

Multi-unit Dwelling (MuD) Vehicle Charging Case Studies



Joel Pointon

SDG&E - Manager of Electric Transportation



100 mile electric Available in.....1908

THIS IS THE 100 Mile Fritchle Electric Automobile



PRICE \$2,000

That **TOURED 2,140 MILES** from Lincoln, Nebraska, to Washington, D. C., through Ten States, in the months of November and December, over the most direct route, through the Allegheny Mountains, regardless of road conditions or charging facilities.

AVERAGING 90 MILES PER DAY OF TRAVEL, 200 MILES IN 2 DAYS ON 2 CHARGES, from York, Pa., to New York City, and finally 101 miles on **One Charge** on the streets of Washington, D. C.

The only replacements necessary on this tour were brake linings after the Allegheny Mountains, and an inner tire tube which was punctured by a nail.

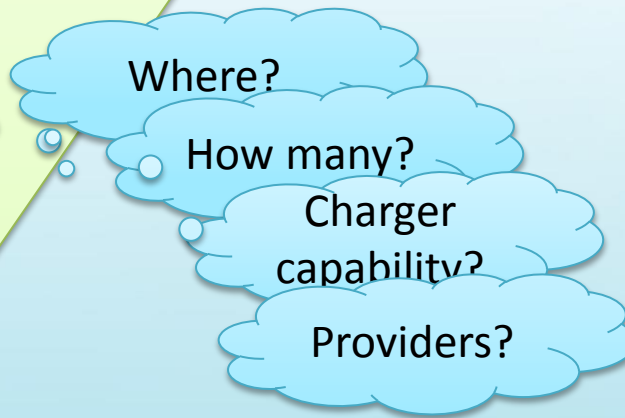
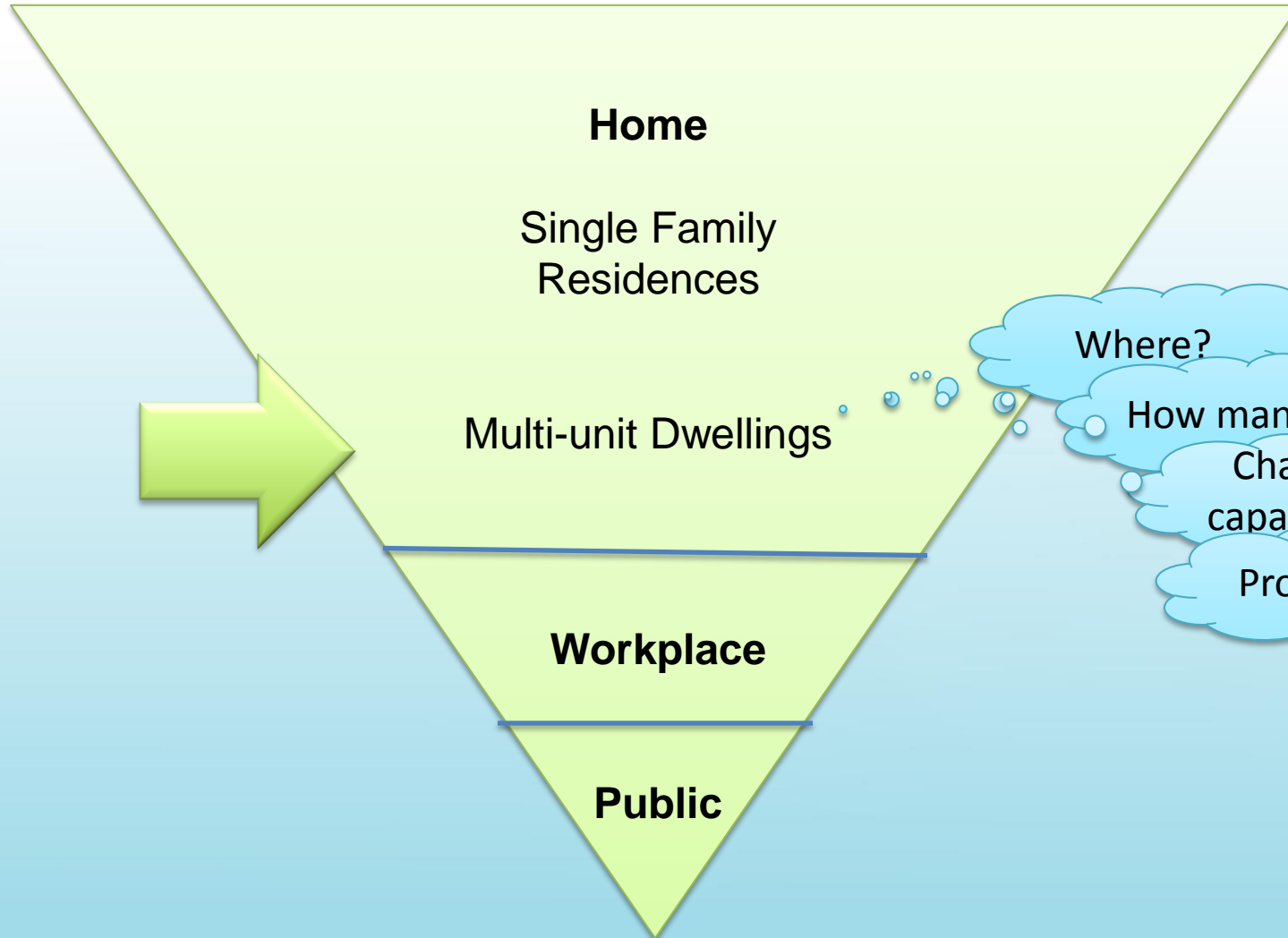
FRITCHLE ELECTRICS have toured the Rocky Mountains for four years.

A **100-MILE FRITCHLE ELECTRIC** is the Automobile you will eventually use.

Harry L. Cort, Sole Agent
Moore Theatre, Phone Main 6103.

P. S.—Our 1909 4-Passenger Coupe, like our Victoria, is the car supreme in Coupes.

Where will PEVs charge?



Where?
How many?
Charger capability?
Providers?

CityFront Terrace – MuD Case Study

CityFront Terrace is a mid-rise luxury condominium community in the Marina District of downtown San Diego, just blocks from the waterfront, restaurants and shopping areas.

- Built in 1993 with 13 stories and over 300 condominium residences.
- Amenities include, 2 pools a 3500 square foot fitness center, conference room and the expansive “Citrus Room” available for private events.
- Secure underground resident assigned parking, optional valet parking and a 24-hour lobby attendant.
- With 400,000 bricks this is the largest brick building ever built on the West Coast, and designed to incorporate the 1920s-era Citrus Soap Factory.



Plug-in Electric Vehicle Charging Need:

Residents of CityFront Terrace began to inquire about their charging station options for electric vehicles they were planning to purchase in 2011. A **variety of electric vehicles and charging stations**, were being considered by residents. Property management and residents were seeking **a billing solution that would allow residents to pay for their energy usage directly without the property managers having to track usage or collect payments.**

With **assigned underground parking spaces far from the residents' individual living unit electric meters located on upper floors and common area meters on commercial rates subject to demand and time-of-use impacts**, this project proved to be a challenge. The property and facility managers, home owners association and residents all worked together to identify a solution that allowed for **lower cost electric vehicle charging rates, individual billing and flexibility of charging units for each resident.** Management also knew that vehicle charging would allow their community to **market it as an important new green amenity.**

Situation

During early evaluation, CityFront Terrace uncovered many technical challenges. Solutions were needed for wiring the parking spaces with **different brands of 208-volt charging stations** as well as for **individual user billing**. Facilities management suggested the installation of **individual meters for each charging unit, therefore using San Diego Gas & Electric's billing direct to each resident installing and using a vehicle charger. By not having vehicle charging electricity being metered by common area meters the property manager is removed as middle man in billing and disputes.**

By wiring new individual meters directly to electrical service in the underground meter room in the garage, the **additional cost of trying to wire to residential meters on upper floors was eliminated**. By **assigning the accounts to individuals, lower cost electric vehicle time-of-use (EV TOU)** could be applied and each **user would see the direct benefit for off peak charging**. This approach **also negated the need to rearrange the previously assigned resident parking spaces** by wiring directly to the user's space and installing the **resident's preferred brand of vehicle charger**.

Solution

- After working together on a compromise to the design, installation and billing plan, CityFront Terrace agreed they would install **20 individual meters wired directly to the utility side of the building electrical supply** via one of the main buses. **Wiring hubs on each floor of the parking garage** would allow for **wiring to individual parking places**. Each individual requesting vehicle charging **would pay an equal portion of the upfront capital expenditure for the project and purchase/own their own charging unit for installation** in their space. Each resident secures the **required liability insurance referenced under SB 880** in California for potential liability that may occur from these units being located with a **“common area”**.



Solution continued

Under this arrangement each resident **receives their monthly bill directly from San Diego Gas & Electric** and sees first hand their individual time-of-use behavior and resulting cost savings from the **utility's special low electric vehicle rates**. Although the project was capital intensive up-front – an estimated \$80,000 – the **consensus among the stakeholders was that it was worth making an investment that would be returned over time** – an estimated \$4,000 for each resident requesting charging – to have a program that allowed for **individual flexibility for charging units, reinforced off-peak charging advantages and removed property management from additional responsibilities relating to vehicle charging**. The costs are therefore passed on directly to the user and the community investment is paid back for its up-front support of a solution.



Benefits

- Creating a **sense of community and consensus** among the residents and property managers by taking time to develop a solution that was **agreeable to all and able to recoup costs over time.**
- **Removing additional work for the property managers** by having billings going directly **from the utility to the residents.**
- Being able to **market the property as a facility that caters to forward-thinking electric vehicle drivers** that supports a cleaner transportation options.
- The ability for **residents to have a choice over charging station vendors.**
- The project that is **scalable over time, and does not have to be “sold out” right away.**
- The project allows for either **removal of the charging unit if the condominium is sold or moving it to another parking spot.**

CA PEVC – Multi-unit Dwelling Workgroup

- Property Profile – for project planning (parking, metering, CC&Rs, etc.)
- Multi-unit Dwelling Vehicle Charging Guide
- Survey of Property Managers
- Survey for Residents
- Regional Resources (CA)
- Case Study Documents (Web Based) – Full Spectrum
 - Duplex/triplex, mobile home parks, garden apartments, low rise/high rise apartment and condos, etc.
 - Mid year 2013 for Guide – Resident & Property Manager Surveys

Thank you - Questions?

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Multi-unit case studies are needed.



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Fleet Only



AC L1 Workplace Charging

- AC L1 unit on the post...charging PEV.
- Kiosk that provides access and control for all 10 charging units (8 L1, 2 L2).

Drivers identify the parking space/charging number...then their unique PIN.

Kiosk has a headless cell phone... Meter data for each driver/PIN...and DR/control commands travel over the cell network.

L1 units were about \$600 each, as opposed to \$6,000 each...for "smart" units. Central kiosk costs about the same as one "smart" unit. All-in-all....far cheaper = more accessible to a greater number of workplaces...

Plug-In 2013 – San Diego, CA

Plug-In 2013 Conference and Exposition:

September 30 – October 3, 2013

Public Day – September 29th

- **Plug-In 2013 will be the year for real data, real-world reporting and a serious analysis of what's next for the electric highway.**

www.plugin2013.com



Future of charging????

