



SCAG EV Study Toolbox Tuesday

Dec 13, 2022

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Toolbox
Tuesday

WWW.SCAG.CA.GOV

Housekeeping

- Meeting length: 1.5 hour
- This meeting is being recorded
- All participant lines will be muted
- If you have a question during the presentation, please type it into the chat box or press the "raise hand" function
- We will have opportunities for question and answer
- A recording of this webinar and the PowerPoint slides will be available on the SCAG website. We will send a link to everyone who has registered after the event

Agenda

- Welcome
- Clean Tech Program Overview
- Study goals and purpose
- Deliverables and methods
- **Tools for cities**
 - **Permitting Strategies**
 - **Site Location**
 - **Funding**
 - **Communications**
- Lessons learned and next steps
- Discussion/Question and Answer



CLEAN TECHNOLOGY PROGRAM

Clean Technology Vision

- Connect SoCal 2020 included the *Accelerated Electrification Key Connection*, creating a holistic and coordinated approach to decarbonizing or electrifying passenger, transit and goods movement vehicles and a *vision* for a zero-emission transportation system or using cleaner mobility options where zero emission options are not feasible.



INNOVATING FOR A BETTER TOMORROW

SCAG is the nation's largest metropolitan planning organization, representing six counties, 191 cities and more than 19 million residents. SCAG undertakes a variety of planning and policy initiatives to encourage a more sustainable Southern California.

SCAG Clean Technology Program

- Our work includes:
 - Ongoing research, evaluation and plan development
 - Providing Support to Regional Stakeholders
 - Letters of Support
 - Training and Tools
 - Partnerships
 - Advocacy and Policy Work
 - Clean Cities Coalition

Ongoing Research, Evaluation and Planning

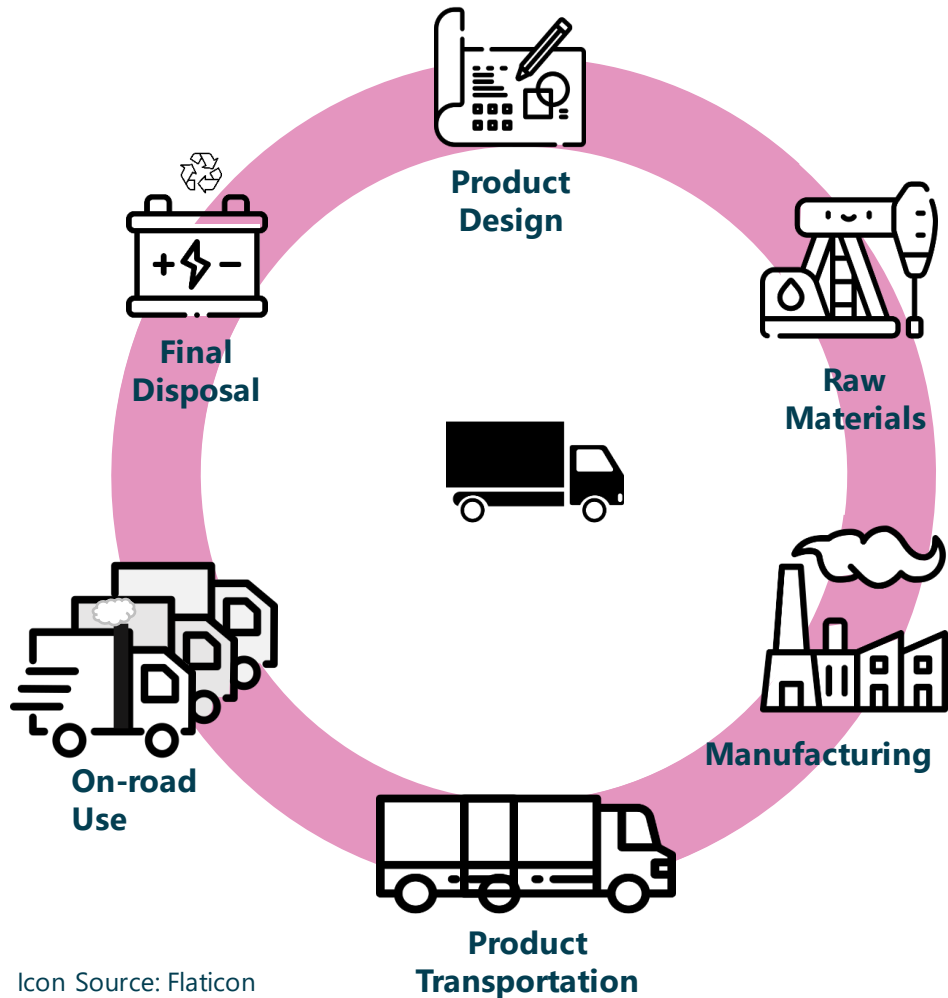
Light Duty and Transit:

- Transit Agency Grant Administration
- EV Charging Site Suitability Study (EVCSS) Part of Sustainable Communities Program
- AI-Powered Automated Traffic Monitoring Sensor and Analytics Demonstration Project (with UCI) using EV fleet
- Measuring VMT Reduction from LADOT EV Car Share program.

Rail and Goods Movement:

- Medium and Heavy Duty Zero Emissions Roadmap
- RHETTA pilot partnership with EPRI/CEC
- Last Mile Freight Program Evaluation
- Regional Rail Electrification Analysis

Life Cycle Approach to Clean Technology



Icon Source: Flaticon

- SCAG legislative platform, approved by the Regional Council on February 3, 2022, includes a principle that supports taking a life cycle approach
- Consider emissions and environmental impacts in production and disposal of the vehicle as well as in use
- ***Solving one problem should not create new environmental and social impacts.***

Next Steps: Upcoming RTP/SCS Development (2024)

- Setting a vision for ZE Tech in the Region
 - Focus on publicly accessible stations
 - Regional Road Map for MD/HD Vehicles
- Demonstrate ability to meet and exceed state targets
- Create Technology Compendium
- Continued Outreach
 - *What other innovations, benefits or potential consequences need to be addressed as we roll out this technology?*
 - *What best practices can be shared across the region?*
 - *Where is support needed the most?*



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PEV Site Suitability Study; Goals and Objectives

- Help jurisdictions in the SCAG region promote electric vehicle charging stations (EVCS) to accelerate transportation electrification
- Develop tools and methods for cities
- Focus on increasing EV infrastructure in traditionally hard to serve sectors – disadvantaged communities (DACs) and multi-unit dwellings (MUDs)
- Includes policy evaluation and guidance (AB 1236), listening sessions, community events, site selection tool, and site planning.





EVCS STUDY

Existing Conditions Passenger Electric Vehicles (PEV)

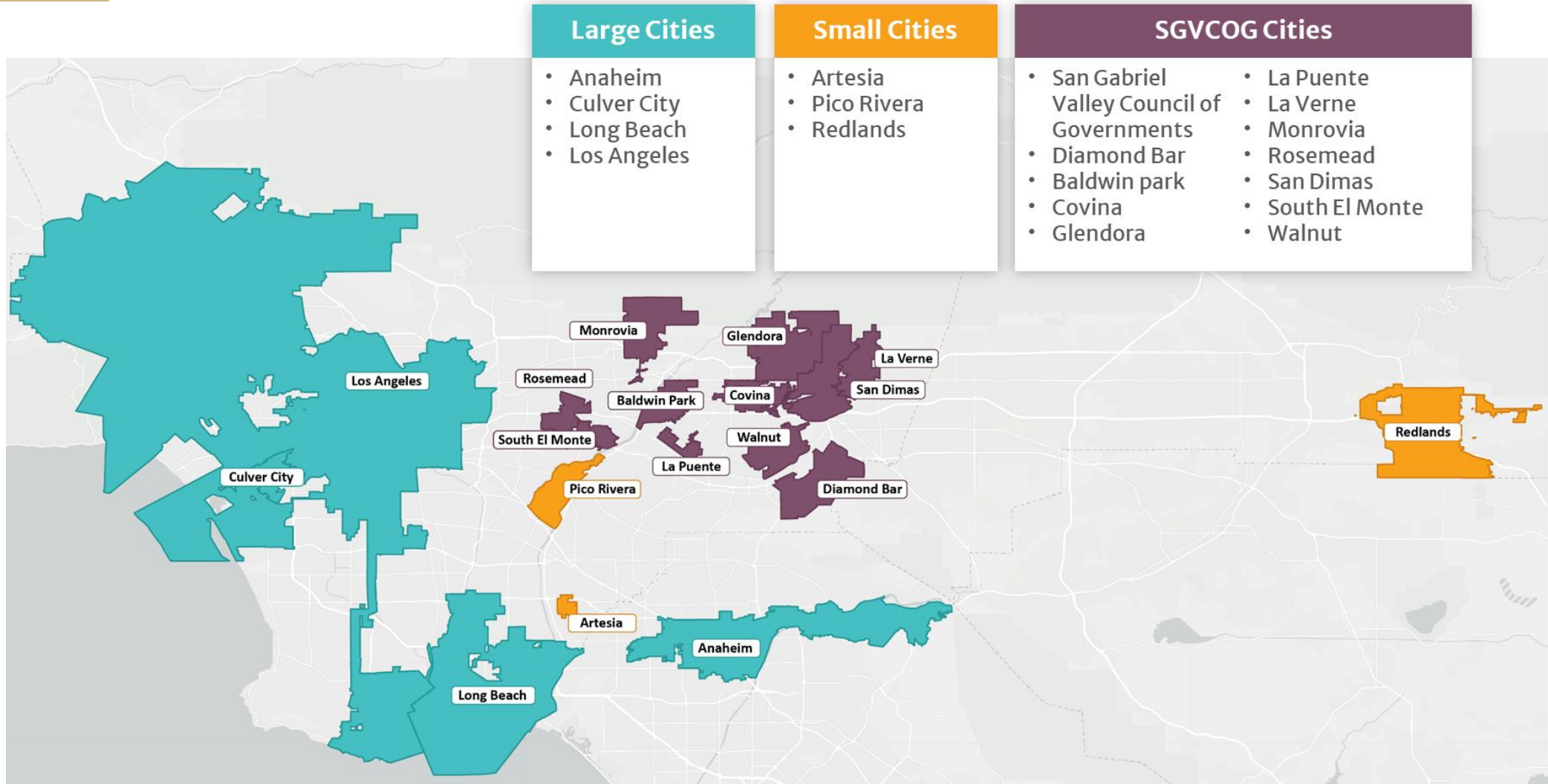
Targets and Status

- CARB Advanced Clean Cars (August 2022) requires 100% of new passenger car sales to be zero emission by 2035
 - Formalizes Newsom's EO-N-79-20
- 8 Million ZEV expected on road by 2030.
- Need 1.2 Million charging stations.
- As of Feb 2022,
 - 1,054,095 ZEV sold in CA
 - 71,236 Level 2 charging stations
 - 7,158 Level 3 Fast Charging stations
 - 12.2% of all new cars sold*

Remaining Challenges

- Standardization and interoperability across a variety of products and vendors
- Consumer education needed
- Consumer interest in more makes/models
- Range anxiety
- Need to make vehicles and infrastructure available to all (Equity)
- Availability of critical materials
- Grid Capacity concerns and Resilience opportunities

Participating Jurisdictions



Key Objectives and Project Outcomes



Outcomes for SCAG

- Suitability analysis GIS results and layers for PEV Atlas
- Real time feedback from cities on their challenges and successes on EV adoption throughout project
- Multiple reports, guides and memos that can guide future efforts



Outcomes for Cities

- EV policy guidance and implementation best practices guides
- Site evaluations and sample layouts for top sites
- Understanding of local challenges and how to overcome them



Outcomes for Public

- Community events that engage residents about EVs
- Understanding local barriers
- EV brochures highlighting benefits of EV ownership
- Guide for property managers on benefits of adding EVCS on-site

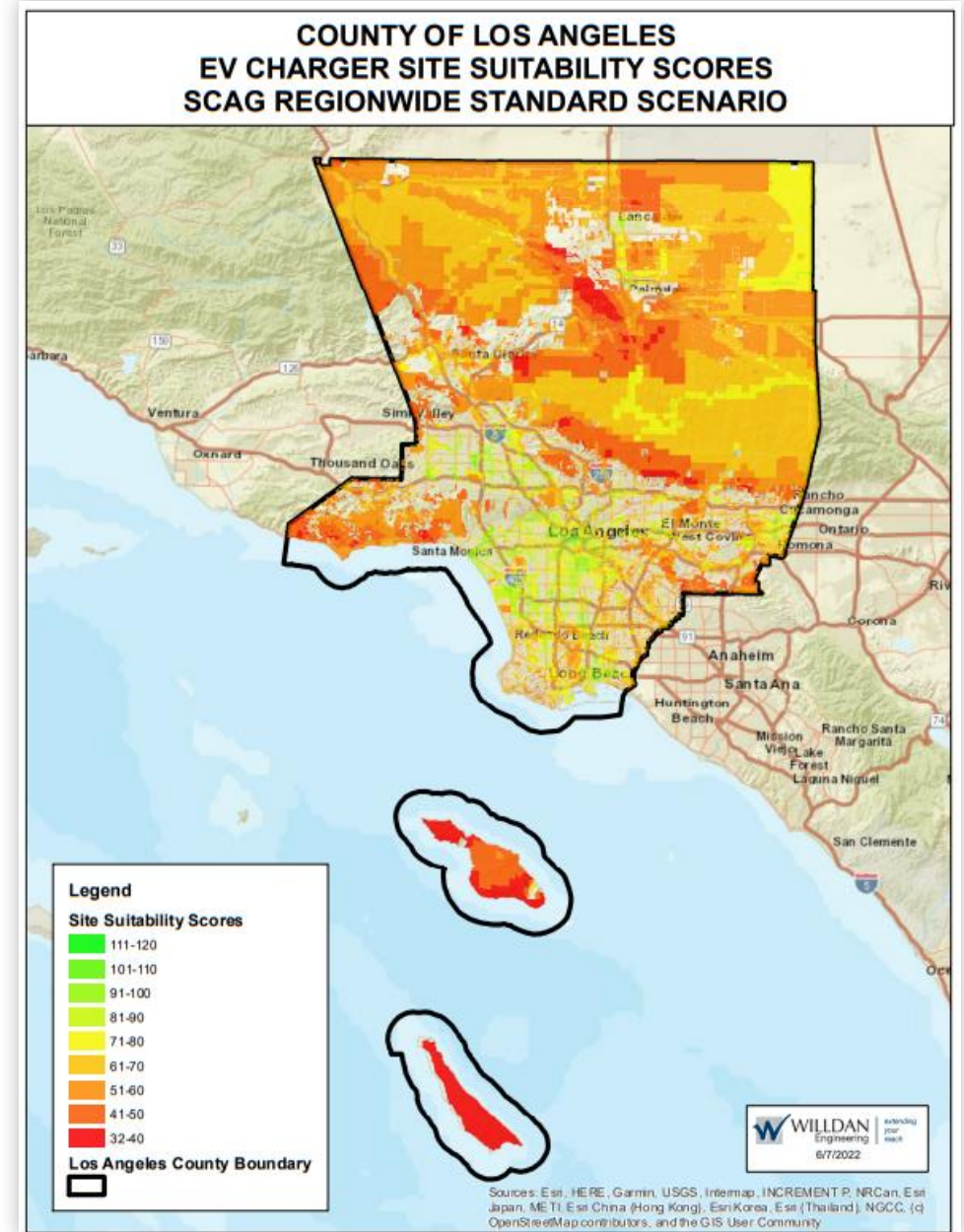
Tools generated from the study

- Updated PEV Atlas with Suitability Results
- Site plan template
- Fact Sheets and Brochures
- EV Guides for cities early in their EV journey
- Policy Analysis and streamlined permitting best practices
- List of funding resources (updated with NEVI; IRA)
- Regional EV Plan that guides participating cities



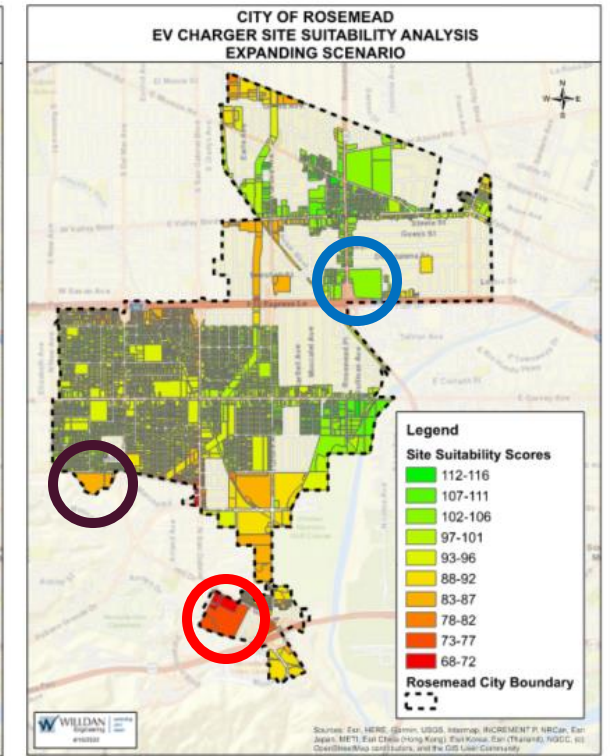
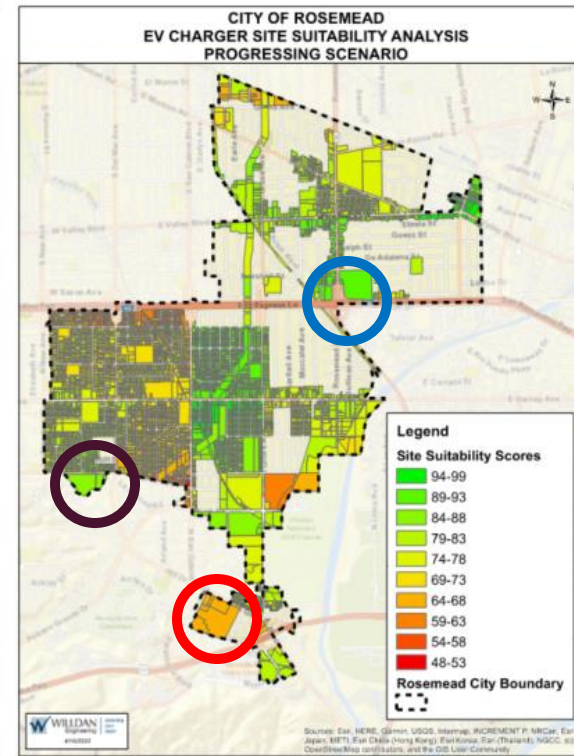
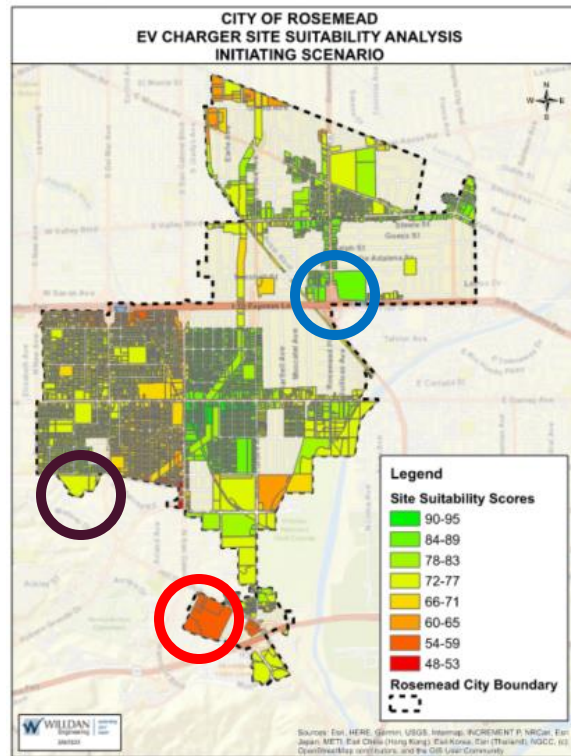
Suitability Analysis Tool for Cities

- 4 total scenarios to reflect different stages of EV adoption
- Integrated with SCAG PEV Atlas
 - Cities can use scenarios based on where they are today and tomorrow
- Allows Cities, Developers, and Planners to identify priority areas for EVCS
 - Can target outreach to private sector
 - Identify locations for curbside charging



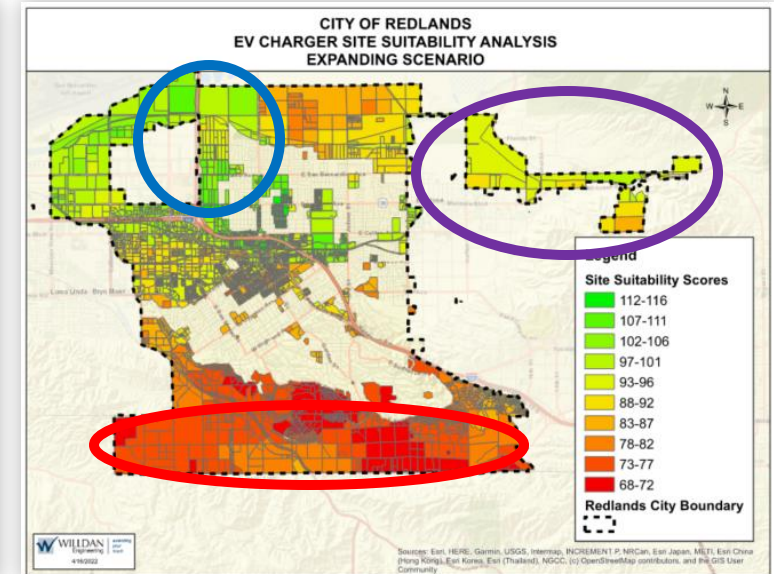
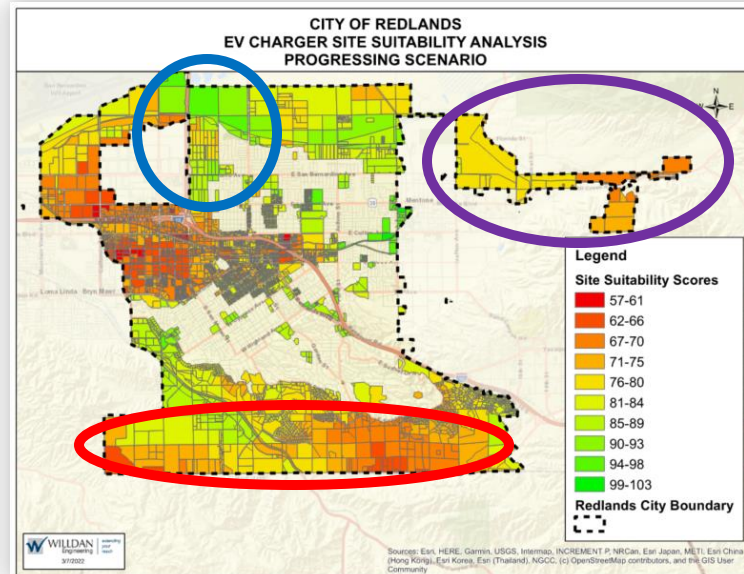
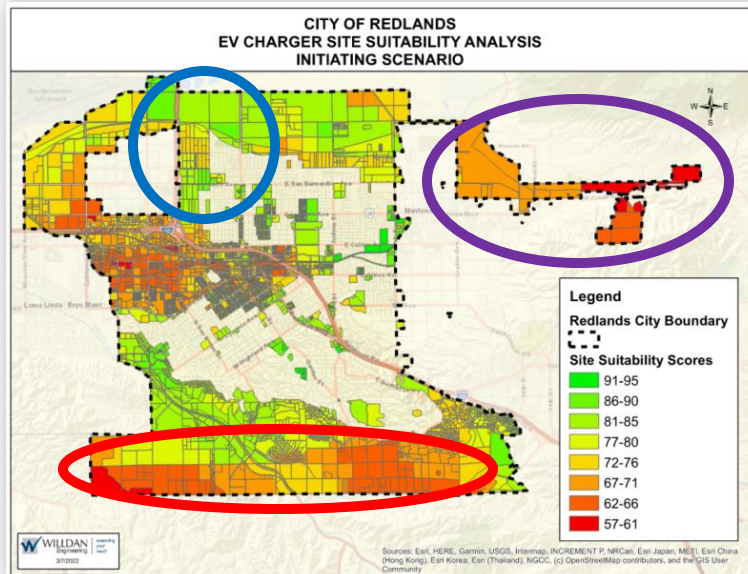
Scenarios help with long term planning

- Multiple scenarios can help target near, mid, and long terms areas
- High scoring areas in all scenarios – high priority
- Low scoring areas in all scenarios – low priority
- Areas that move between high and low scoring between scenarios – informs phasing



Scenarios help with long term planning

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- Areas that move between high and low scoring between scenarios – informs phasing



Site Evaluation Process Tool for Cities

- 100 sites identified from suitability analysis and City feedback
 - 5-10 per City
- Conceptual plans recommend power level, quantity, and location of EVCS
 - Standard design principles to guide future projects
- Construction cost estimates
- Blank layout template to be available on SCAG website

SCAG EV CHARGER SITE ASSESSMENT - CITY OF _____
SITE NAME - ADDRESS

SHEET: 1 OF 2

PROJECT SUMMARY

SITE TYPE / OWNERSHIP	_____ / _____
RECOMMENDED SCOPE	(_) LEVEL _ CHARGE PORTS
ESTIMATED PROJECT COST	\$ _____
AMMENITIES	_____

DETAILED LAYOUT WITH LEGEND CALL-OUTS

AREA MAP WITH PROJECT SITE IDENTIFIED

LEGEND

- STANDARD EV CHARGING STALL, 9' TYP
- VAN ACCESSIBLE EV CHARGING STALL, 12'X18' TYP
- STANDARD ACCESSIBLE EV CHARGING STALL, 12'X18' TYP
- ACCESS AISLE, 5' WIDE TYP
- EXISTING ACCESS AISLE
- CONCRETE EQUIPMENT PAD, METERED ELECTRICAL SERVICE SWITCHBOARD, TRANSFORMATION, AND DISTRIBUTION
- SINGLE PORT LEVEL 2 EV CHARGING STATION
- DUAL PORT LEVEL 2 EV CHARGING STATION
- PROTECTIVE BOLLARD, 4" DIAMETER STEEL TYP
- UTILITY SERVICE CONDUITS
- POWER SOURCE
- PROPOSED PATH OF TRAVEL

Site Evaluation Design Guide

- Used 2019 new construction building code as starting point to size L2 EVCS projects
- Exceed minimum in small MUDs to provide charging to all tenants
- Recommend DCFC for sites with short dwell time <1hr

SCAG EV CHARGER SITE ASSESSMENT - CITY OF _____
 SHEET: 2 OF 2

SCAG EV CHARGER SITE ASSESSMENT - CITY OF _____
 SITE NAME - ADDRESS _____

SITE DETAILS

SCAG CITY: _____
 SITE NAME: _____
 ADDRESS: _____
 OWNER: _____
 CONTACT INFORMATION: _____
 LAND USE OR BUSINESS TYPE: _____
 PLANNING CONFORMANCE: _____
 ELECTRICAL UTILITY: _____

CRITERIA

1-10 FT FROM CURB TO METER: _____
 METER: _____
 ARE CHARGERS PUBLICLY ACCESSIBLE AND NON-RESERVED: _____

QUALIFICATION

NO. OF CHARGERS: _____
 NO. OF CHARGERS: _____
 NO. OF CHARGERS: _____

DETERMINATION OF QTY. OF EV CHARGE PORTS

THE RECOMMENDED QUANTITY OF CHARGE PORTS IS BASED ON THE 2019 CALIFORNIA GREEN BUILDING STANDARDS CODE.

NON-RESIDENTIAL MANDATORY TABLE 5.106.5.3.3	RESIDENTIAL MANDATORY MEASURES TABLE 4.106.4.3.1
TOTAL # OF PARKING SPACES	TOTAL # OF PARKING SPACES
0-9	0-9
10-25	10-25
26-50	26-50
51-75	51-75
76-100	76-100
101-150	101-150
151-200	151-200
201+	201+
10% OF TOTAL	6% OF TOTAL

DETERMINATION OF QTY. OF DC FAST PORTS

WHEN DC FAST CHARGE PORTS ARE PROPOSED, ONE (1) DC FAST CHARGE PORT WILL SUPPLEMENT FIVE (5) LEVEL 2 CHARGE PORTS AS IDENTIFIED IN TABLES 5.106.5.3.3 AND 4.106.4.3.1, PER THE 2022 CALIFORNIA GREEN BUILDING CODE

DETERMINATION OF QTY. AND TYPE OF ACCESSIBLE CHARGERS

THE REQUIRED QUANTITY AND TYPE OF ACCESSIBLE CHARGING SPACES IS BASED ON THE CALIFORNIA BUILDING CODE SECTION 11B-812

TOTAL # OF EVCS AT A FACILITY	MINIMUM # (BY TYPE) OF EVCS REQUIRED TO COMPLY WITH SECTION 11B-812		
	VAN ACCESSIBLE	STANDARD	AMBULATORY
1 TO 4	1	0	0
5 TO 25	1	1	0
26 TO 50	1	1	1
51 TO 75	1	2	2
76 TO 100	1	3	3
101+	1, PLUS 1 FOR EACH 300, OR FRACTION THEREOF, >100	3, PLUS 1 FOR EACH 60, OR FRACTION THEREOF, >100	3, PLUS 1 FOR EACH 50, OR FRACTION THEREOF, >100

DETERMINATION OF QTY. OF EV CHARGE PORTS

THE RECOMMENDED QUANTITY OF CHARGER PORTS IS BASED ON THE 2019 CALIFORNIA GREEN BUILDING STANDARDS CODE:

"The number of required EV spaces shall be based on the total number of parking spaces provided for all types of parking facilities in accordance with Tables 5.106.5.3.3 (Non-Residential) or 4.106.4.3.1 (Residential). Calculations for required number of EV spaces shall be rounded up to the nearest whole number."

NON-RESIDENTIAL MANDATORY TABLE 5.106.5.3.3		RESIDENTIAL MANDATORY MEASURES TABLE 4.106.4.3.1	
TOTAL # OF PARKING SPACES	# OF REQUIRED EV CHARGING SPACES	TOTAL # OF PARKING SPACES	# OF REQUIRED EV CHARGING SPACES
0-9	0	0-9	0
10-25	2	10-25	1
26-50	4	26-50	2
51-75	7	51-75	4
76-100	9	76-100	5
101-150	13	101-150	7
151-200	18	151-200	10
201+	10% OF TOTAL	201+	6% OF TOTAL

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Rough Order of Magnitude Cost Breakdowns



Trenching and civil improvements

- Length of conduit runs (\$100-\$150 per foot)
- ADA improvements for curb ramps, striping, etc.



Electrical upgrades

- New electrical service
- Panels
- Breakers
- Wire and conduit

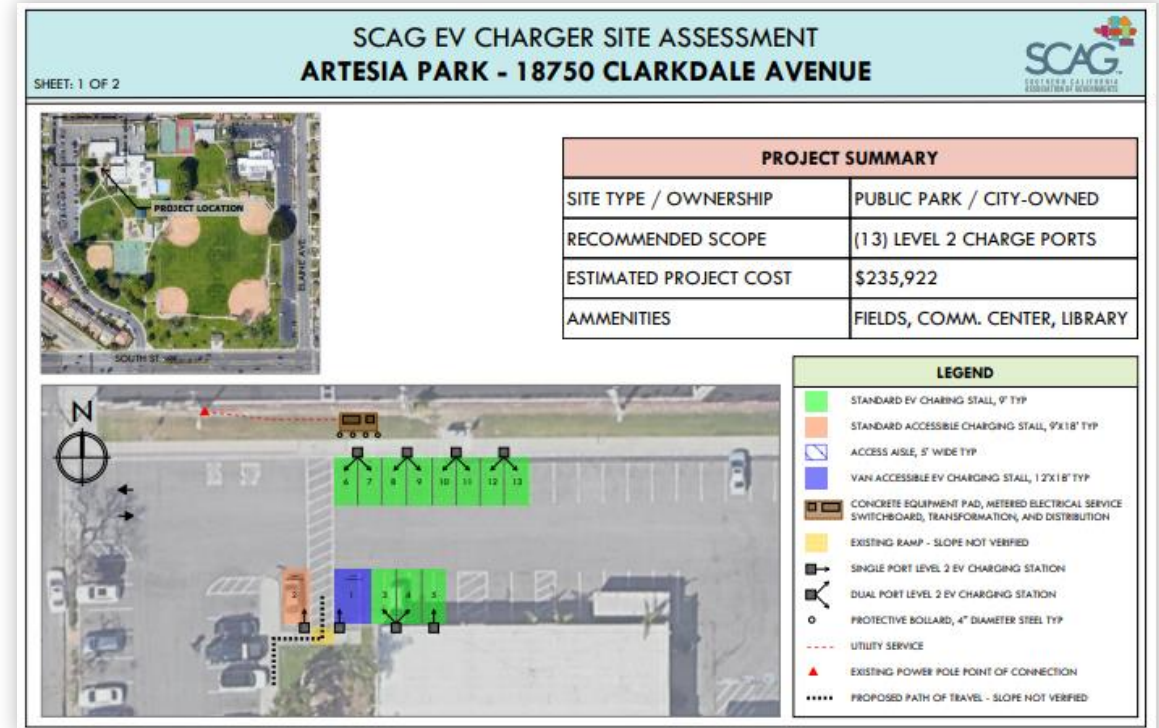


EVCS hardware

- Level 2 - \$5,000 per 7.2kW port
- Level 3 - \$62,500 per 180kW port
- Does not include ongoing networking or maintenance

Sample Site Evaluations

- Suitability Analysis can't capture all the relevant characteristics that make a site viable
- Factor like parking lot size, proximity to power, ADA all impact the viability and/or final cost to install EVCS

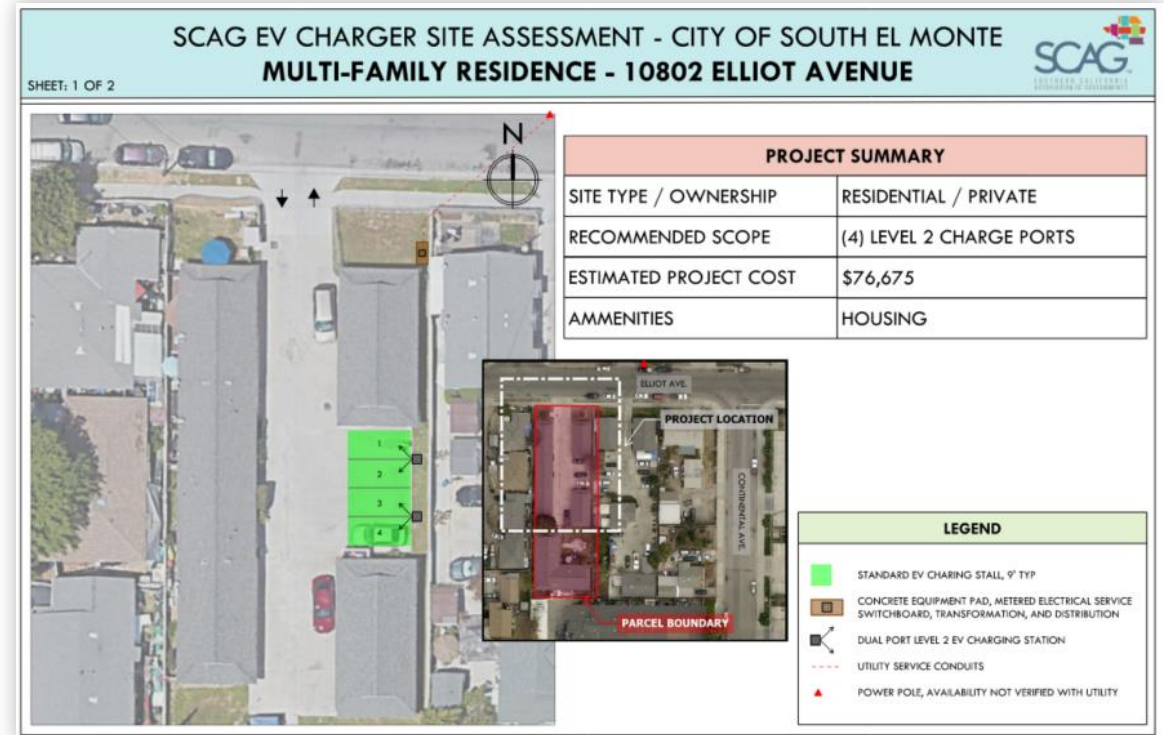


Simple Public L2 Install – Artesia Park

- Large parking lot is amenable to higher quantity of chargers to increase cost effectiveness
- Close to potential utility power and simple to connect to existing ADA
- Average cost per port = \$18,153

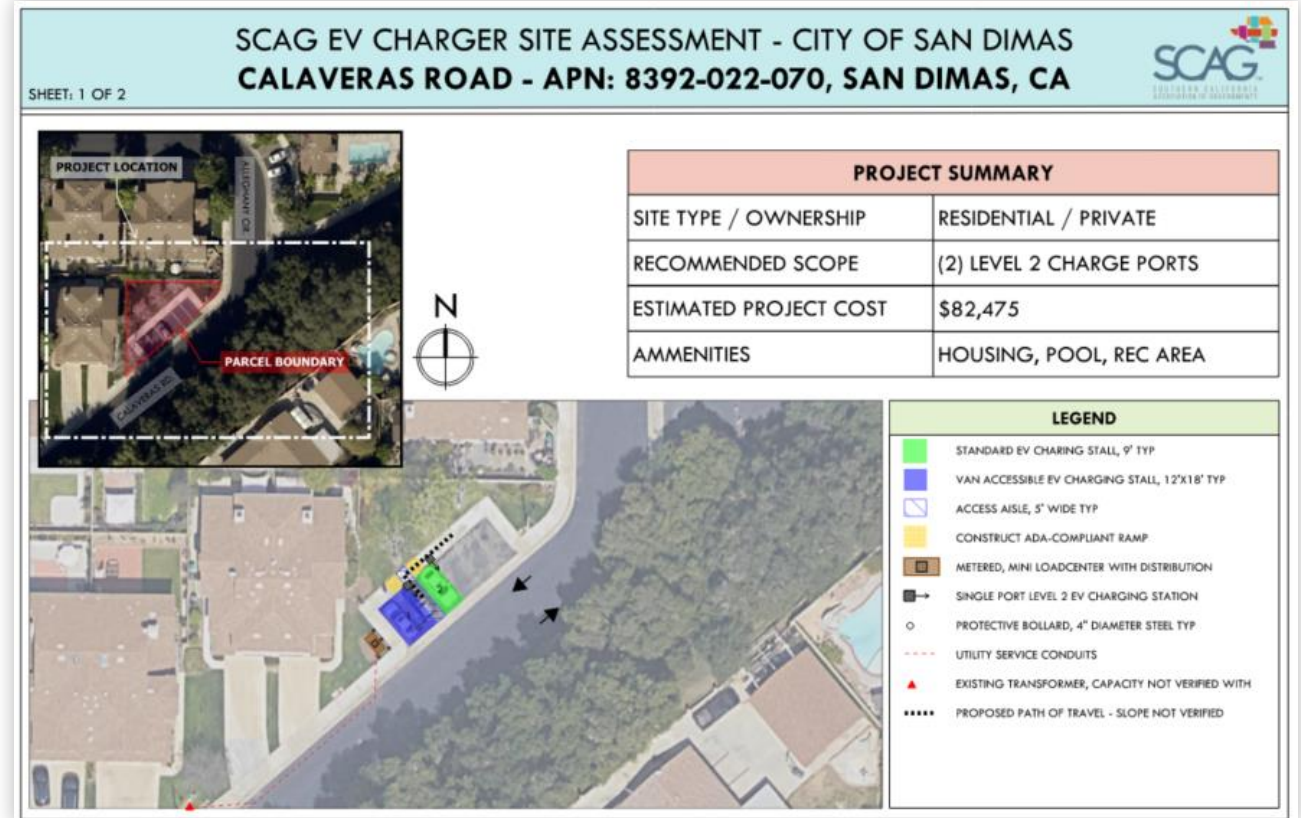
Sample Site Evaluations

- Sample Small MUD Install in South El Monte
- Recommended to install L2 charger in each surface stall to support tenants
- Stalls dedicated for specific individuals (i.e. tenants) are exempt from ADA
- Average cost per port = \$19,168



Sample Site Evaluations

- Difficult Public/Private L2 Install – Housing community in San Dimas
- Visitor parking in townhome/condo community consists of multiple small lots
- Limited ADA options, requires install of curb ramps
- Average cost per port - \$41,237





QUESTIONS AND COMMENTS

Stakeholder and Community Outreach

Listening Sessions

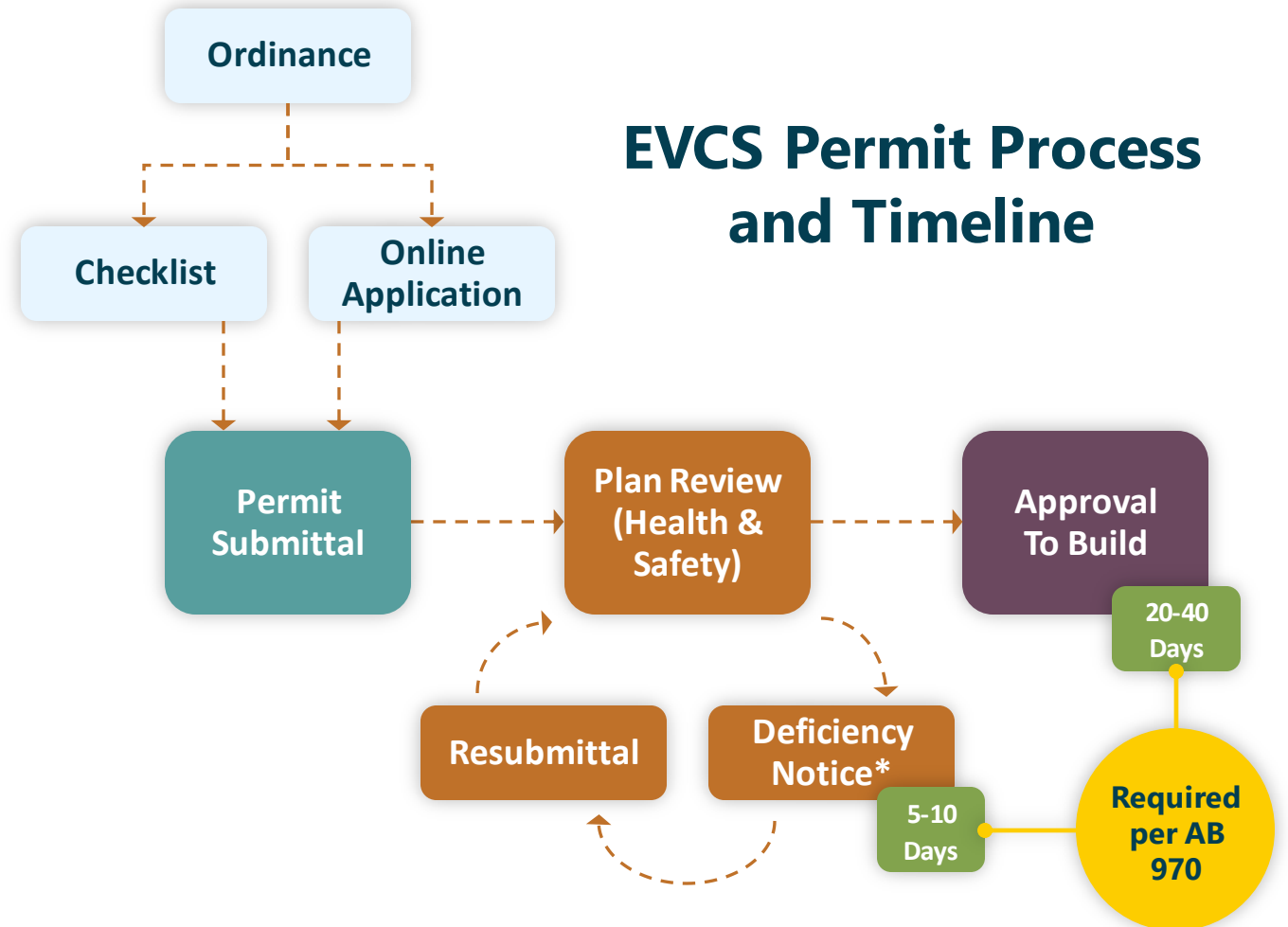
- Met with 18 cities to review current EVCS permit process and understand how it can be streamlined
- Met with project developers, and property managers to understand their barriers to expanding EV infrastructure

Community Engagement

- Attended 15 community events to engage the public on EV adoption
- Developed outreach collateral to educate the public on EVs
- Surveys helped to indicate barriers to adoption and charging infrastructure

Policy Analysis – AB1236 and AB970

- AB1236 (2015) required cities to pass ordinances and develop checklists to streamline EVCS permits
- AB 970 (2021) established timelines for Cities to review and approve EVCS permits
 - 1-25 stations = shorter approval time
 - 25+ stations = longer approval time
- Permit considered complete and approved after applicable timelines



Listening Sessions and Lessons Learned

EVCS Permitting

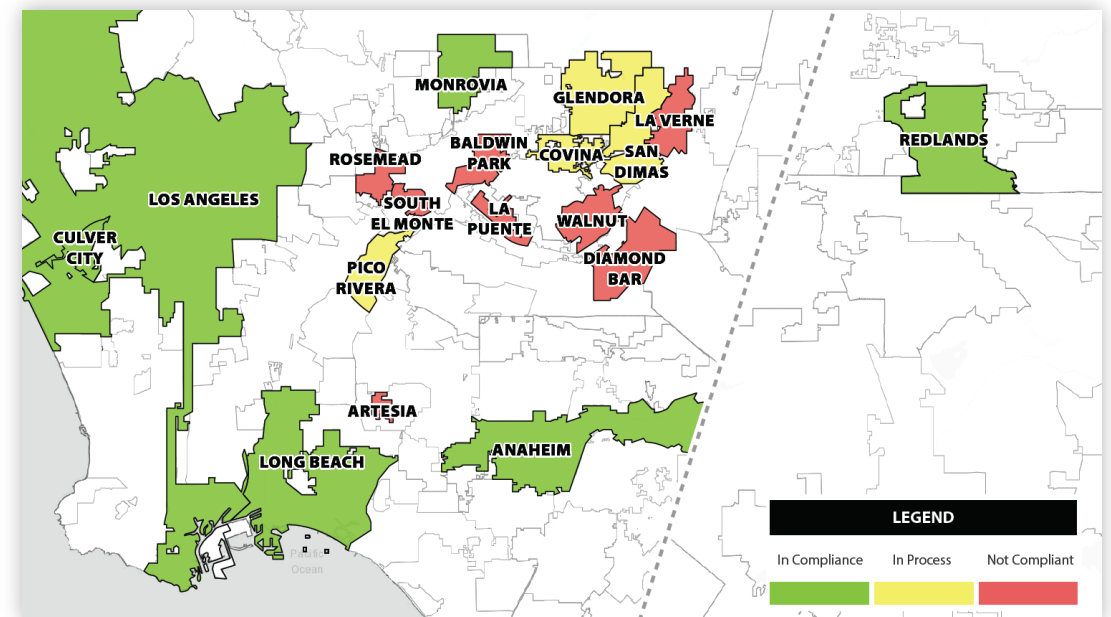
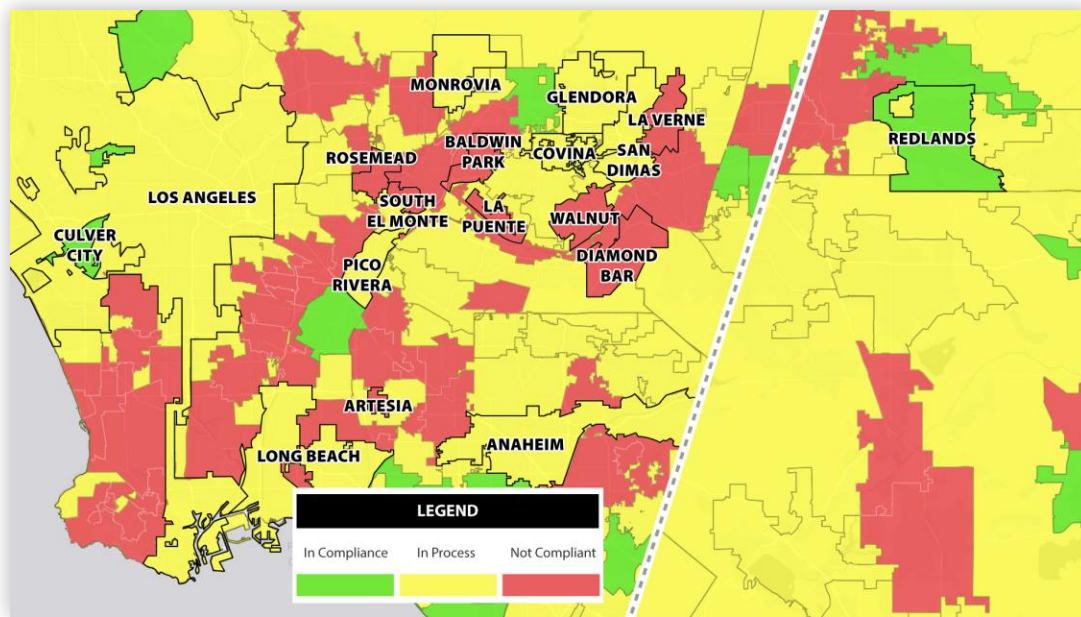
- Most cities meet the intent of AB 1236 by quickly issuing EVCS permits
- Most EV permitting handled as a plan check
 - Residential permits – over the counter up to a few days
 - Commercial permits – few days to weeks, depending on complexity
- Most cities expected to be able to meet AB 970 deadlines

City Installation

- Cities interested in installing publicly-owned EVCS at city parking lots or facilities
- Barriers
 - Guidance on how to develop projects and select proper equipment
 - Available funding
 - Ongoing O&M

Listening Sessions Impact

- Several cities acted after the listening sessions, using resources provided during the project
- Start of project only 2 cities were in full compliance now 6 cities are in full compliance
- Several small and SGV cities adopted LA County Electrical code, which contains a streamlined ordinance which is not captured by GO-BIZ



Community Engagement and Lessons Learned

Collected nearly 500 Survey Results

General Engagement Takeaways

Common Barriers

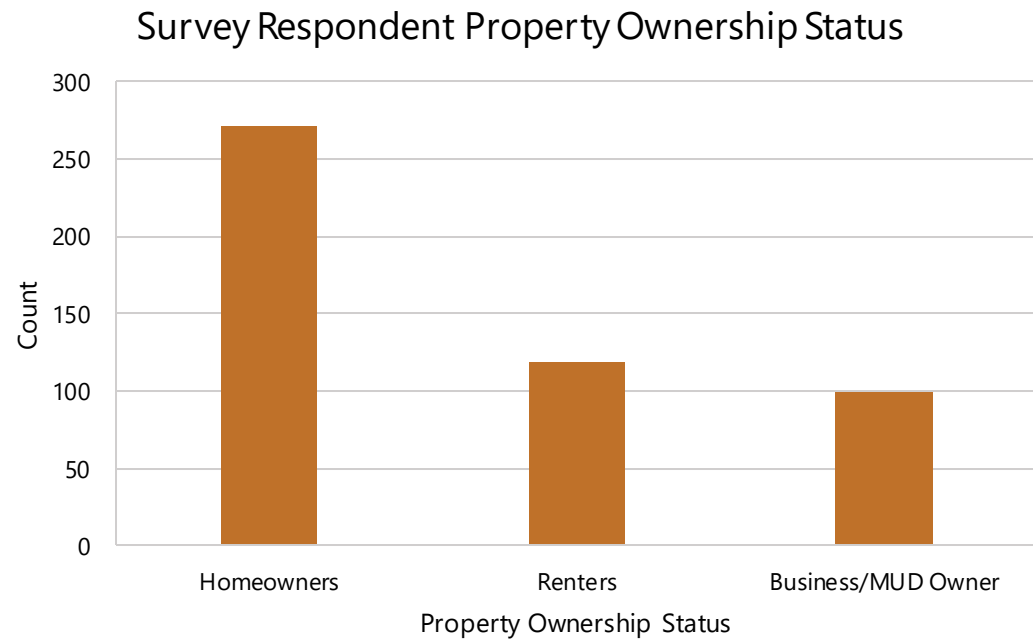
- Lack of or not aware of public charging network
- Vehicle range anxiety, coupled with inadequate charging network
- Unaware of benefits of EVs, both financial and environmental

Encouraging Signs

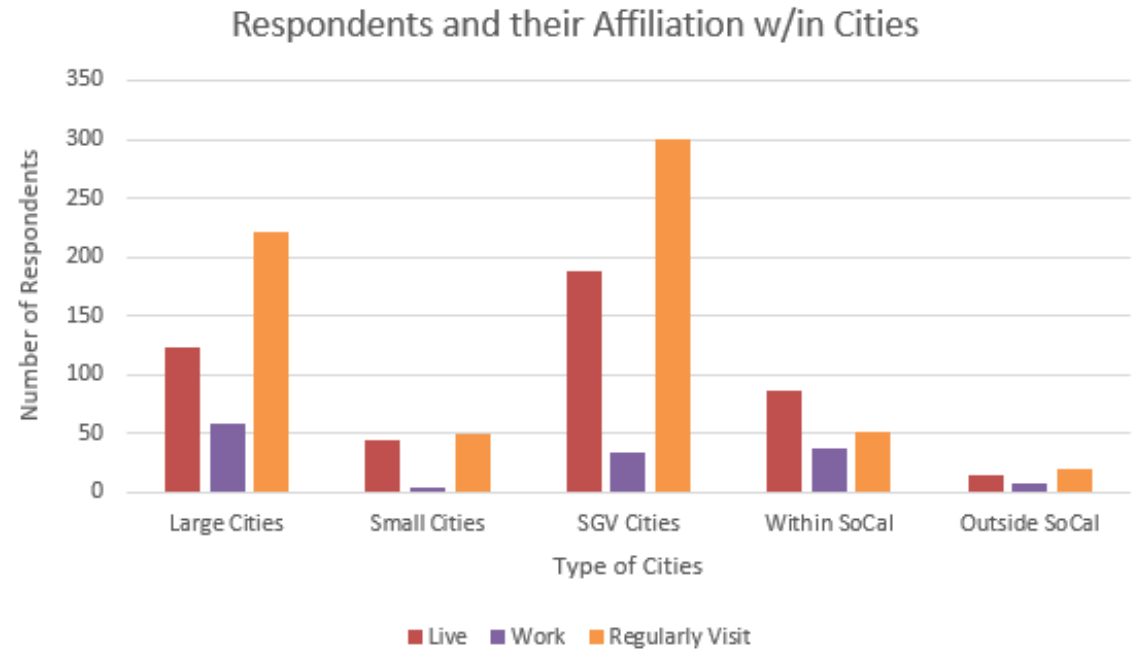
- Communities eager to learn more
- Understanding that EV ownership will increase, and we need to plan for the future



Who Took the Survey



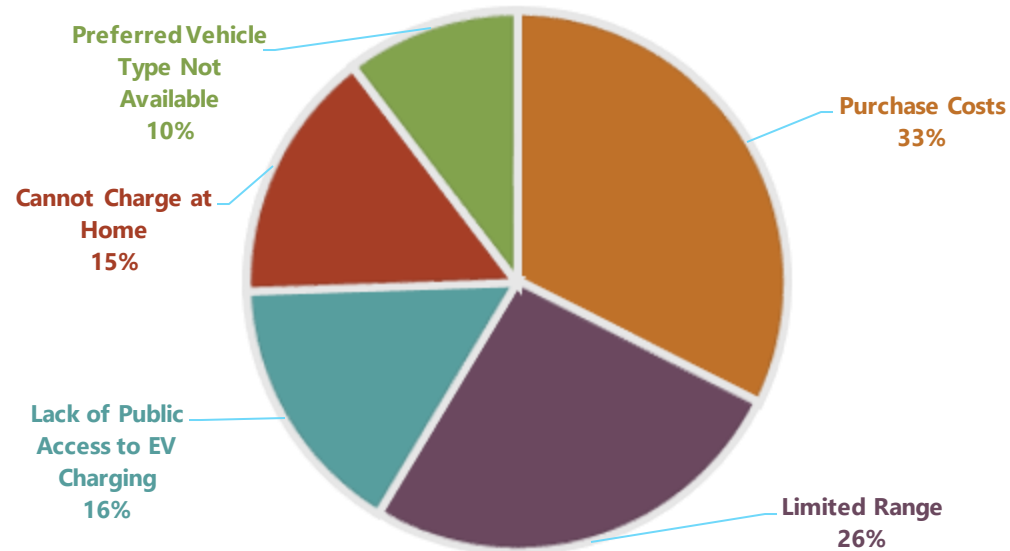
- Mix of homeowners, property owners (with tenants) and renters responded to the poll



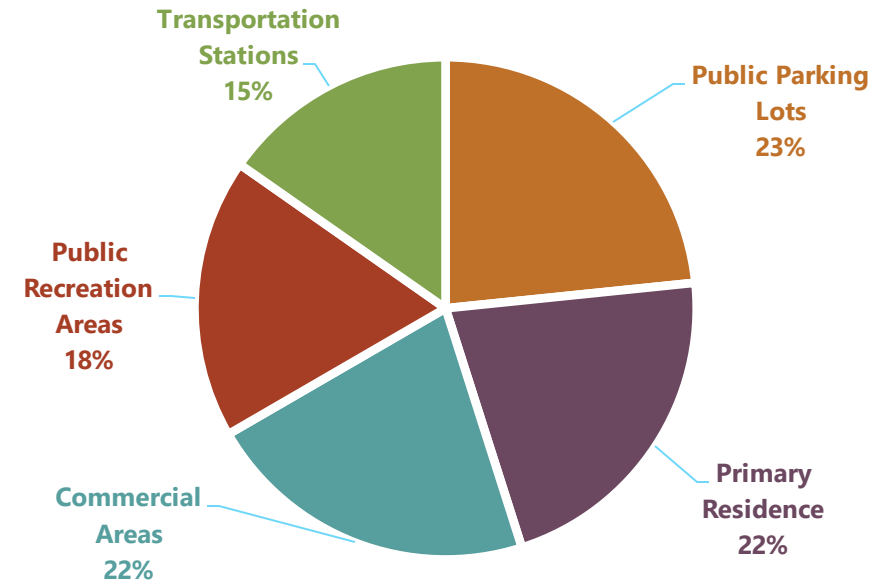
- Wide geographic range of survey respondents on where they live, work, and visit
- Helps to understand where they may need EVCS

Survey Results

TOP BARRIERS TO EV OWNERSHIP



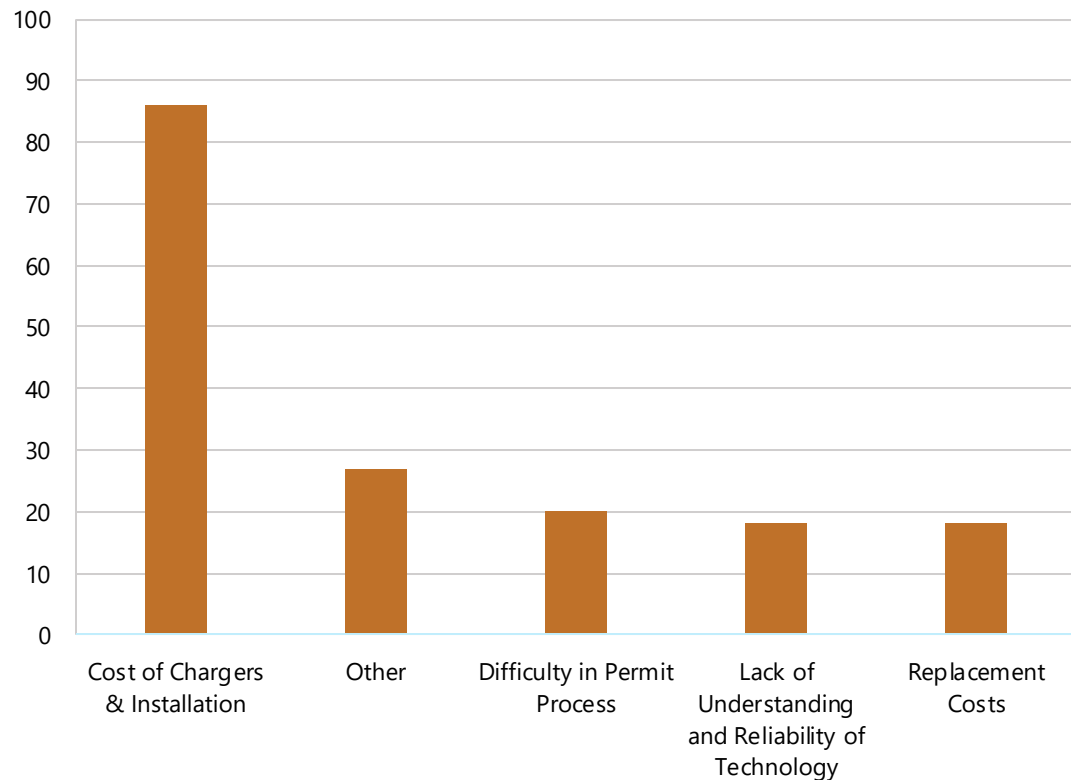
PREFERRED LOCATION TO ACCESS EV CHARGING



- EV Cost, Range, and limited charging infrastructure still significant barriers to EV adoption
- Increased charging infrastructure in MUDs and highly trafficked public areas may increase consumer confidence in converting to EVs

Survey Results

Commercial/MUD Barriers to Installing EVCS



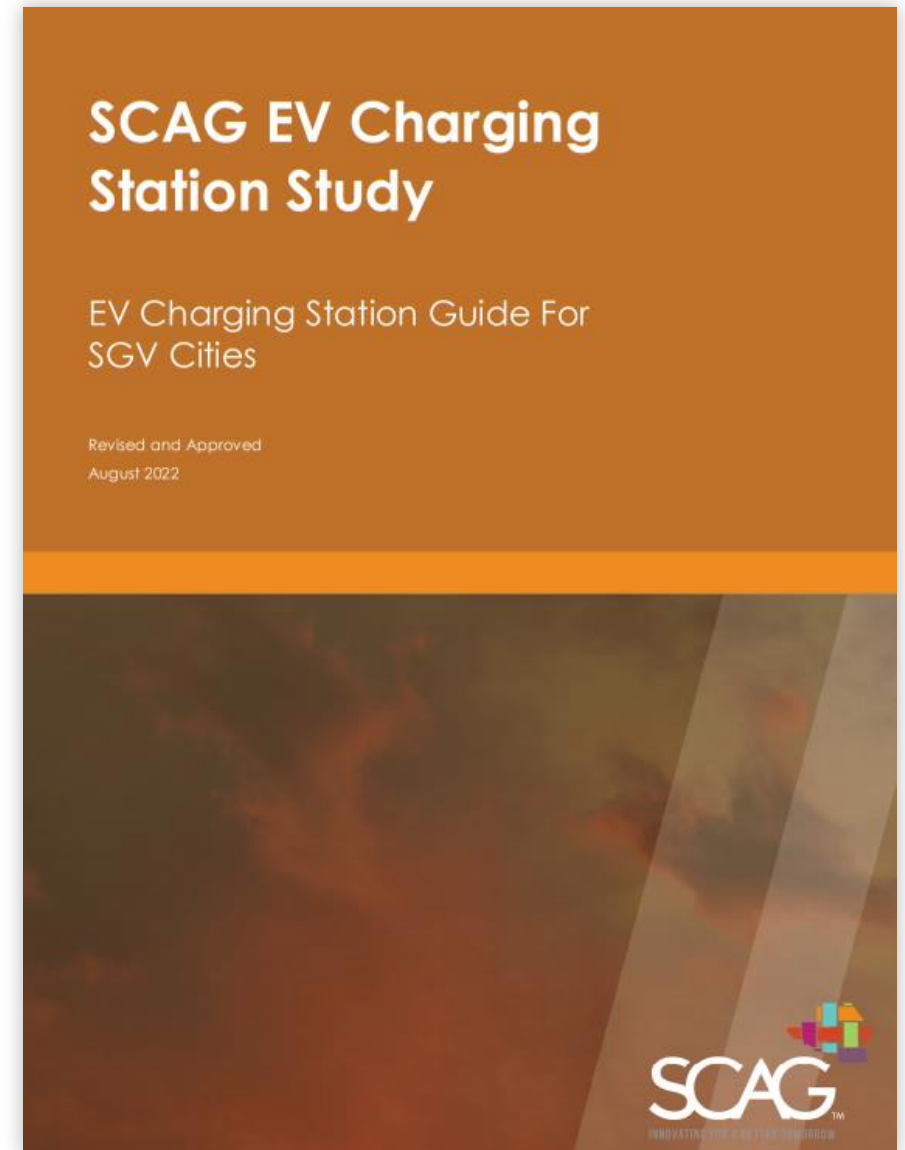
- Cost is still a major barrier to installing EVCS infrastructure
- EVCS incentives of 25-50% of total cost may be enough to spur adoption for commercial and MUD property owners
- Permitting not the largest barrier to adoption, but may have room for improvement



QUESTIONS AND COMMENTS

Other Tools for Cities

- Educational Material
 - EV 101 Guides for Cities to be used to educate City staff
 - Brochures geared towards educating the public on EVs
- Policy memos with best practices for processing EV permit applications
 - Includes sample ordinances, staff reports, and checklists that comply with AB 1236
- Infrastructure Plan (in progress)




















Planning Targets – CEC Projections

- CEC estimates 1.2M chargers will be needed in CA by 2030
 - 97% expected to be L2 at long dwell time locations: workplace, MUD, and public
- Scale down by population and car ownership rates
 - SCAG will need approximately 564,000 chargers
- Cities interested in more DCFC can swap five L2s for every additional DCFC

City	Total Charger Target	Workplace L2	Public L2	MUD L2	DCFC
SCAG Wide	564,304	158,529	227,855	159,983	17,937
Artesia	494	139	199	140	16
South El Monte	610	171	246	173	19
Walnut	881	247	356	250	28
La Verne	949	267	383	269	30
San Dimas	1,003	282	405	284	32
Monrovia	1,085	305	438	307	34
Culver City	1,154	324	466	327	37
La Puente	1,179	331	476	334	37
Covina	1,417	398	572	402	45
Glendora	1,526	429	616	433	49
Rosemead	1,599	449	646	453	51
Diamond Bar	1,656	465	669	469	53
Pico Rivera	1,856	521	749	526	59
Walnut Creek	2,049	576	828	581	65
Redlands	2,097	589	847	595	67
Baldwin Park	2,236	628	903	634	71
Anaheim	10,310	2,896	4,163	2,923	328
Long Beach	13,751	3,863	5,552	3,898	437
Los Angeles	116,863	32,830	47,187	33,131	3,715

Funding Resources

Federal	State	Local	Utility
<p>Infrastructure Bill funding – multiple provisions for EV projects</p> 	<p>CARB – CVRP, HVIP, rebates and vouchers for EVs</p> 	<p>SCAQMD – Carl Moyer Funds may be available for vehicle replacement and charging infrastructure</p>  	<p>SCE Charge Ready – reduce cost of electrical infrastructure and provide EVCS rebates EVCS</p> 
<p>Inflation Reduction Act – tax credits for EVCS, may get issued as a direct payment to Cities</p>  	<p>CARB – LCFS credits for electricity dispensed to EVs</p> 	<p>MSRC – Grants may be available for EVs and charging infrastructure</p>  	<p>Muni programs – LADWP and APU each have local rebate programs for EVCS and infrastructure</p> 
<p>DOE – Energy Efficiency and Conservation Block Grant program includes EV infrastructure</p>  	<p>CALeVIP – rebates for charging stations (will focus on DCFC in 2023)</p> 	<p>CMAQ - formula funds to improve air quality may be used for EVCS projects</p>  	<p>TOU rates to reduce cost of charging during off-peak times</p> 

NEVI – Preliminary CEC Guidance

- CA to receive \$384M from IIJA Act passed in 2021 for DCFCs along Alternative Fuel Corridors (AFCs) – CEC to issue as competitive grants
- Minimum four 150kW ports, within 1 mile of AFC, no more than 50 miles apart. Infrastructure to be future proofed for five 350kW ports
- Private sector **MUST** be the applicant, public agencies **CANNOT** apply, but may be a project partner
- May require up to 50% match share (as opposed to 20% for typical federal funds) depending on area
- 50% of funding used for DACs, 40% used for Justice 40 communities

City Best Practices/Next Step Recommendations

- Review current EV infrastructure within City and establish/revise targets for EVCS by 2030 to align with statewide goals
- Pursue station development on City-owned properties and continue city fleet conversion
- Most infrastructure will be owned and operated by the private sector, so City role is to encourage development through policy, funding and coordination.
 - Evaluate and pass reach codes to increase EV infrastructure as part of new construction
 - Create a dedicated webpage to EVs with resources and connections to funding
 - Examine internal permit process to minimize processing for larger/complex projects
- Outreach to private sites completed in evaluations to spark project development



THANK YOU!

For more information, please visit:

<https://scag.ca.gov/alternative-fuels-vehicles>

Tell us how we did!

Take a quick 2-minute survey to help us improve future Toolbox Tuesdays!



SCAN ME