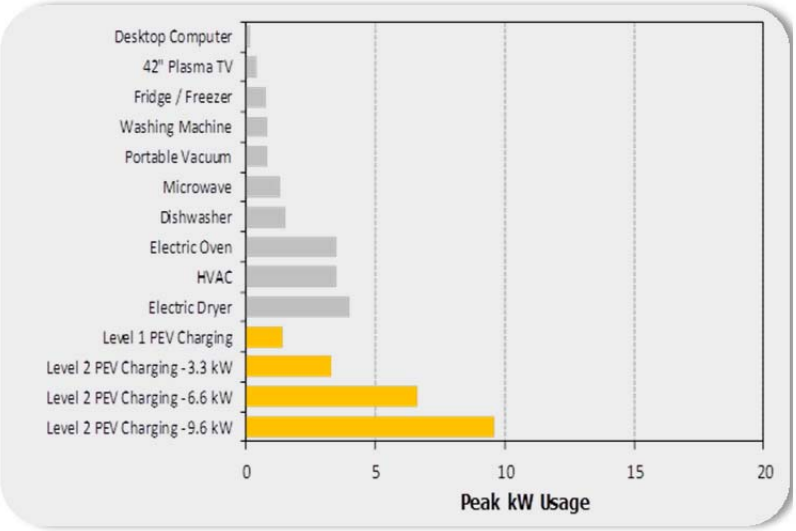
When installing a home or commercial charging station, property owners are encouraged to choose a local electrical contractor with the proper expertise, information, tools and training for installing EVSE to ensure a high quality and efficient installation experience. Please reference the wiring methods based on the California Electrical Code attached.

Why would SDG&E need to know about your charging station?

SDG&E needs to be able to accurately track the number of PEV charging stations installed to properly plan for local increases in electricity demand due to PEV charging. The combined effect of several chargers in the same area could result in overloads on utility secondary wires and transformers. Therefore, utility notification is an important component of providing safe, reliable electricity to all SDG&E customers.

SDG&E can help businesses understand pricing options for employees. They also help businesses identify potential EVSE rebates and incentives.

SDG&E's Clean Transportation Program has created the figure below that displays the significant load difference of a residential EVSE as compared with typical household appliances. According to SDG&E, a PEV charging at 9.6kW may double or triple a household's prior peak load. Additionally, PEV owners who notify SDG&E of a residential EVSE installation will be informed of SDG&E's PEV time-of-use rates (EV TOU). These rates provide a significantly lower cost of electricity for PEV owners that charge during the night, when demand is lower.



Source: San Diego Gas and Electric

Visit SDG&E's website for more information about their Electric Vehicle Programs: http://www.sdge.com/electric-vehicles

SAN DIEGO REGIONAL PLUG-IN ELECTRIC VEHICLE (PEV) READINESS PLAN

APPENDIX C

Contents:

June 6, 2013 File Number 3200800

Ken Alex, Director
Governor's Office of Planning and Research
1400 10th Street
P.O. Box 3044
Sacramento, CA 95812-3044
ZEVfeedback@opr.ca.gov

SUBJECT: San Diego REVI Comments on the *Plug-In Electric Vehicles: Universal Charging Access Guidelines and Best Practices*

Dear Director Alex:

The San Diego Regional Electric Vehicle Infrastructure Working Group (REVI) is pleased to submit these comments regarding Plug-In Electric Vehicles (PEV): Universal Charging Access Guidelines and Best Practices (Guidelines) prepared by the Governor's Office of Planning and Research (OPR) and the Division of the State Architect (DSA). The REVI serves as the San Diego region's PEV Coordinating Council (PEVCC) and is developing a regional PEV readiness plan through California Energy Commission and San Diego Association of Governments (SANDAG) funding. Our member list is included as Attachment 1. The REVI is glad that OPR and DSA are updating the DSA 97-03 interim guidelines, and we appreciate the opportunity to provide comments for your consideration (Attachment 2).

The San Diego region has been at the forefront of PEV deployment and REVI members have experience addressing accessibility for electric vehicle (EV) charging station installations, particularly through the EV Project. In April 2012, the City of San Diego issued *Technical Policy 11B-1 on Accessibility to Electrical Vehicle Charging Stations (CSD-TP11B-1)* to address the uncertainty faced by charging station hosts and suppliers regarding accessibility (Attachment 3). Local jurisdictions have been using CSD-TP11B-1 as a best practice since its release, and it has enabled a significant increase in PEV charger installations.

The primary recommendation in our comments is to add flexibility to the ADVISORY for EVG-250.1 by making it consistent with CSD-TP11B-1 and allowing accessible EV charging stations at existing accessible parking spaces. Some REVI members went as far as suggesting that OPR replace its Guidelines with the City of San Diego's. The Guidelines state that accessible EV charging stations are not to be reserved exclusively for the use of persons with disabilities. The City's CSD-TP11B-1 allows for accessible EV chargers at existing accessible parking spaces with limitations. This flexibility has facilitated EV charging station installations at existing facilities that would otherwise not be able to accommodate an accessible EV charging station due to their mandated parking requirements. We provide more explanation for this, as well as other suggestions, in our attached comments.

Thank you for your consideration in developing these Guidelines. If you have any questions, please contact me at SANDAG, 401 B Street, Suite 800, San Diego, CA 92101; (619) 699-7387; or Susan.Freedman@sandag.org.

Sincerely,

SUSAN FREEDMAN, CHAIR
San Diego Regional Electric Vehicle Infrastructure Working Group (REVI)

Attachments

1. San Diego REVI Member List
2. REVI Comments and Recommendations on Draft Guidelines
3. City of San Diego Technical Policy 11B-1: Accessibility to Electrical Vehicle Charging Stations

SAN DIEGO REGIONAL ELECTRIC VEHICLE INFRASTRUCTURE WORKING GROUP

REPRESENTATION	MEMBER	ALTERNATE
South County Subregion	Brendan Reed City of Chula Vista	Chris Helmer City of Imperial Beach
North County Coastal Subregion	Ramsey Helson City of Del Mar	Mike Grim City of Carlsbad
North County Inland Subregion	Kathy Winn City of Escondido	Vacant
East County Subregion	Kathy Valverde City of Santee	Scott Munzenmaier City of La Mesa
City of San Diego	Jacques Chirazi	Vacant
County of San Diego	Peter Livingston	Susan Freed
San Diego Association of Governments	Susan Freedman, Chair	Allison King
San Diego Regional Airport Authority	Paul Manasjan	Brett Caldwell
Caltans, District 11	Chris Schmidt	Vacant
Unified Port District of San Diego	Michelle White	Jenny Lybeck
San Diego Gas & Electric	Joel Pointon	Randy Shimka
California Center for Sustainable Energy	Mike Ferry, Vice Chair	Colin Santulli
University of California, San Diego	Dave Weil	Jim Ruby
Miramar College, Advanced Transportation Technology and Energy	Greg Newhouse	Vacant
San Diego Electric Vehicle Network	Randy Walsh	Vacant
National Electrical Contractors Association	Karen Prescott	Tim Dudek
International Brotherhood of Electrical Workers Local 569	Micah Mitrosky	Vacant
ADVISORY MEMBERS		
San Diego Air Pollution Control District	Mike Watt	Nick Cormier
Department of Defense	Chris Parry, US Navy	
Metropolitan Transit System	Claire Spielberg	
City of Coronado	Bill Cecil	
City of Encinitas	Diane Langager	
City of National City	Ray Pe	
City of Solana Beach	Dan King	
City of Vista	Lyn Dedmon	
Ecotality	Andy Hoskinson	
Car2go	Mike Cully	
Aerovironment	Charlie Botsford	
Coulomb Technologies	Colleen Quinn	
General Electric	David Wang	

SAN DIEGO REVI COMMENTS AND RECOMMENDATIONS ON OPR'S AND DSA'S
PLUG-IN ELECTRIC VEHICLES: UNIVERSAL CHARGING ACCESS GUIDELINES AND BEST PRACTICES

General Comments:

1. Recommended changes to specific language in the draft guidelines are provided here in BOLD RED. Removal of language is shown in STRIKETHROUGH.
2. The guidelines component and regulations component of the document should use consistent terminology and definitions.
3. Revise all existing parking stall figures to show the preferred location of the electric vehicle charging station and cord. Refer to the figures in City of San Diego's Technical Policy 11B-1: Accessibility to Electric Vehicle Charging Stations for clear examples. (Attached to these comments.)
4. Replace references to the 2013 California Building Code with "current edition of the California Building Code" where applicable.
5. Include definitions for all uses of the term "maximum extent feasible" and "available right-of-way."

Comment 1: Alter ADVISORY EVG-250.1 to offer more flexibility at existing sites.

Explanation

The City of San Diego Technical Policy 11B-1 (CSD-TP11B-1) allows for use of existing ADA spaces for EV charging. In this case, the space remains ADA first and EVSE second. Non PEV users of ADA spaces are encouraged, but not required, to park in other ADA spaces before taking an ADA space that also has access to an EV charger. CSD-TP11B-1 was created to address actual experiences faced by businesses and agencies interested in hosting EVSE at their sites, but were unable due to how the EVSE impacted their parking requirements (counts of stalls, etc.). Prior to this technical policy, the EV Project experienced uncertainty and hosts backing out of the project because the addition of EVSE could not be reconciled with mandatory parking requirements.

OPR is encouraged to allow for flexibility here, to answer challenges in finding locations for accessible EV charging stations. Less ideal options, other than using an existing ADA parking space at existing sites and locations, include:

1. Convert an existing ADA parking space to an accessible EV charging space, and remove signage and coloring for ADA parking. (This is not a likely solution as most parking lots cannot remove an ADA parking space without consequences due to number counts of parking spaces.)
2. Convert a standard parking space into an accessible EV charging space. (This is a challenging solution as many parking lots adhere to the exact number of parking spaces they are required to provide. They do not have an excess number of spaces to enlarge a standard parking space and thus take away a second parking space.)
3. Place an EV charger between an ADA parking space and a standard space to allow access by either a person with disabilities or a vehicle without the ADA placard. (This can be a solution in

some locations (including the parking structure at SANDAG's office building); however, many large stores have the ADA parking spaces clustered together near the front of the building, so an adjacent standard space is not always available.)

Recommended Revision to ADVISORY: EVG-250-1

ADVISORY: EVG-250.1 General. While there is no positive requirement to provide electric vehicle charging stations, when they are provided a portion of them should be accessible. When co-located with parking spaces, electric vehicle charging is considered the primary function of these ~~stations~~ **spaces**, not parking. **For new construction, electric vehicle charging when co-located with parking spaces is considered the primary function of these stations, not parking. Accessible electric vehicle charging stations are not to be reserved exclusively for the use of persons with disabilities. They should not be identified with signage that would mistakenly indicate their use is only for vehicles with placards or license plates for individuals with disabilities. For installations at existing sites and locations, existing ADA spaces can also be used as electric vehicle charging stations if the site or location would fall out of compliance with its required parking counts by reconfiguring parking stall(s) into an accessible electric vehicle charging station. In this case, the space remains ADA first and an electric vehicle charging station second. Users of ADA spaces are encouraged, but not required, to park in other ADA spaces before utilizing an ADA space that provides access to an electric vehicle charging station. The space must continue to be identified with ADA signage.**

Comment 2: We support inclusion of a "programmatic" option in EVG-250.5.2 to address the difficulty in siting on-street electric vehicle charging, and the scope of a programmatic option should be determined at the local level.

Explanation

- The interpretation of "programmatic basis" should be left to the discretion of the public entity because in some cases it could refer to just a few blocks, a neighborhood or an entire city.
- Include a definition for "maximum extent feasible."

Recommended Revision to ADVISORY: EVG-250.5.2

The required total number of electric vehicle charging stations complying with EVG-250.2 and EVG-250.3 may be provided on a combined basis using both on-site locations **owned or controlled by a state or local governmental jurisdiction** and on-street locations within a public right-of-way owned or controlled by a state or local governmental jurisdiction. On-street electric vehicle charging stations within the public right of way shall be integrated with on street parking to the maximum extent feasible. **Maximum extent feasible is defined as _____.**

Comment 3: Provide clarification to EVG-250.6 to denote the purpose as Path of Travel and defining "cost of compliance" and "path of travel" using the definitions provided in 2013 CBC 11B-202.4 (pages 17-19 of OPR draft).

Explanation

The narrative, EXCEPTION, and ADVISORY are difficult to comprehend at times and should be written clearer.

Recommended changes:

1. Revise the opening narrative to read, "**Path of travel provisions for** alterations **at existing facilities** solely for the purpose of installing electric vehicle charging stations shall be limited to the actual scope of work of the project and shall not be required to comply with section 11B-202.4 of the current edition of the California Building Code."

2. Revise the EXCEPTION to read, **"EXCEPTION:** Alterations solely for the purpose of installing EV charging stations at sites where vehicle parking or storage is the sole and primary use of the facility shall comply with the current edition of the California Building Code section 11B-202.4 Path of Travel Requirements in Alterations, Additions and Structural Repairs to the maximum extent feasible. The cost of compliance with 11B-202.4 shall be limited to twenty percent of the **adjusted construction** cost**s** of the work directly associated with the installation of the electric vehicle charging equipment**. For the purposes of this exception, the adjusted construction costs of alterations, structural repairs or additions shall not include the cost of alterations to path of travel elements required to comply with 11B-202.4.**

   Adjusted construction costs are determined on a three-year period. If an area has been altered without providing an accessible path of travel to that area, and subsequent alterations of that area or a different area on the same path of travel are undertaken within three years of the original alteration, the total cost of alterations to the areas on that path of travel during the preceding three-year period shall be considered in determining whether the cost of making that path of travel accessible is disproportionate.

3. Omit the last sentence of ADVISORY EVG-250.6 (page 8): "~~For projects with basic costs above the CBC valuation threshold of $139,964, the cost above which path of travel alterations would become disproportionate has been aligned with the federal requirements of twenty percent (20%).~~" It creates unnecessary confusion regarding projects valued under $139,964.

Comment 4: For EVG-812.3, insert language stating that an access aisle shared between an accessible parking space and an EV charging station that enables use of the EV charger from the accessible space can be counted as an accessible EV charger as long as the EV charger's cord does not impede the accessible path of travel. Include figures to identify where the electric vehicle charging station and its cord should be located in this situation.

Explanation

Placing an EV charger between an ADA parking space and a standard space allows access by either a person with disabilities or a vehicle without the ADA placard. This set-up offers flexibility for utilization of the EV charging station. The City of San Diego Technical Policy 11B-1 allows for this.

THE CITY OF SAN DIEGO

Development Services
Division of Building, Construction & Safety

Technical Policy 11B-1

Subject: Accessibility to Electrical Vehicle Charging Stations
Code Section: N/A
Code Edition: 2010 California Building Code
Issue Date: April 19, 2012

Approved by: Signed copy on file
Afsaneh Ahmadi, Chief Building Official P.E.

The 2010 California Building Code (CBC) requires public accommodations and services to be made accessible to persons with disabilities. The 2010 CBC includes accessibility standards for card readers at gasoline fuel-dispensing facilities but does not include regulations for accessibility at electric vehicle (EV) charging stations. The Division of the State Architect has developed a guideline titled "Interim Disabled Access Guidelines for Electrical Vehicle Charging Stations" and published Policy #97-03 (see copy attached). City of San Diego Technical Policy 11B-1 has been adapted from the State guidelines and State standards for access to card-reader devices at fuel-dispensing equipment to ensure uniform and consistent enforcement by review and inspection staff.

When the CBC requires that parking in existing or new construction be accessible, the required parking is designed to serve the building and shall be used exclusively for parking of appropriately identified vehicles. Accessible EV charging stations provide a service available to disabled and non-disabled persons using electric vehicles and are provided based on an availability basis.

This policy applies to the installation of EV Charging Stations in both new and existing construction.

EV charging stations located in non-public areas and used to charge vehicles managed by fleet services such as rental car agencies, EV car dealerships etc.are not required to be accessible since they do not serve persons with disabilities.

I. Where Required:

1. **New Construction.** When provided in conjunction with new buildings or parking facilities such as surface parking lots or parking garages, the accessible EV charging station(s) must be located in close proximity (DSA recommends within 200 ft) to a major facility, public way or a major path of travel on the site.

   Accessible EV charging stations not provided in conjunction with accessible parking spaces need not be provided immediately adjacent to the major facilities on the site since the primary purpose of the stations is to provide the charging as a service, parking is not intended to be the primary use of the EV charging stations.

   An accessible path of travel is required from the accessible EV charging station to other services provided at the site such as buildings, parking facilities, etc.

2. **Existing sites.** When provided at existing sites, the accessible charging station need not be located in close proximity to other services at the site.

An accessible path of travel connecting the accessible EV charging station to a major facility, public way or major path of travel on the site is required to the extent that the cost of providing such path does not exceed 20% of the cost of the EV equipment and installation of all EV charging stations at the site over a three-year period, when such valuation does not exceed the threshold amount referenced in CBC Section 1134, Exception 1.

In lieu of providing detailed information on the plans to demonstrate compliance with the CBC accessibility requirements for the existing parking and path of travel, the following two notes can be added to the plan(s) to certify that the existing facilities complies with the CBC. The notes shall be as follows.

a. Add and sign the following certification note "I am the designer/owner in responsible charge of this EV charging station project; I have inspected the proposed location for the proposed accessible EV charging station and have determined that the accessible route of travel to the EV charging station shown on the site plan complies as an accessible route of travel as is required by the California Building Code. Signature: _____

   Print Name: _____
   Date: _____."; and

b. "If the Building Inspector determines noncompliance with the above statement he/she shall require complete, detailed plans clearly showing all existing non-complying conditions and the proposed modifications to meet current accessibility provisions for the parking space and accessible route of travel to the EV charging station to the extent required by the California Building Code. The revised plans must be resubmitted to the Structural review section for approval."

Accessible EV charging stations in existing accessible parking spaces: When the CBC requires that parking in existing or new parking facilities be accessible, the required parking is designed to serve the building and shall be used exclusively for parking of appropriately identified vehicles. Accessible EV charging stations provide a service available to disabled and non-disabled persons using electric vehicles and are provided based on an availability basis.

When a new accessible EV charging station is installed in an existing accessible parking space, not less than one additional EV charging station shall be provided.

Not more than one accessible EV charging station shall be located in an existing accessible parking space unless more than one accessible EV charging station is required.

When more than one accessible EV charging station is required and are placed in existing accessible parking spaces, the EV charging stations shall be reasonably distributed throughout the parking lot or parking structure.

When an EV charging station is placed in conjunction with an existing accessible parking space the identification sign required in subsection (d) below shall be omitted.

II. **Specifications for Disabled Accessible EV Charging Stations:**

Vehicular spaces provided for accessible EV charging stations shall allow for persons with disabilities to exit an electric vehicle, to access the charging unit and place the charging cable on the vehicle. While the space designated for the accessible EV charging station is not required to be striped and identified as is required for accessible parking spaces, the space shall be designed to comply with the following requirements.

(a) **Number of Accessible EV Charging Stations Required:** Not less than one EV charging station shall be accessible to persons with disabilities.

When the number of EV charging stations proposed exceeds 25, they shall be provided at a rate of one accessible EV charging station for every 25 stations proposed. Not more than a total of 4 accessible EV charging stations is required on the same site.

(b) **Dimensions for Accessible EV Charging Stations:** The EV charging station shall include a space to place the electric vehicle that is not less than 9 foot wide by 18 feet deep to accommodate the vehicle. The space shall also include a 5 ft wide access aisle that extends the full depth of the vehicular space and located on the passenger side of the vehicle. Alternatively, the access aisle can be located between an accessible parking space and an accessible EV charging station. See figures 1, 2 and 3 for possible configurations.

(c) **Identification for Accessible EV Charging Stations:**

The accessible EV charging station shall be identified.

(i) The accessible EV charging station and its access aisle need not be striped or provided with signage as required for an accessible parking space.

(ii) When an EV charging unit is installed in an existing accessible parking space, the signage at the accessible parking space shall remain in conformance with the requirements of the CBC.

(iii) To identify an accessible EV charging station an informational sign must be posted which reads, “Parking for EV Charging Only; This Space Designed for Disabled Access; Use Last.” When an EV charging station is placed in conjunction with an accessible parking space this sign shall be omitted.

(d) **Disabled Access to Accessible EV Charging Equipment:**

Charging equipment serving accessible EV charging stations shall be accessible.

(i) The charging equipment, and when applicable card readers, must meet all applicable reach range provisions of CBC Section 1118B and Ch 11C for a 30 by 48 inch wheelchair space used for side or front approach.

(ii) A clear path of travel measuring not less than 36 inches in clear width shall be provided to access the charging equipment.

Figure 1

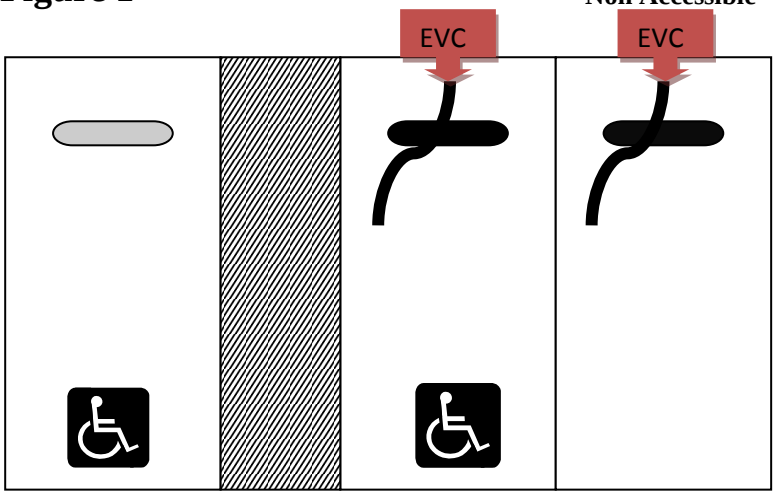


Figure 2

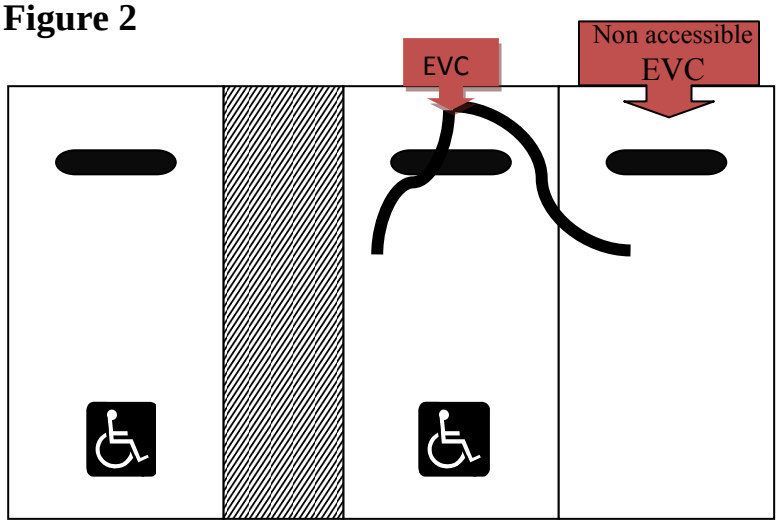
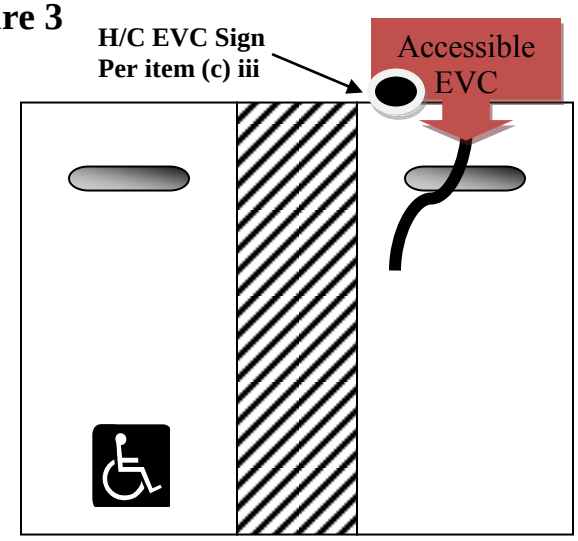


Figure 3



Interim Disabled Access Guidelines for Electrical Vehicle Charging Stations

97-03

Effective 4-30-97
Revised 6-5-97

This policy is applicable to projects under DSA jurisdiction only. DSA's Access Compliance jurisdiction encompasses state-funded buildings, facilities and universities, as well as publicly-funded elementary schools, secondary schools, and community colleges. Local jurisdictions may or may not adopt similar methods of administering current code requirements, determining equivalent facilitation, or defining acceptable parameters as necessary in enforcing the existing California Building Standards Code as allowed under Government Code Section 4451(f)] of the California Code of Regulations.

Issue: In state funded projects with electrical vehicle, charging stations must be accessible. Electric Vehicles are being slowly introduced to the consumer market over the next three years as a result of an agreement between auto makers and the State of California. The zero emission vehicles as well as the equipment to charge them are continuing to develop and change at a rapid pace. Yet to successfully serve new electric vehicle customers, public charging is essential. Public charging sites that are developed now are likely to see significant technology changes before electric vehicles are fully commercialized. Based on a rule adopted by the California Air Resources Board, beginning in 2003, 10% of vehicles sold in California must be zero emission.

Public charging stations will be installed in public places such as shopping centers, parking lots and garages of companies or municipalities. They are provided as a convenient charging location for Electric Vehicle owners while they work or shop. Full charging of an Electric Vehicle takes between two to three hours.

Resolution: Representatives of the Division of State Architect, California Electric Transportation Coalition, Edison EV, The California Building Officials, Department of Rehabilitation and members of the disabled community have held meetings for the purpose of developing interim guidelines to address the issue of disabled access to these charging stations. The following guidelines have been developed and agreed upon by the these organizations:

ARE EV CHARGING STATIONS REQUIRED TO BE ACCESSIBLE?

Yes. EV Charging Stations are required to be accessible because they offer a service to the general public. When EV charging is coupled with regular parking, the EV charging is considered the primary service. (See Item V for further discussions.)

WHAT PERCENTAGE OF THE EV CHARGING STATIONS MUST BE MADE ACCESSIBLE?

The following table shall be used in determining the required number of accessible charging stations:

# of charging stations provided at a site	# of accessible charging stations required
1 to 25	1
50	2
51 to 75	3

WHAT PERCENTAGE OF THE EV CHARGING STATIONS MUST BE MADE ACCESSIBLE?
The following table shall be used in determining the required number of accessible charging stations:

# of charging stations provided at a site	# of accessible charging stations required
76 to 100	4

WHAT SPECIFICATIONS MUST THE ACCESSIBLE EV CHARGING STATION COMPLY WITH?

a. A 9 foot wide space by 18 feet deep space is required. An access aisle of 5 feet on the passenger side is required. One in every eight accessible charging stations, but not less than one, shall be van accessible with a 8 foot access aisle.
b. The accessible EV charging station and its access aisle need not be striped or provided with signage as required for an accessible parking space. An information sign must be posted which reads, "Parking for EV Charging Only; This Space Designed for Disabled Access; Use Last."

MUST ACCESSIBLE EV CHARGING STATIONS BE RESERVED EXCLUSIVELY FOR THE USE OF PERSONS WITH DISABILITIES?

No. The primary function of these stations is the charging of Electric Vehicles. Parking is not intended to be the primary use of the charging station.

ARE THERE ANY RESTRICTIONS RELATIVE TO THE LOCATION OF THE ACCESSIBLE EV CHARGING STATIONS?

For installations associated with new construction, the accessible charging station must be located in close proximity to a major facility, public way or a major path of travel on the site. Note: 200 feet is the maximum distance recommended. However, the charging stations need not be provided immediately adjacent to the major facilities since, again, the primary purpose of the stations is to provide the charging as a service, and parking is not intended to be the primary use of the stations.

For installations at existing sites, the accessible charging station need not be located in close proximity to other services at the site.

IS AN ACCESSIBLE PATH OF TRAVEL REQUIRED FROM THE ACCESSIBLE EV CHARGING STATION TO OTHER SERVICES PROVIDED AT THE SITE?

Yes, for installations associated with new construction. As for other facilities on the site, an accessible path of travel is required between facilities.
For installation at an existing site, an accessible path of travel is required to the extent that the cost of providing such path does not exceed 20% of the cost of the EV equipment and installation of all EV charging stations at the site, when such valuation does not exceed the threshold amount referenced in Exception 1 of Section 1134 of Title 24. The accessible path of travel shall connect to a major facility, public way or major path of travel on the site.

WHAT SPECIFICATIONS MUST THE CHARGING EQUIPMENT MEET?

The charging equipment must meet all applicable reach range provisions of Section 1118B of Title 24. A clear path of travel measuring 36 inches in clear width to the charging equipment is required.

DOES THE INSTALLATION OF CHARGING STATIONS AT AN EXISTING SITE TRIGGER PATH OF TRAVEL IMPROVEMENTS SUCH AS PRIMARY ENTRANCE TO OTHER FACILITIES, RESTROOMS, TELEPHONES, OR DRINKING FOUNTAINS?

No, unless the above features are located in the parking lot, are accessed directly from the parking lot and designed for use with the parking lot.

HOW DOES THE THREE-YEAR VALUATION ACCUMULATION APPLY TO THESE INSTALLATIONS?
The valuation of other improvements at the site over the last three years need not be added to the cost of the installation to determine application of the exception referenced in item VI above. The cost of installation of other EV charging stations at the site over a three-year period must be used in determining compliance with the exception.

Approving Authority:

Michael J. Mankin, AIA
Manager, Access Compliance Program

San Diego County Sample RFP Template

REQUEST FOR PROPOSAL (RFP) TEMPLATE:

Installation and Operation of Electric Vehicle Charging Stations

The following is a Request for Proposal (RFP) template that provides recommended headings and proposal language to assist in the issuance of an RFP for Electric Vehicle Charging Stations. In the outline, a brief summary is provided for each heading and this information can and should be customized for each individual RFP.

Disclosure: *Proposals shall be kept confidential until a contract is awarded. The <insert jurisdiction> reserves the right to request clarification of any proposal term from prospective suppliers. Selected supplier(s) will be notified in writing. Any award is contingent upon the successful negotiation of final contract terms. Negotiations shall be confidential and not subject to disclosure to competing suppliers unless and until an agreement is reached. If contract negotiations cannot be concluded successfully, the <insert jurisdiction> reserves the right to negotiate a contract with another supplier or withdraw the RFP. Any contract resulting from this RFP shall not be effective unless and until approved by the <insert jurisdiction Council>.*

1. Overview of the Project

Requesting proposals from suppliers to fully fund, design, install, operate, maintain, market, and potentially remove electrical vehicle (EV) charging stations, also known as Electric Vehicle Supply Equipment (EVSE), on publically-owned property for public use. This work will also include assisting the jurisdiction in identifying ideal site locations for the EVSE installations.

2. Acronyms/Definitions

A glossary of the necessary acronyms and definitions used throughout the RFP (e.g. “Supplier” – Organization/individual submitting a proposal in response to this RFP)

EVSE – Electric Vehicle Supply Equipment

3. Scope of Project

The Scope of the Project is as follows:

- Provide attractive and well-maintained EVSE.
- Cover all costs associated with installation, maintenance, and electricity for the EVSE. The supplier may establish a service charge and method of payment collection to recoup these costs as well as any operating profit from EVSE users.
- Provide proper EV parking signage and reconfiguration of any parking stalls for EV parking.

- Market the project as well as provide product advertisement.
- Offer options for EVSE when the agreement expires (e.g. charging unit removal, transfer of ownership, contract renewal options).
- The <insert jurisdiction> to provide the required parking spaces to accommodate the EVSE within the parking facilities at no cost to the supplier.

4. Additional Considerations

A. The supplier must agree to insurance and liability requirements (scope and coverages) set by the jurisdiction and state such in its proposal.

<Jurisdiction to insert summary of applicable insurance and liability requirements here and/or can attach full description to end of this template.>

B. <Jurisdiction can add any additional considerations here. For example, if City offers/restricts use of advertisements on or around EVSE.>

5. Submittal Instructions

For questions regarding this RFP, submit all inquiries via email to <insert email address> by <insert due date>. Responses to the questions will be posted <insert where responses will be made available> no later than <insert date>. All proposers are recommended to visit the above mentioned <insert jurisdiction> website on a regular basis as responses will be posted when available.

Proposal Evaluation Process Timeline

TASK:	***DATE/TIME:***
Deadline for submitting questions	<Insert date>
Answers to all questions submitted	<Insert date>
Pre-Submission conference/meeting	<Insert date>
Deadline for submission of proposals	<Insert date>
Evaluation period	<Insert date>
Selection of supplier	<Insert date>

MANDATORY SITE VISITS

Site visits are scheduled as follows for potential EVSE suppliers to gather data and further assess proposed sites. The dates and times identified will be the only opportunity to view the proposed sites. Failure to attend the mandatory site visits will result in automatic disqualification with no further consideration for award.

PROPOSED SITE	DATE OF VISIT	TIME	CONTACT

NOTE: The dates above represent a tentative schedule of events. The <insert jurisdiction> reserves the right to modify these dates at any time, with appropriate notice to prospective suppliers.

Suppliers shall submit one (1) original proposal marked "ORIGINAL" and four (4) identical copies to the following:

<Insert Jurisdiction Name>
<Insert Contact Name>
<Insert Address>

Proposals shall be clearly labeled in a sealed envelope or box as follows:

REQUEST FOR PROPOSAL NO.: <insert proposal number>
FOR: Electric Vehicle Charging Stations

Disclosure: *Proposals must be received by <insert date and time>. Proposals that do not arrive by the specified date and time WILL NOT BE ACCEPTED and will be returned unopened. Suppliers may submit their proposal any time prior to the above stated deadline. E-mail or fax submissions will not be accepted.*

At its sole discretion, the <insert jurisdiction> may reject incomplete proposal submittals if, in its judgment, the submittal lacks information needed to effectively evaluate the proposal. Nothing in this request for qualifications implies a contractual obligation with any firm, nor will the <insert jurisdiction> reimburse costs for submittal preparation.

Proposal Format:

Supplier Information:

- The legal name of the supplier, address and telephone number.
- The structure of the organization (e.g., sole proprietorship, partnership, corporation, etc.) including state of formation.
- The name, address and telephone number of the person to whom correspondence should be directed.
- The year the company was established as currently being operated.
- A certified financial statement, including, but not limited to a Dun and Bradstreet rating.

Supplier Background & Work Experience:

- A list of all communities within the San Diego Gas & Electric (SDG&E) service territory in which the supplier has provided and maintained publicly-available EVSE during the last five years, if applicable. Please list communities with active EVSE and communities where EVSE have been removed. Also include the following information for each community:
    - Name of the organization that contracted with you for EVSE sites. Please include the name of a contact person and phone number.
    - Was the contract/franchise exclusive or nonexclusive?
    - Number of EVSE provided.
    - Time period that the EVSE were installed.
    - Reporting sales & usage (sample reports)

- A list with additional California communities, and/or communities in United States in which the supplier has provided and maintained publicly-available EVSE during the last five years, if applicable. Include all of the information identified in the previous bullet.
- Please list any public agencies that have chosen to cancel or not renew EVSE contracts with your firm during the last five years. Show names of organizations and names and phone numbers of persons who can be contacted.
- Provide qualifications of the local contractors that will perform the EVSE installations. Demonstrate that the supplier is working with C-10 licensed electrical contractors employing California state-certified electricians to handle EVSE installations and maintenance.
    - List any EVSE-specific trainings or certifications that the supplier's electrical contractor and/or the contractor's electricians have completed, if applicable (e.g. The Electric Vehicle Infrastructure Training Program (EVITP) or UL training).
    - Include the number of EVSE installations completed to date by the supplier's electrical contractor and/or the contractor's electricians.
- Demonstrate an understanding of <insert jurisdiction> processes, required permits, permit costs, licenses, applicable state and local codes specific to EVSE and procedures for this type of project.

Scope of Work:

- A written and pictorial description of the proposed EVSE design, including:
    - Comprehensive specifications (including make, manufacturer, & model numbers of equipment).
    - Delivery and proposed installation schedule.
    - The submission of more than one type of charging station is permitted, however, if the selection of any particular design would result in a change to the proposed rate structure and method of collection, those changes must be noted.
- Metering configurations identifying how the supplier will provide the electricity to the EVSE end consumer at no cost to the jurisdiction.
    - Process and schedule for reimbursement to the jurisdiction for cost recovery of electricity provided to EVSE (if applicable).
- Proposed EVSE end consumer rate structure (e.g. charging customers per kWh usage or plug time) and customer method of payment (e.g. credit card reader for universal usage or restricted access for only network users).
- Description of the proposed EVSE maintenance program including the location of maintenance facilities, number of staff that will be available for maintenance, and anticipated response times.
- Description of ability and staff expertise to provide services including marketing, installation, monitoring, and maintenance of EVSE.
    - Quality control/safety features.
    - Marketing plan details and available resources.
- Financial incentives to the <insert jurisdiction> (if applicable).
- Options for EVSE when the agreement expires (e.g. charging unit removal, transfer of ownership, contract renewal options) and responsible party for any costs incurred (if applicable). Highly preferred that the supplier cover any removal costs.

Additional Items:

- The proposal must be signed by the individual(s) legally authorized to bind the supplier.
- If complete responses cannot be provided without referencing supporting documentation, such documentation must be provided with the proposal and specific references made to the tab, page, section and/or paragraph where the supplemental information can be found.

6. Proposal Evaluation & Award Process

Proposals will be evaluated based on the following criteria (please reference attached *RFP Criteria Review Template*):

- Current and past supplier performance in similar contracts with other agencies.
- Financial stability of the proposer as reflected in a certified financial statement or other certified statement, including but not limited to a Dun and Bradstreet financial rating.
- EV customer rate structure and method of customer payment that will be used to charge customers.
- Description of metering configuration.
- Process and schedule to reimburse the jurisdiction in order to recoup cost of electricity used to provide EVSE (if applicable).
- Maximum public benefit (i.e., in terms of affordability and customer support).
- Strength, quality, durability, advanced technology, future flexibility, and aesthetic appeal of proposed EVSE.
- Proposed maintenance, repair and replacement schedule including response times for malfunctioning EVSE (e.g. supplier's proximity to the <insert jurisdiction> and number of proposer's employees performing maintenance functions).
- Possible commitment to providing additional EVSE at other <insert jurisdiction> owned parking facilities (desirable but not required).
- Supplier's specific marketing strategy that includes product advertising.
    - EVSE installation marketing plan.
    - Description of the supplier's available marketing resources.
- Proposed options for EVSE (e.g. system removal, transfer of ownership, contract renewal options)when the agreement expires and potential costs to the jurisdiction.

<u>Suggestion for Jurisdiction</u>: Create a scoring criterion that may include assignment of percentages and/or weighting each criterion listed above.

7. Project Specifications

- Provide installation site plans (if applicable [for reference, please see Exhibit A of the City of Long Beach RFP No. PW12-016]).

8. Subcontractor Information and Business License

Does this proposal include the use of subcontractors?

Yes _____ No _____ Initials _____

If “Yes”, supplier must:

- Identify specific subcontractors and the specific requirements of this RFP for which each proposed subcontractor will perform services.
- The <insert jurisdiction> requires that the awarded supplier provide proof of payment of any subcontractors used for this project. Proposals shall include a plan by which the <insert jurisdiction> will be notified of such payments.
- Primary contractor shall not allow any subcontractor to commence work until all insurance required of subcontractor is obtained.

BUSINESS LICENSE

<Insert Jurisdiction> requires all businesses operating in the <insert jurisdiction> to pay a business license tax. In some cases the <insert jurisdiction> may require a regulatory permit and/or evidence of a State or Federal license. Prior to issuing a business license, certain business types will require the business license application and/or business location to be reviewed by the Development Services, Fire, Health, and/or Police Departments.

9. Cost

- N/A

10. Terms, Conditions and Exceptions

<***Insert*** project specific terms, conditions and exceptions>
To view an example, please reference section 9 of the City of Long Beach RFP No. PW12-016.

<***Insert*** individual public liability and insurance requirements for your agency>

Plug-in Electric Vehicle Benefits

Incentives available

Fun driving experience

Low fuel and maintenance costs

Minimal environmental impacts

Reduced dependence on oil

Different sizes and ranges to meet your needs

Learn more about the advantages of driving electric:

sdcleancities.org/ev

SAN DIEGO REGIONAL CLEAN CITIES COALITION

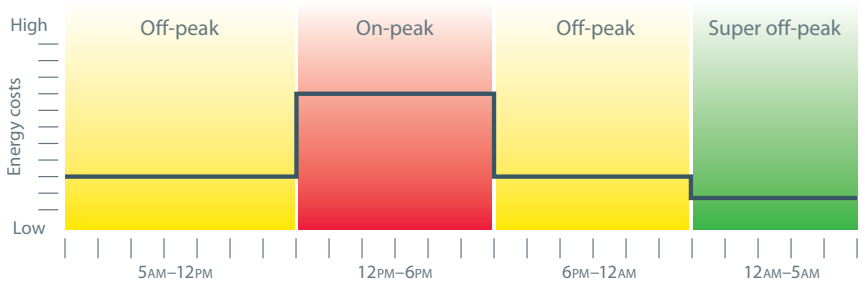
PLUG-IN.

SAVE MONEY. DRIVE ELECTRIC.

It matters *when* you charge your electric car.

San Diego Gas & Electric's electric vehicle (EV) rates will help you pay the lowest price for your EV fuel, when charging from midnight to 5 a.m.

Sign up for an EV time-of-use rate and program your car to charge when electric rates are at their lowest – during the **"off-peak"** and **"super off-peak"** hours.



Connect with SDG&E® first when purchasing an EV, by visiting:
sdge.com/ev

SDGE connected
A Sempra Energy utility℠

SDG&E supports the adoption of EVs while ensuring safe and reliable service.

PLUG-IN.
SAVE MONEY. DRIVE ELECTRIC.

California EV drivers qualify for *major incentives!*

Clean Vehicle Rebate Project

State cash rebates of up to $2,500! Qualifying is easy . . .

- Purchase or lease a new eligible plug-in electric vehicle and register it in California
- Minimum 36 month lease term or ownership required
- Available to California residents, businesses and public entities

Funding based on availability and is first-come, first-served.

Federal Tax Credit

Get money at tax time!

Federal tax credits range from **$2,500** to **$7,500** based on battery capacity.

DMV Clean Air Vehicle Sticker

EV drivers can use the carpool lane as a single occupant.

Learn more by visiting:
energycenter.org/ev

Center for Sustainable Energy® CALIFORNIA

California Environmental Protection Agency
Air Resources Board

PLUG-IN.
SAVE MONEY. DRIVE ELECTRIC.

Planning for *EV charging* across San Diego

The San Diego Association of Governments (SANDAG) is the 18 cities and county government and serves as a forum for regional decision-making and the region's planning and transportation agency. **sandag.org/energy**

SANDAG is helping to facilitate EV charging and to resolve barriers to EV charger installations through the San Diego Regional EV Infrastructure (REVI) Working Group:

Diverse Membership

- Local governments and public agencies
- Public utility and private businesses
- Not-for-profits and educational partners

Learn more: **energycenter.org/pluginready**

A number of resources on EV charging are available, including

- Department of Energy – Alternative Fueling Station Locator: **afdc.energy.gov/locator/stations**
- National Renewable Energy Laboratory, Vehicles & Fuels Research – EV vehicle and charging information: **nrel.gov/vehiclesandfuels**
- California PEV Collaborative – A resource for statewide activities, tools, resources and information: **pevcollaborative.org**

SANDAG

PLUG-IN. SAVE MONEY. DRIVE ELECTRIC.

Center for Sustainable Energy® CALIFORNIA

Your Guide to Plug-In and Get Ready*

There are many different ways to charge your PEV. You can charge at public charging stations near your work or home, use the existing electrical outlets in your home (Level 1), or install a Level 2 charging station in your home.

Use this guide to help you decide if installing a Level 2 charging station in your home is the right choice for you and learn about the steps needed for Residential Electric Vehicle Supply Equipment (EVSE) installations. At this time, this guide is intended for use by single-famiy residences only. If you rent your home, be sure to discuss any home modifications with the property owner first and visit SDGE's website for more information.

Level 1 (120 volt) — PEVs come with a 120-volt charging cord that enables PEV owners to charge their PEV with any conventional 120-volt three-pronged outlet. While it takes longer to charge, Level 1 (L1) allows PEV drivers to plug in without the installation of a dedicated charging station.

Level 2 (208 to 240 volt) — This level of charging requires a charging station, also known as electric vehicle service equipment (EVSE), be purchased and installed and generally involves the installation of a dedicated circuit at either the PEV owner's home or where a public charging station is installed. Currently, Level 2 (L2) EVSE makes up the majority of public charging stations across California.

To learn more visit www.energycenter.org/pluginready

*Adapted from *Take Charge I: A First Step to PEV Readiness in the Sacramento Region*, a report from SACOG and the Capital Area PEV Coordinating Council on preparing the region for Plug-In Electric Vehicles

** When the electrician arrives, be sure and ask to see a copy of their state certification.

Electric Vehicle Charging for Regional Park-and-Ride Lots and Transit Stations

[NOTE: Any agency or company's sustainability goal(s) could be placed here. This is SANDAG's.]

The 2050 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), adopted by SANDAG in October 2011, included the following actions to be implemented:

> "Support planning and infrastructure development for alternative fueling stations and plug-in electric vehicle (EV) chargers."
>
> "Integrate alternative fuel considerations into the development of the regional transportation network by, for example, integrating infrastructure for electric vehicle charging into regional park-and-ride lots and transit stations."

To achieve this, it is recommended that any time a park-and-ride or transit station parking lot/structure is newly constructed or undergoing renovation, that SANDAG/ Caltrans/ MTS/ NCTD:

1. **At a minimum, pre-wire parking facilities for EV charger capabilities during construction,**
2. **Seek opportunities to install plug-in electric vehicle chargers at these sites, and**
3. **Investigate additional sustainability options like high efficiency lighting, solar photovoltaic (PV) shading structures, and water-efficient irrigation systems.**

EV readiness can be achieved for the very low cost of pre-installed conduit, and properly sized electric panels. This can be very cheap for new construction or for anytime a parking lot is repaved, sidewalks moved or replaced, or structures renovated.

The following tables provide general "rules of thumb" pertaining to plug-in EV chargers (technically referred to as electric vehicle supply equipment or EVSE). Charging equipment is now available from a variety of vendors. Again, *the most optimal time to install charging at the lowest possible cost is during parking lot resurfacing or new construction*. Here are some resources for finding charging equipment:

- Plug-in America http://www.pluginamerica.org/
- Go Electric Drive http://goelectricdrive.com/

Charging Equipment (EVSE)	Typical user profile	Equipment cost[1] (avg. per unit)	Install cost[2] (avg. per unit)
Level 1	Parked for 6-8 hours	$300-$700	<$1,000
Level 2	Parked for 2-4 hours	$1,000- $2,500	$3,000-5,000
DC Fast Charge (DCQ)	Quick stop for 5-30 minutes	$25,000-$35,000	$14,000-20,000

1. Equipment costs will be more for 2-4 ports and combination units.
2. Installation cost is for minimal trenching needs and no service upgrades. Costs increase for sites requiring trenching and/or electrical panel upgrades.

over

Charging Basics

There are three basic levels to charge plug-in electric vehicles. The vehicles from every manufacturer are equipped with standardized connectors. How long it takes to charge at each level depends on how far a car is driven and the size of the battery on board. Charging speed is governed by the size of the on-board charger and power lever of the charging equipment.

Charging Equipment (EVSE)	Power Supply	Charging Power	Miles of Range for 1 Hour of Charge
Level 1	120 VAC (volts AC) Single Phase	1.4 kW at 12 amp (on-board charger)	3-4
Level 2	240 VAC Single Phase Up to 19.2 kW (up to 80 amps)	3.3 kW (on-board) 6.6 kW (on-board)	8-10 17-20
DC Fast Charge (DCQ)	200-450 volts DC Up to 90 kW (~200 amps)	45 kW (off-board)	50-60

For Assistance

[Note: This section was written with SANDAG project managers in mind.]

For site specific installation information and power availability, contact Randy Schimka, San Diego Gas & Electric (SDG&E), RSchimka@semprautilities.com, (858) 248-3515. SANDAG's Energy Team can provide additional assistance related to other site considerations, standards, and RFP/RFQ language for EV chargers. Contact Susan Freedman, susan.freedman@sandag.org, (619) 699-7387.

CALGreen

The CALGreen code sections relevant to electric vehicle charging infrastructure installation and referenced below can be found in the California Building Standards Commission 2012 Supplement:[12]

EVSE Codes for Residential Buildings

The voluntary code calls for at least three percent of the total parking spaces, but not less than one, in low-rise multi-family dwellings be prepared to support electric vehicle charging infrastructure in the future. This entails installing any underground conduit that would be needed for future installations. Single/dual-family homes are suggested to install a raceway to accommodate a dedicated branch circuit.

A4.106.6.1 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.

A4.106.6.2 Multifamily dwellings.
At least 3 percent of the total parking spaces, but not less than one, shall be capable of supporting future electric vehicle supply equipment (EVSE).

A4.106.6.2.1 Single charging space required.
When only a single charging space is required, install a listed raceway capable of accommodating 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.

A4.106.6.2.2 Multiple charging spaces required.
When multiple charging spaces are required, plans shall include the location(s) and type of the EVSE, raceway method(s), wiring schematics and electrical calculations to verify that the electrical system has sufficient capacity to simultaneously charge all the electrical vehicles at all designated EV charging spaces at their full rated amperage. Plan design shall be based upon Level 2 EVSE at its maximum operating ampacity. Only underground raceways and related underground equipment are required to be installed at the time of construction.

EVSE Codes for Non-Residential Buildings

For non-residential development, it is mandatory to provide designated parking for low-emitting, fuel-efficient, and carpool/vanpool vehicles, including electric vehicles (A5.106.5.1). Voluntary standards identify designated parking spaces for 10 percent of parking spaces (Tier 1) or 12 percent (Tier 2).

A5.106.5.3 Electric Vehicle Charging.

Provide facilities meeting Section 406.7 (Electric Vehicle) of the California Building Code and as follows:

A5.106.5.3.1 Electric vehicle supply wiring.

For each space required in Table A5.106.5.3.1, provide panel capacity and dedicated conduit for one 208/240V 40 amp circuit terminating within 5 feet of the midline of each parking space.

Table A5.106.5.3.1

Total number of parking spaces	Number of required spaces
1-50	1
51-200	2
201 and over	4

Assembly Bill 1092[13], if adopted, would mandate PEV-ready standards for multi-family residential and non-residential new buildings to take effect in January 2017. The bill would also adopt CALGreen electric vehicle voluntary codes as as mandatory state standards.

Building Code Resources

Many local jurisdictions in California have established mandatory building codes requiring conduit and wiring for EVSE to be installed during in the construction phase of a project. These policies enable communities to become more PEV-ready by removing the high construction costs from home and business owners. No jurisdiction in the San Diego region has yet to adopt building codes that require pre-wiring for EVSE. The following are examples from two southern California cities that have:

City of Los Angeles

Mandatory Green Building Code Standards for Newly Constructed Residential and Non-Residential EVSE:

Low-rise residential building: *Electric Vehicle Supply Wiring 99.04.106.6.*

1) For one-or two- family dwellings and townhouses, provide a minimum of:
    a. One 208/240 V 40 amp, grounded AC outlet, for each dwelling unit; or
    b. Panel capacity and conduit for future installation of a 208/240 V 40 amp, grounded AC outlet, for each dwelling unit
2) Residential occupancies where there is a common parking area, provide:
    a. Provide a minimum number of 208/240 V 40 amp, grounded AC outlet(s), that is equal to 5% of the total number of parking spaces. The outlet(s) shall be located in the parking area; or
    b. Panel capacity and conduit for future installation of electrical outlets. The panel capacity and conduit size shall be designed to accommodate the future installation, and allow the simultaneous charging, or a minimum number of 208/240 V 40 amp, grounded AC

outlets, that is equal to 5% of the total number of parking spaces. The conduit shall terminate within the parking area; or

c. Additional service capacity, space for future meters, and conduit for future installation of electrical outlets. The service capacity and conduit size shall be designed to accommodate the future installation, and allow the simultaneous charging, or a minimum number of 208/240 V 40 amp, grounded AC outlets, that is equal to 5% of the total number of parking spaces. The conduit shall terminate within the parking area

Non-residential and high-rise residential building: *Electric Vehicle Supply Wiring 99.05.106.5.2*

1) Provide a minimum number of 208/240 V 40 amp, grounded AC outlet(s), that is equal to 5% of the total number of parking spaces. The outlet(s) shall be located in the parking area

City of Temecula

Circuits for electric vehicle charging stations shall meet all the requirements of California Electrical Code Article 62540. Residential garages shall have a minimum three quarter (3/4) inch metal flex conduit ran from meter box to the garage fire wall and terminated in a metal box at forty-two (42) inches above finished floor for future electric vehicle charging station.[14]

Towing Alternative Fuel Vehicles Presentation

Presented By: Greg Newhouse
Advanced Transportation Technology & Energy Program – San Diego Miramar College
gnewhous@sdccd.edu

Alternative Fuel Vehicles Provide a Key Value in relation to:

Public Health and Environment

- Lower greenhouse gas (GHG) emissions
- Lower particulate pollution
- Lower carcinogens

Energy Security

- Alternative Fuels Plentiful in U.S.
- Existing infrastructure

In Regards to Roadside Assistance- Safety is the Key Issue

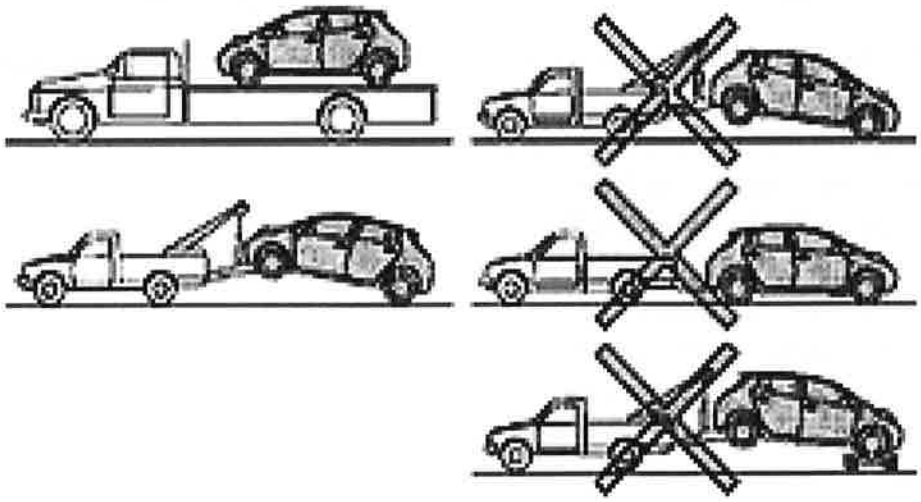
For Electric, Hybrid and Plug-in Hybrid

- Do not touch the orange wires
- Do not assume even if the vehicle has not been operated that the battery is fully discharged. High voltage capacitors can hold the electrical charge for up to 10 minutes after a vehicle shut down.
- Consider all orange coded cables to be energized until proven otherwise.

For Natural Gas

- Check whether or not there is a smell of natural gas – if there is, do not tow.

Towing – flatbed is the most recommended approach



RESOURCES – there are still many individual differences in all the alternative fuel vehicles – here are some resources:

- Honda Emergency Response Guide for CNG Civic

  https://techinfo.honda.com/rjanisis/pubs/web/Y0661.pdf

- General Motors Emergency Response Guide for Volt

  http://boronextrication.com/files/2010/11/2011-Chevrolet-Volt-Emergency-Response-Guide_ERG.pdf

- Toyota Prius Emergency Response Guide – Hybrid 2012

  http://boronextrication.com/files/2010/11/2012_Toyota_Prius_V_Hybrid_Emergency_Response_Guide.pdf

- Honda EV Fit Emergency Response Guide
- http://evsafetytraining.org/~/media/Electric%20Vehicle/Files/PDFs/Fit%20EV%20Response%20Guide.pdf
- Ford Focus Electric – Emergency Response
- http://boronextrication.com/files/2010/11/2012_Focus_Electric_Emergency_Response_Guide.pdf
- Nissan LEAF Emergency Response Guide
- http://boronextrication.com/2011/01/nissan-leaf-emergency-response-guide-erg/
- Ford Wrecker Towing Manual

  http://www.motorcraftservice.com/vdirs/quickref/2012_WreckerTowing_Manual.pdf

FireFighter Nation 2007

http://my.firefighternation.com/profiles/blogs/889755:BlogPost:24782?q=profiles/blogs/889755:BlogPost:24782

- **Alternative Fuel Emergency Response Guides:** Download Hybrid Response Guide - Chevrolet Malibu
  Download Hybrid Response Guide - Ford Escape
  Download Hybrid Response Guide - Honda - All Models
  Download Hybrid Response Guide - Lexus 450h
  Download Hybrid Response Guide - Lexus RX400h
  Download Hybrid Response Guide - Nissan Altima
  Download Hybrid Response Guide - Saturn Aura
  Download CNG Response Guide - Toyota Camry - CNG
  Download Hybrid Response Guide - Toyota Camry
  Download Hybrid Response Guide - Toyota Fuel Cell Hybrid Combo
  Download Hybrid Response Guide - Toyota Highlander
  Download Hybrid Response Guide - Toyota Prius - Generation 1
  Download Hybrid Response Guide - Toyota Prius - Generation 2
  Download Hybrid Response Guide - Toyota Rav4

Electric Vehicle Infrastructure Training Program (EVITP) Summary

On January 29, 2013, at SDG&E's Energy Innovation Center, there was a great turn-out for the Electric Vehicle Infrastructure Training Program (EVITP) seminar. Participants from electrical contractors, planners to inspectors and government officials all came by to learn more about Electric Vehicle (EV) infrastructure and upcoming public charging station projects in the San Diego region.

The following presentations were given during the course of the seminar:

- Introduction to EV Infrastructure Training and Instructors (Bernie Kotlier, EVITP)
- EV Codes and Standards (Rubio Rubio, EVITP)
- Site Assessments, Load Calculations, and Safety (Rubio, Rubio)
- EV Permitting (Bernie Kotlier and Tyler Petersen, CCSE)
- Introduction to Utility Notification (Bernie Kotlier)
- San Diego Gas & Electric Utility Presentation (Joel Pointon, SDG&E)
- "PEV-Ready" Policy Recommendations (Tyler Petersen)
- City of San Diego (Martin Montessoro, Development Services Department)
- City of Chula Vista (Andrew McGuire, Sustainable Communities Outreach Program)
- NRG Energy, eVgo San Diego Project (Jill Brandt)
- Charge Point America, MultiCharge San Diego project (Michael Jones)
- ECOtality (Andy Hoskinson)
- The California Fleets and Workplace Alternative Fuels Project, San Diego (Kevin Wood, CCSE/San Diego Regional Clean Cities)

Attendees were given presentations that ranged from EV codes and standards, and information about on-site assessments to load calculations and safety guidelines for the installation of charging stations. Attendees learned about how and where electricians can be trained to properly install Electric Vehicle Supply Equipment (EVSE), the best practices of EVSE permitting and inspection, how cities can best accommodate EVs in their new policy, and what new EV projects are taking root in the San Diego region.

eVgo presenter, Jill Brandt, stated that San Diego will be the first region in California to see eVgo's "Freedom Stations", which will include a DC Fast Charger and level 2 charging options. ChargePoint America presenter, Michael Jones, provided audience members with an overview of the Multi-Charge San Diego project, which will install approximately 200 level 2 EVSE charging stations at multi-family locations within the County of San Diego. The project will also create a Load Research Monitoring pilot program that will provide data on load management and demands on transformers to aid utilities in developing capital infrastructure plans.

Additionally, during lunch time, attendees got a chance to look at EVs on display, such as the all-electric Toyota RAV-4 and the Ford C-MAX plug-in hybrid, and browse samples of charging equipment as well.

Lessons Learned

With the wide variety of presentations given from experts across the industry, the following are significant outcomes and lessons learned that attendees walked away with:

- The EVITP representatives highlighted the importance of having properly trained electricians to install EVSE's.
- With the assistance of Bernie Kotlier, Tyler Petersen of CCSE identified the need to streamline the permit and inspection process of residential EVSEs.
- Joel Pointon of SDG&E identified the importance of utility notification of an EVSE installation.
- Martin Montessoro and Andrew McGuire provided a municipality perspective and highlighted the internal benefit of adopting EVSE permitting and inspection best practices.

- Representatives from ECOtality, eVgo and ChargePoint displayed their businesses and identified their next steps towards the installation of EVSE's across San Diego County through projects such as the Multi-Charge San Diego project, The EV Project and "Freedom Station" installations.
- With the framework already in place in Houston Texas, eVgo highlighted the potential for a large amount of multi-unit dwelling installations across San Diego County.

Electric Vehicle Infrastructure Training Program (EVITP) Presentations

Introduction to EV Infrastructure Training and Instructors *EV Codes and Standards/Site Assessments, Load Calculations, and Safety Guidelines*	
Description	The EVITP program is a structured platform for delivering training and certification for the installation of (EVSEs) in and around Residential, Commercial & Public Facilities. EVITP is a non-profit, volunteer, EV industry, collaborative training program that addresses the technical requirements, safety imperatives, and performance integrity of industry partners and stakeholders. The EVITP provides training on EV codes and standards, will teach electricians how to properly complete a site assessment and load calculation while highlighting safety as a top priority.
Key Items	The detailed EVITP program provides assurance that trained electricians will have the knowledge and skill to properly install an EVSE. Although all EVSE installations must be completed by a California State Licensed electrician, it currently is not a requirement that the electrician be EVITP certified. With the amount of detail and the associated skills needed to complete an EVSE installation, it is highly encouraged that all electricians working in the electric vehicle industry receive this training.
Next Steps	If you are interested in locating an EVITP certified electrician, please contact Bernie Kotlier directly to receive a list of contractors who employ these electricians. • Bernie Kotlier, EVITP • lmccenergy@gmail.com

Permitting for Electric Vehicle Supply Equipment (EVSE) Installations*	
Description	The typical cost of a residential EVSE installation ranges from $300 to $1,900 in California, according to Mr. Kotlier. Associated permit fees typically contribute to 5% - 20% of the total cost of the installation. According to national data from SPX, permit fees have ranged from $0 to $625, with the average permit fee in California among the highest in the nation.
Key Items	Because of the high and unpredictable cost of permits, it is imperative that the industry work to standardize processes in an attempt to provide consistency throughout all the different regions. According to the Plug-In Electric Vehicle Collaborative, a "Best Practice" permitting process for EVSEs would include the following elements: 1. A Unique Permit Application 2. Online (if available) or Over-the-Counter Permit Process 3. Template Based Forms 4. A Unique EVSE Permit Fee 5. Avoid Electrician Required Attendance at Inspection 6. Develop Outreach and Training Plans
Next Steps	For more information, please go to www.energycenter.org/pluginready for more information jurisdiction issuance time and permit cost for EVSE installations in the San Diego region.

**EVSE is also referred to as electric vehicle supply stations*

Introduction to Utility Notification/San Diego Gas & Electric Utility Presentation	
Description	While using electricity as a source to fuel electric vehicles, it is important that the utility be notified when an EVSE is being installed in their territory. As the infrastructure for EV's continues to grow, the demand on the grid will grow as well.
Key Items	It is important that customers are aware of the different EV rates that are provided by the utility. San Diego Gas & Electric customers who have an EV can sign up for an Electric Vehicle Time-of-Use (EV-TOU) rate and receive lower rates for charging their vehicle during off-peak hours, between midnight at 5 A.M. EV-TOU rates are offered to encourage customers to limit daytime usage of electricity, when demand for electricity is highest. By opening up the communication lines between customers who install an EVSE and the utility, customers have a greater opportunity for learning about all the available electricity rates for EV owners.
Next Steps	Download a copy of the For more information, please go to www.energycenter.org/pluginready

San Diego PEV Readiness Assessment & City PEV Projects Updates

"PEV-Ready" Policy Recommendations	
Description	The San Diego Regional PEV Readiness Assessment was recently released. This assessment evaluates the regional state of PEV readiness focusing on five core issues: 1. Zoning & Parking 2. Streamline Permitting and Inspection 3. Building Codes 4. Training and Education 5. Outreach to Local Businesses and Residents
Key Items	Based on the research conducted, the following recommendations have been proposed: • Implement consistent general service and regulatory signage for PEVs • Expand safety training for emergency first responders • Adopt/update prewiring for EVSE in residential and nonresidential new construction • Develop a PEV resources page on regional municipal websites
Next Steps	The complete assessment can be found at the following site: www.energycenter.org/pluginready

City of San Diego, Development Services Department	
Description	Martin Montessoro from the City of San Diego's Development Services Department presented to the group the city's Technical Policy 11B-1 along with a guide on "How to Obtain a Permit for Electric Vehicle Charging Systems". The City of San Diego is one of the first in the San Diego region to issue such policies.

Key Items	Technical Policy 11B-1, "Accessibility to Electrical Vehicle Charging Stations" was issued on April 19, 2012. The City of San Diego's policy applies to the installation of EV Charging Stations in both new and existing construction and is currently available for review. The policy also includes information on accessibility standards. The "How to Obtain a Permit for Electric Vehicle Charging Systems" is an informational bulletin that describes the permitting and inspection process for the installation of an Electrical Vehicle Charging system (EVCS) on an existing site or building.
Next Steps	The Technical Policy 11B-1 can be found at the following site: https://www.sandiego.gov/development-services/pdf/industry/tpolicy11b1.pdf The "How to Obtain a Permit for Electric Vehicle Charging Systems" can be found at the following site: http://www.sandiego.gov/development-services/pdf/industry/infobulletin/ib187.pdf

City of Chula Vista	
Description	In September of 2012, the City of Chula Vista submitted an informal request for quotes for a turn-key electric vehicle charging stations. The informal request for quotes were seeking service-oriented vendors to fully fund, install, operate, maintain, and market electric vehicle (EV) charging stations at municipal parking lots for public use.
Key Items	After reviewing the submittal proposals, the City of Chula Vista awarded ECOtality with this project with whom they are currently working with to install EVSEs at the 24 potential sites.

San Diego Regional Electric Vehicle Infrastructure Projects

NRG Energy, eVgo San Diego Project	
Description	eVgo, a subsidiary of NRG Energy, has committed to build hundreds of eVgo Freedom Station sites and the infrastructure for thousands of individual eVgo Level 2 charging stations throughout the state. These installations will take place at offices, multi-family communities and more throughout major metropolitan cities California. Each eVgo's Freedom Station site have installed – one L2 station, one DC fast charging station and one "pre-install" for a second DC fast charger.
Key Items	eVgo is just getting started in the California market so in order to install these chargers throughout the state, eVgo will need to make connections with local municipal staff and become educated on the permitting processes and build the necessary network in order to identify potential installation sites.
Next Steps	In order to expedite these installations, it is important for eVgo to connect with municipal staff to learn the permitting process for their respective jurisdiction and streamline the DC fast charger installations. At events such as this, eVgo was able to make these connections.

Charge Point America, MultiCharge San Diego Project	
Description	Charge Point America received a California Energy Commission EVSE Infrastructure Grant for $499,512 plus matching commitments. The program will begin in Q2 of 2013 through community outreach and request for applications. These installations are expected to begin in Q3 2013 and complete in Q2 2014.
Key Items	For this project, Charge Point is expecting to install approximately 200 L2 EVSE charging stations at multi-dwelling unit (MDU) locations within the County of San Diego. Additionally, with this funding, a Load Research Monitoring pilot program is being created in order to provide data on load management and demands on transformers to aid utilities in developing capital infrastructure plans.
Next Steps	Charge Point America highlighted the importance of collaborating with the City of San Diego, SDG&E and The San Diego Association of Governments in order to streamline the permitting process for installing EVSE infrastructure at MDU locations.

ECOtality, MultiCharge San Diego Project	
Description	Managing the largest deployment of electric vehicles and charging infrastructure in history, ECOtality provided a summary and update on The EV Project. In August 2009, ECOtality was awarded a $99.8 million dollar grant from the U.S. Department of Energy which launched in October of 2009. As of today, more than 300 Blink stations have been installed in San Diego through The EV Project subsidies.
Key Items	The EV Project has given the industry a great jump start to the installation of EVSEs; however, it has also exposed barriers in the San Diego market that will need to be continually addressed in order to expand the PEV market.
Next Steps	The EV Project is in the process of completing the installations for its subsidy program in the San Diego region. The next steps will study the utilization of the charging stations in its network. These studies will likely be published as white papers on the EV Project website by Q4 2013.

The California Fleets and Workplace Alternative Fuels Project, San Diego	
Description	The California Fleets and Workplace Alternative Fuels Project are multiple efforts aimed at eliminating the barriers to deployment of alternative fuel vehicles. Best practices, training initiatives and market development and outreach are just a few steps that are being taken to reach the program goals.
Key Items	In order to reduce barriers, best practice toolkits are being created for the permitting of Natural Gas stations, hydrogen stations and fleet deployment of alternative fuel infrastructure. Additionally, it is imperative that training needs around alternative fuel and advanced technology vehicles be assessed and the appropriate trainings be coordinated.
Next Steps	At the first part of this year, the project is really focusing on training needs and assessments. Moving into the summer months, the focus will shift onto best practices development. In the Fall of this year, the program focus will transition to trainings and best practice workshops.

Plug-in Electric Vehicles

San Diego Regional Non-Residential Charging Infrastructure Study

As the market for plug-in electric vehicles (PEVs) develops, it will be critical that existing and potential charging infrastructure site hosts, industry stakeholders, and policy makers better understand the value of hosting a public or workplace charging station. The California Center for Sustainable Energy (CCSE) has produced a draft report that provides insight into the value proposition for companies and institutions in the San Diego region that install charging infrastructure, known as electric vehicle supply equipment (EVSE).[1]

Study Scope and Design

CCSE's study of non-residential charging infrastructure hosts was designed to answer three key questions:

- What is the cost of hosting Level 2 charging equipment?
- Are PEV drivers willing to pay sufficient fees to cover these costs?
- What is the significance of non-revenue benefits to charging infrastructure hosts?

Methods of Data Collection

To answer the above questions, CCSE leveraged several methods of data collection:

- A survey was administered to San Diego workplaces and public locations hosting Level 2 EVSE to analyze their motivations and costs incurred (43 locations contacted, 22 responded)
- Discounted cash flow modeling to analyze project economics[2]
- San Diego PEV owners were surveyed to gather data on their willingness to pay for non-residential Level 2 charging (4,270 drivers contacted, 1,040 responded)

San Diego PEV Drivers' Willingness to Pay for Charging

The table below displays regional PEV owners' reported willingness to pay (WTP) for daily charging and occasional PEV charging based on two billing methods: $ per one hour and dollars per kilowatt hour (kWh).

	WTP for Daily Charging	WTP for Occasional Charging
Median ($/hour)	$0.50	$1.00
Median ($/kWh)	$0.15	$0.30

For daily charging, survey respondents reported a median WTP of about $0.15 per kWh, which is about a $0.02 per kWh markup over the average California residential rates of $0.13 per kWh. For occasional charging, survey

[1] CCSE's Research and Analysis team presented the draft report *Providing a Place to Plug In: The Value Proposition of Hosting Level 2 Non-Residential Electric Vehicle Supply Equipment and Drivers' Willingness to Pay for PEV Charging* at the March 19, 2013 REVI meeting. A copy of the presentation can be found at: http://energycenter.org/programs/pev-planning/san-diego

[2] The discounted cash flow model developed for this study estimates cash flows to the EVSE host – that is, a private company, public agency, or other institution – who purchases the EVSE equipment, pays for the equipment installation, operates the equipment, covers electricity costs associated with the EVSE, and covers the cost of billing users.

respondents reported an average willingness to pay of about $0.30 per kWh, which is about a $0.17 per kWh markup over the typical California residential rates.

Utilization and Cost Recovery Assumptions

How much a host would have to charge to recover installation and operation costs largely depends on how often their EVSE are used. The study used the following assumptions to estimate the breakeven user fees needed for both a workplace and public utilization setting.[3]

- Public Level 2 setting assumes four charge events per day for 1.5 hours per charge event, or a 25 percent utilization rate
- Workplace Level 2 setting assumes three charge events per day for two hours a day, or a 17 percent utilization rate
- Hosts received no subsidies or tax credits for the EVSE

Non-Financial Benefits of Hosting Charging Infrastructure

The study examines the motivations of San Diego companies and public institutions that invest in EVSE, and what non-revenue benefits they experience by hosting charging infrastructure.

- The primary reasons companies invested in EVSE were to enhance part of an established sustainability plan and to provide a service to their customers/clients
- 90 percent of the hosts interviewed believe that the EVSE investment had a positive impact on the company or institution's brand
- Almost 60 percent reported that hosting EVSE increased visitation to their business

Key Conclusions

- Breakeven user fees are very sensitive to utilization rates of charging infrastructure
- PEV owners' WTP of $0.30/kWh for "occasional charging" is in line with the breakeven user fees for hosts that invest in a lower cost EVSE[4]
- PEV owners' WTP of $0.15/kWh for "daily charging" is not high enough to recoup EVSE costs
- Non-revenue benefits are important to early adopters of EVSE
- Hosts may be willing to subsidize charging costs to enjoy the non-revenue benefits of hosting EVSE

Resources

California Center for Sustainable Energy. (2012). California Plug in Electric Vehicle Owner Survey. Retrieved from https://energycenter.org/programs/clean-vehicle-rebate-project/vehicle-owner-survey/july-2012-survey

California Energy Commission. (2012). California Electricity Statistics. Retrieved Dec 19, 2012, from Statewide Electricity Rates by Utility, Class and other data: http://energyalmanac.ca.gov/electricity/index.html

U.S. Department of Energy Office of Energy Efficiency and Renewable Energy. (2012). *Plug-In Electric Vehicle Handbook for Public Charging Stations Hosts* available at http://www.afdc.energy.gov/pdfs/51227.pdf

[3] The discounted cash flow model was used to estimate the breakeven user fee.

[4] A lower cost EVSE assume total equipment and installation costs at $2,000, billing costs at $0.40 per transaction and 3% user fee. A higher cost EVSE assume total equipment and installation costs at $10,000, billing costs at $0.50 per transaction and 7.5% user fee.

SAN DIEGO REGIONAL PLUG-IN ELECTRIC VEHICLE (PEV) READINESS PLAN

APPENDIX D

Contents:

Resources

1. "Alternative Fuel Infrastructure Tax Credit," Alternative Fuels Data Center, http://www.afdc.energy.gov/laws/law/US/10513.

2. Krumm, John. *How People Use Their Vehicles: Statistics from the 2009 National Household Travel Survey.* SAE International (2012).

3. Snyder, Jason et al. *Financial Viability of Non-Residential Electric Vehicle Charging Stations.* UCLA Luskin Center for Innovation: 2012.

4. SANDAG. *Activity Centers in the San Diego Region:* August 2007. http://www.sandag.org/uploads/publicationid/publicationid_1318_7233.pdf

5. San Diego Regional Economic Development Center. *Welcome to San Diego: A Regional Overview*. http://www.sdtechcareers.org/PDF/Welcome%20to%20SD%20a%20regional%20overview.pdf

6. California Center for Sustainable Energy. *California Plug-in Electric Vehicle Owners Survey* (2012). http://energycenter.org/sites/default/files/docs/nav/transportation/cvrp/survey-results/California_PEV_Owner_Survey_Report_0.pdf.

7. Southern California Edison. *Charged Up: Southern California Edison's Key Learnings about Electric Vehicles, Customers, and Grid Reliability* (2013).

8. Kotkin, Joel. "The Best Cities for Tech Jobs," *Forbes.* 17 May 2012. http://www.forbes.com/sites/joelkotkin/2012/05/17/the-best-cities-for-tech-jobs.

9. SANDAG. *Traded Industry Clusters in the San Diego Region:* December 2012. http://www.sandag.org/uploads/publicationid/publicationid_1715_15318.pdf

10. State of California Employment Development Department. http://www.edd.ca.gov.

11. San Diego Regional Economic Development Council. http://www.sdchamber.org.

12. "2010 California Electrical Code", California Building Standards Commission. http://rrdocs.nfpa.org/rrserver/browser?title=/NFPACA/CaliforniaElectricalCode2010.

13. AB. 1092, Assembly Committee on Transportation, April 15, 2013. http://www.leginfo.ca.gov/pub/13-14/bill/asm/ab_1051-1100/ab_1092_cfa_20130412_131630_asm_comm.html.

14. "15.04.040 California Electrical Code." City of Temecula. http://www.qcode.us/codes/temecula.

15. William, Brett et al. *Early Plug-in Electric Vehicle Sales: Trends, Forecasts, and Determinants.* UCLA Luskin Center for Innovation: 2012.

16. Zhang, Li, Tim Brown, & Scott Samulesen. *Evaluation of charging infrastructure requirements and operating costs for plug-in electric vehicles*. Journal of Power Sources 240 (2013) 515-524.

Glossary of Terms and Abbreviations

Glossary of Terms, Abbreviations, and Acronyms Abbreviation or Acronym	Description
A	Amperes or amps. The International System of Units base unit of electric current.
AB	Assembly Bill
AC	Alternating current. It is the flow of electric charge which periodically changes directions.
ADA	Americans with Disabilities Act of 1990, which prohibits discrimination based on disability.
ARRA	American Recovery and Reinvestment Act of 2009, an economic stimulus package as an effort to create and save U.S. jobs.
ATTE	Advanced Transportation Technology and Energy
BEV	Battery electric vehicle. A vehicle that derives power from battery packs and produces zero tailpipe emissions or pollution while operating. A BEV is a type of plug-in electric vehicle (see "Plug-in Electric Vehicle, PEV").
CalETC	California Electric Transportation Coalition
CALGreen	California Green Building standards
CAP	Climate Action Plan
CARB	California Air Resources Board
CCR, Title 24	California Code of Regulations, Title 24. Commonly known as the California Building Standards Code.
CEC	California Energy Commission
CCSE	California Center for Sustainable Energy
CFR	Code of Federal Regulations
Charger	A device that is designed to charge batteries or other energy storage options within electric vehicles. Chargers vary in electrical force (i.e. voltage, see "charging levels") and charge through conductive or inductive means.
Charging level	Standardized indicators of electrical force, or voltage, at which an electric vehicle's battery is recharged and referred to as Level 1 (120 VAC), Level 2 (240 VAC), and Level 3 (or DC/AC Fast Charging).

Circuit breaker	A device that protects and electrical circuit from damage caused by overloaded electrical current by automatically interrupting the current flow.
CNCDA	California New Car Dealers Association
CNG	Compressed natural gas
CPUC	California Public Utilities Commission
CVRP	California Air Resource Board's Clean Vehicle Rebate Project
DC	Direct current. Electric current that moves in one direction from anode to cathode.
DMV	Department of Motor Vehicles
DOE	U.S. Department of Energy
EAA	Electric Auto Association
EPRI	Electric Power Research Institute
EVITP	Electric Vehicle Infrastructure Training Program
EVP	The EV Project, managed by ECOtality
EVSE	Electric vehicle supply equipment. This includes all components required for the installation and use of an electric vehicle charging station, such as: conductors, plugs, power outlets, wiring, ground connectors, etc.
EVSP	Electric vehicle service providers
FHWA	U.S. Department of Transportation Federal Highway Administration
GHG	Greenhouse gas. Any of the gases (e.g., carbon dioxide, methane, ozone, and fluorocarbons) emitted that contribute to the greenhouse effect by absorbing solar radiation once in the atmosphere.
HEV	Hybrid electric vehicle. A motor vehicle that is powered by both an electric propulsion system with a conventional internal combustion propulsion system and meets the applicable federal motor vehicle safety standards and state registration requirements. A hybrid electric vehicle does not plug into an off-board electrical source.
HOA	Homeowners Association

HVIP	California Air Resource Board's Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project
HOV	High occupancy vehicle
ICC	International Code Council
ICE	Internal combustion engine: An engine which combusts petroleum-based fuel as a means of delivering power.
IOU	Investor owned utility
J1772	Industry-wide standard EV connector for Level 2 charging.
kW	Kilowatt: A unit of power equal to 1,000 watts.
kWh	Kilowatt hour: A unit of energy commonly used for measuring the energy capacity of a battery. This is the normal quantity used for metering and billing electricity customers.
LADWP	Los Angeles Department of Water and Power
LCFS	Low Carbon Fuel Standard
LEV	Low emission vehicle
Li-ion	Lithium ion: The type of chemical used in a majority of modern electric vehicle batteries. Lithium-ion batteries are lighter in weight and have higher energy density than previous types of batteries designed.
MAP-21	Moving Ahead for Progress in the 21st Century Act
MBUAPCD	Monterey Bay Unified Air Pollution Control District
MDU	Multi-family dwelling units
MOU	Municipally-owned utility
MTC	Metropolitan Transportation Commission
MUTCD	Manual on Uniform Traffic Control Devices
NEC	National Electrical Code
NREL	National Renewable Energy Laboratory
OEM	Original equipment manufacturer

PEV	Plug-in electric vehicle: Any motor vehicle for on-road use that is capable of operating solely on the power of a rechargeable battery or battery pack (or other storage device that receives electricity from an external source, such as a charger) and meets the applicable federal motor vehicle safety standards and California State registration requirements. PEVs include, but are not limited to: all-electric vehicles (e.g., BEVs), plug-in hybrid electric vehicles, neighborhood electric vehicles, and electric motorcycles.
PEVC	California Plug-in Electric Vehicle Collaborative
PHEV	Plug-in hybrid electric vehicle: A type of plug-in electric vehicle (see "Plug-in Electric Vehicle") that is powered by an internal combustion engine, as well as an electric motor, and is capable of being powered solely by electricity. PHEV batteries are primarily charged by connecting to the grid or another off-board electrical source but may also be able to sustain battery charge using an on-board internal-combustion-driven generator.
Plan	Plug-in Electric Vehicle (PEV) Readiness Plan
Pre-wiring	The practice of providing sufficient basic infrastructure, such as conduits, junction boxes, outlets serving garages and parking spaces, adequate wall or lot space for future EVSE, and adequate electrical panel and circuitry capacity, to meet anticipated future demand for EVSE.
the Region	San Diego Region
REVI	San Diego's Regional Electric Vehicle Infrastructure working group.
SAE	Formerly Society of Automotive Engineers: SAE International is developing standards to create consistency in the design of electric vehicles and their associated charging equipment.
SANDAG	The San Diego Association of Governments
SCS	Sustainable communities strategy
SDG&E	San Diego Gas and Electric
TAZ	Transportation analysis zone
TOU	Time-of-use: An electricity billing method with rates based upon the time of usage during the day.
UL	Underwriters' Laboratory

V	Volt. The electrical potential difference or pressure across a one ohm resistance carrying a current of one ampere.
VMT	Vehicle miles traveled
W	Watt. A unit of power, defined as one joule per second, which measures the rate of energy transfer.
ZEV	Zero emission vehicle. A vehicle that emits no tailpipe pollutants from the onboard source of power.