Education

**Barriers Topics:** 

#### **Barrier: Education Barrier Pertains To Guidance Materials Action Items** 1. Lack of Public **Biodiesel Electricity** Promote Clean Cities vehicle Recommendation: Develop **Knowledge on** guides, handbooks, and other materials/toolkits that allow relevant documents. **Alternative Fuels** general consumers to better - Lack of knowledge and understand AFVs, and provide a misconceptions about Leverage consumer-focused baseline understanding of AFVs alternative fuels and resources available. useful to local governments. advanced vehicle Includes: Hydrogen technology. Reviewing existing consumer outreach materials -Additional education on General "myths" and hydrogen is needed since realities of each fuel (how it is a newer vehicle the fuel is made, what technology. vehicles use the fuel, range, etc.) Relevant state policies that create the motivation for adopting AFVs Guidance for local EV encouragement efforts-Work with South Bay Energy Action Collaborative to document best practices **Biodiesel Electricity** 2. Training and Education **Existing Conditions Report public** Recommendation: Develop for Municipal Staff agency survey results. The materials and toolkits that allow -Lack of knowledge about fleet managers and municipal survey results reveal what alternative fuels and municipalities have done to staff to integrate AFVs and advanced vehicle prepare for alternative fuels and create/promote AF-friendly technology. what resources they lack in policies. Includes: order to further adopt Reviewing existing -Additional education on alternative fuel-friendly policies educational hydrogen is needed since and strategies. programs/materials it is a newer vehicle Reviewing past and current **Existing Conditions Report's** technology. training programs & section on codes and standards promote them -Need to further plan for can serve as guidance for Planning documents to AFVs in energy planning installations. better assist jurisdictions in documents and Leverage National Renewable achieving GHG reduction implement strategies in Energy Laboratory (NREL) strategies using alternative municipal fleets. developed codes and standards fuels handbooks. How to choose optimal locations for alternative fuel Replacing government fleet infrastructure vehicles with alternative fuel Relevant state policies that vehicles is a strategy noted in motivate greater AFV some Climate Action Plans adoption (CAPs), or other energy planning Sample policies that support documents. the growth of AFVs Ensuring open communication among fleet managers and planning staff to secure the success of CAP strategies.

### 3. Training and Education for Emergency Personnel and Transportation Fleet Staff

- -Lack of safety and technical training for AFVs and AFI.
- -Need specific fleet data to better understand AFV performance.



Needs Assessment for Alternative Fuel Vehicle Training in California offer insight to training needs.

Existing Conditions Report offers a section on training for emergency personnel and fleet staff.

Existing Conditions Report fleet survey results. The survey results reveal what alternative fuels fleets around the San Diego region have already adopted. It informs about resources desired by fleet managers in order to integrate more alternative fuels into their fleet.

Recommendation: Develop materials and toolkits that will help train emergency personnel on how to handle AFVs and fleet staff on how to service AFVs. Includes:

- Reviewing past and current training programs
- Developing training resources one pager, which includes contacts for training facilities within and near San Diego County and provide course/topic recommendations for each fuel type
- Promoting trainings
- Specific fleet data that allow fleets to understand the technical capacities/build of an AFV

# 4. TOU Utility Rates/ Grid Integration

- -Need to discourage charging when electricity supplies are in high demand and cost more. Support of time of use (TOU) pricing.
- -High demand charges that impact EVSE host utility bills. Expensive metering options to access TOU rates.
- -Need further education on how PEVs integrate with the electricity grid, and how to reduce its grid impact.



Educate public on SDG&E EV time of use rates.

Promote Plug-In Electric Vehicle Collaborative (PEVC) materials and guidance documents from the PEV Readiness Plan.

Information on minimizing utility charges from natural gas station operation.

Maintain regular updates and communication from SDG&E regarding its work with a proposed vehicle-to-grid pilot project.

Recommendation: Develop guidance and toolkits that help AFV users understand the way vehicles integrate with the electricity grid and general EV charging time of use information. Includes:

- Promoting information and guidance on utility rates/ grid integration
- How vehicle charging time affects overall electricity/grid capacity (i.e. duck curve)
- How used PEV batteries can be integrated into the electrical grid.
- Optimizing natural gas infrastructure for limited electrical demand







٩FV

#### **Barrier: Infrastructure Barrier Pertains To Guidance Materials Action Items Biodiesel Electricity** Recommendation: Address 5. Station Development: **Promote Best Practice Codes & Permitting** documents generated through problems that frequently -Need for increased the California Statewide occur when stations are Alternative Fuels and Fleets guidance on EVSE, propane, being installed (e.g., when natural gas, and hydrogen project. propane station is built, station installation screens are often required to processes. Propane, hydrogen, and be surrounding the propane Hydrogen biofuel Refuel subcommittees tanks; not favored by -Direction on how city staff devoted a portion of time propane providers). Includes: and station developers can identifying barriers to station Fuel-specific permitting work together to ease installation. best practices to help station deployment process. jurisdictions facilitate **Existing Conditions Report** station section on codes and installations(Reference standards serves as guidance existing codes) for installations. Successful installation case studies Compiled station installation processes as discussed through Refuel subcommittees **Biodiesel Electricity** Assist municipal staff through Recommendation: Provide 6. Station Development: Clean Cities tools on zoning, solutions and guidance for Site Assessment -Station developers have station design, and municipal staff and other come across right of way and assessment of station fueling fleets on where to place easement issues. needs. fueling infrastructure. Includes: -Stations should be located Conduct fleet route Enabling cities to site Ethanol Hydrogen along fleet routes. assessment to determine best fueling stations based on locations for AFI. their fleets' routes and fuel usage (i.e., how to Promote electric, natural gas conduct fueling analysis) and hydrogen best practice Enabling private fleets to documents generated through site fueling stations the California Statewide based on their fleets' Natural Gas Propane Alternative Fuels and Fleets routes and fuel usage project. (i.e., how to conduct fleet analysis) Enabling public agencies to determine best locations to install infrastructure for the public (i.e. providing relevant variables, methods, etc.)







# 7. Access to Public Alternative Fuel Stations

-Lack of AFV adoption due to limited infrastructure near where fleets and the public need to refuel.

-Lack of station access for heavy-duty vehicles.



Increase awareness of current and planned alternative fuel stations to fleet managers.

Compile resource list of station locator maps.

Guidance to station developers on building stations that are accessible to heavy-duty vehicles.

Examples of outreach activities San Diego Regional Clean Cities Coalition has performed with local alternative fuel providers.

Clean Cities Coalition guide on costs associated with CNG and propane fueling stations.

San Diego Regional Clean Cities Coalition-developed maps of San Diego County infrastructure and proximity to residences. Recommendation: Develop ways for fuel providers and local jurisdictions to increase awareness of public alternative fuel station locations. Includes:

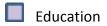
- Reviewing existing resources and updating as necessary
- Mapping tools to encourage more installations
- Best practices for promoting alternative fuel stations to the public (e.g., an outreach guide)







8. EVSE at Multi Unit	Electricity	Promote PEVC materials and	Recommendation: Increase
Dwellings		guidance documents from	public understanding of
-Consumer and property		the PEV Readiness Plan.	complexities of charging at
owners have lack of			MuDs and gather resources
knowledge regarding EVSE		PEVC's case studies on	to help facilitate charging
installation in these		charging installations at	installations. Includes:
buildings.	13	MuDs.	Gathering
			complementary
-Need to educate and work			information about MuD
with HOAs to identify and			charger installations. Or,
find solutions to unique			developing specific
building challenges.			studies for particular
			charging scenarios (i.e.,
			SB 880 and AB 2565
			being ineffective if
			insurance companies will
			not add HOA as
			additionally insured – get
			examples of this.)
			<ul> <li>Promoting installation</li> </ul>
			and information about
			EVSE through future CSE
			and SANDAG PEV
			Implementation work.
			This work may be
			coordinated in tandem
			with SDG&E's vehicle-to-
			grid pilot project and
			adjusted as necessary
9. Workplace Charging	Electricity	Promote Calstart's <u>Best</u>	Recommendation: Increase
-Lack of understanding		Practices for Workplace	public understanding of
regarding benefits and		Charging and the California	complexities of charging at
approaches to workplace		Plug-In Electric Vehicle	workplaces and gather
charging.		Collaborative guidance	resources to help facilitate
Nood to funther advisets		documents.	installations. Includes:
-Need to further educate	19		Promoting installation
employers and property			and information about
management companies about the benefits of			EVSE through future CSE
			and SANDAG PEV
workplace charging			Implementation work

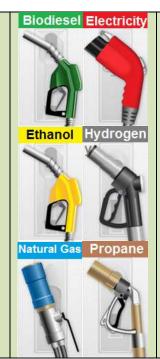






### **10.** Infrastructure Costs

- -Lack of capital for station construction and operation costs.
- -Who pays for the upfront costs of the infrastructure? The grantee, ratepayer or end user.
- -Risk of investment.
- -Need justification/incentives for higher costs to build stations.
- -Need partners to justify investment.



Create forum for stakeholders to discuss and form partnerships.

Promote Clean Cities tools, such as natural gas Vehicle and Infrastructure Cash-Flow Evaluation (VICE) Model which address payback period for natural gas vehicles and infrastructure.

Past success from regions to apply for infrastructure funding from the California Energy Commission.

Recommendation: Provide public agencies and fleets with tools for evaluating and overcoming infrastructure costs. Includes:

- Evaluating and promoting existing tools
- Providing a forum for coordination
- Best practices of CEC infrastructure grant recipients so other jurisdictions may have similar success
- Developing a guide that allows jurisdictions to better navigate and understand CEC infrastructure grants





AFI



Barrier: Vehicles	Barrier Pertains To	Guidance Materials	Action Items
11. Selecting Appropriate AFVs -Advise municipal staff and businesses on choosing alternative fuels that will meet fleet needs.	Ethanol Natural Gas  Propane	Clean Cities tools such as the Vehicle Cost Calculator and Vehicle Search.	Recommendation: Help fleet staff and businesses choose most appropriate AFVs for their needs. Includes:  Promoting Clean Cities tools  Developing guidance on determining most appropriate AFVs
12. Procuring and Financing AFVs -Initial higher costs of AFVs barrier to adoption.  -Need further outreach to fleets and public about incentives for procuring AFVs.	Ethanol Natural Gas  Propane	Connect municipal staff, businesses and local residents to dealers and vehicle manufactures. Provide guidance on leasing vs. purchasing an EV.  Educate public on available incentives.  A Public Fleet Pilot Project allows for cities with disadvantaged communities to apply for extra funding to buy new PEVs  The CalEnviroScreen, a statedeveloped tool that identifies "disadvantaged communities" in the state, helps determine who can benefit from additional funding and pilot projects, such as the Public Fleet Pilot Project. 1	Recommendation: Assist fleets to understand the costs of AFVs and provide guidance on procurement and financing AFVs. Includes:  Identifying & promoting best resources on financing and procurement  Reaching out to cities with disadvantaged communities to take advantage of extra funding to buy PEVs  Costs associated with each type of AFV (provide a cost analysis)  Developing models for financing vehicle acquisition

<sup>&</sup>lt;sup>1</sup> The lack of San Diego regional communities labeled as "disadvantaged communities" limits the extra funding coming to the region. SANDAG believes this tool is not representative of the underserved communities existing in the region; that is, there are far more than are actually labeled in the tool.











# 13. Converting Conventional Vehicles to an Alternative Fuel

- Lack of understanding on the regulations, conversion kits available or companies that provide retrofit services.



Information on CARB acceptable conversion kits and manufacturers.

Recommendation: Provide guidance on how to safely and lawfully convert conventional vehicles to use alternative fuels.

 Provide guidance on CARB approved conversion kits

### 14. AFV Technology

- -AFV lifespan and range (especially for PEVs) in some cases is not competitive with conventional vehicles.
- -People not making the investment until they feel confident of the technology's reliability.
- -People are wary of emerging AFV technology, unsure of its reliability.



Meeting summaries from Refuel subcommittee meetings serve as background for fuels and new technology.

Alternative fuel vehicle industry websites also serve as background for new technology.

Recommendation: Provide insight into the up-and-coming technology and emerging fuels. Includes:

- Guidance on fuel and technology developments: dimethyl ether (DME), hydrogen, algae, renewable natural gas, drop-in fuels in general
- Alternative fuel life cycle analysis, including second-life batteries
- Discussion on vehicle technology "maturity" – how long have certain fuels been used, by who, and with what kind of results



