



Council Meeting: November 29, 2011

SUBJECT: Amendment of the Building Code (Title 16) to Require Electric Car Chargers in New Residential Developments – Study Issue

REPORT IN BRIEF

This study issue was sponsored by Councilmembers Griffith and Whittum and was ranked number 1 of 4 by the Council for the Community Development Department in 2011.

Projections for the number of electric vehicles that will be on the road by 2020 in the United States vary widely and range from 1.8% to 3.3%, with one study forecasting over 6%. Based on current usage of alternative fuel vehicles and hybrids, it is safe to assume that electric car usage in California will be higher than the national average, and the Bay Area will be even higher than the State.

This item was presented to both the Sustainability Commission and the Planning Commission. The Sustainability Commission was very interested in this study and suggested that pre-wiring be required in all new single family and townhouse construction and in condominium and apartment projects for 50% of the parking spaces. The Planning Commission was generally supportive but did not reach a consensus; Commissioners provided suggestions regarding the number, location, and type of parking spaces that should be pre-wired in condominium and apartment developments.

Pre-wiring for electric vehicle chargers in new residential construction with individual garages (single family and townhouses) is fairly easy and requires minimal additional cost. However, the issue is more complicated for new residential construction with shared parking (condominiums and apartments) as multiple issues are involved. Staff is recommending the following amendments to the building code (Title 16) with an effective date of July 1, 2012 (to allow sufficient time for developers with pending applications or anticipated projects to plan appropriately):

- In new residential construction where private garages/carports (single family detached and townhouses) are attached to individual dwelling units, require the garage to be pre-wired for a Level 2 electric car charger.
- In new residential construction where shared parking is provided (condominiums and apartments), require 12.5% (1:8 ratio) of required

parking spaces to be pre-wired for Level 2 electric car chargers. Operational issues and locations shall be specified in a parking management plan.

- Include provisions in the City's green building program to encourage or provide incentives for the installation of electric car chargers in apartments and condominiums. This would be included in the residential green building program review that is scheduled for the City Council action in April 2012.

BACKGROUND

This study issue was sponsored by Councilmembers Griffith and Whittum and was ranked number 1 of 4 by the Council for the Community Development Department in 2011. The study issue paper is included in Attachment A.

In 1891, William Morrison of Des Moines, Iowa built the first successful electric automobile in the United States. In the early 1900's the cost of gasoline powered vehicles dropped significantly due to the combination of advances in mass production and internal combustion engine technology. Henry Ford introduced the first mass produced and gasoline powered Model T in 1908. During the 1920's, electric cars become impractical partly due to their relative cost and the consumer's desire for longer distance vehicles.

In the 1960's and 1970's there was a resurgence of interest in electric cars due to the energy crisis and a growing environmental movement. But it wasn't until after 2000, with growing concerns over increasing oil prices and greenhouse gas emissions, that a strong interest in electric cars re-emerged among consumers and manufacturers. Federal and State mandates and incentives also spurred interest in electric vehicles. Currently, General Motors, Nissan, Tesla, Ford, and Fisker Automotive already have electric cars on the market or plan to by the end of the year. Several other auto manufacturers plan to have electric vehicles on the market over the next few years.

This study focuses on fully electric cars and plug-in hybrid cars. Fully electric cars operate by using electrical energy that is stored in batteries (i.e. the Nissan Leaf). Plug-in hybrid cars include a battery that can be charged with electricity as well as an internal combustion engine (i.e. Chevrolet Volt). Plug-in hybrid vehicles use the energy stored in the batteries to operate the vehicle as the first source of power; if the battery power is depleted, the car will then operate from the internal combustion engine. This differs from a traditional hybrid vehicle (i.e. Toyota Prius) because the traditional hybrid continuously alternates between battery power and the internal combustion engine throughout the driving cycle.

EXISTING POLICY

General Plan - Air Quality

Policy EM-11.5: Reduce automobile emissions through traffic and transportation improvements. (Previously Air Quality Policy A.2)

Green Building Program

The City has had a green building program since 2004. Since that time, the green building program has evolved with increasing requirements. Currently the program requires new construction, initial tenant improvements, and large additions/remodels to comply with the Build it Green program (for residential buildings) or the LEED program (for non-residential buildings). In addition to the local program, the State of California also adopted the California Green Building Code (CALGreen), which applies to all new construction. CALGreen was adopted by the Sunnyvale as part of the triennial building code update in January 2011.

Of the current green building programs used, only LEED provides standards and credits for electric car chargers. LEED credit number 4.3 requires that a minimum of 3% of parking spaces be provided with alternative fuel fueling stations.

DISCUSSION

Types of Chargers

As with electric cars over the years, the types of chargers have varied greatly. Originally, each car manufacturer specified unique types of charging units that only worked with a specific car model. Within the past several years the automobile manufacturers developed a common standard for electric car chargers so that they will work universally with various models of electric cars. These universal standards have increased the practicality of electric cars.

The following table describes the various types of electric car chargers on the market. The table also includes the cost of the actual charging units:

Types of Electric Car Chargers				
Type of Charger	Power Supply	Charging Time	Cost of Charging Unit	Staff Comments
Level 1	110 volt, 12 amp circuit	16-20 hours	Charger is Provided with Car	Not part of this study since they are provided with the car and use a standard receptacle.
Level 2	240 volt, dedicated 40 amp circuit	4-7 hours	\$1,800 to \$2,200	This charger is very common and recommended by vehicle manufacturers; this study focuses on pre-wiring for this type of charger.
Level 3	480 volt and up to 400 amps	30 minutes	\$20,000+	These are rare, expensive, and require a lot of power; staff is not recommending pre-wiring for these chargers.

As with any new technology, the improvements and enhancements to electric car chargers are occurring rapidly. Some recent upgrades to charging units include smaller units, improved appearance, and programmable timers. The industry is also researching ways to reduce the charging time for future charging units.

Cost to Install Wiring for Electric Car Chargers

In addition to the cost of the charging unit itself, the cost to install the wiring for electric car chargers can be significant. Staff contacted three local electrical contractors to determine the approximate cost of the wiring. The results are summarized in the table below:

Cost to Install Wiring for Electric Car Chargers		
	Existing Building	During New Construction
Single-Family	\$1,000 to \$1,200	up to \$800
Townhouse	\$1,000 to \$1,500	up to \$800
Condominium/ Apartment	Varies*	\$7,000 to \$10,000 for a cluster of up to six charging stations

* In existing condominiums and apartments, the cost to install wiring for electric car chargers will vary widely. Variations in the location of electric service equipment, existing capacity of electrical system, and location of parking spaces will all affect the cost of installation. It is not realistic to provide general estimates for this type of work, but it is safe to estimate it would be several thousand dollars.

The Bay Area Air Quality Management District is finalizing an incentive program for the installation of up to 3,000 in-home Level 2 electric car

chargers. Participants are required to provide information about their electric car usage over a period of three years. The details of this program, including participating vendors, is scheduled to be completed by the end of this year.

Permitting Process

As with many new technologies, the popularity of electric vehicles has grown in the past year. In 2010, six permits were issued for electric vehicle chargers in residential buildings. Since January 2011, 27 permits have been issued for this work. These permits have been issued over the counter at the One-Stop Permit Center.

Since this type of work has become more common, staff developed an informational brochure for the public that describes the code requirements and permitting process. The brochure is available on-line at:

<http://sunnyvale.ca.gov/Portals/0/Sunnyvale/CDD/Residential/Electrical%20Car%20Chargers.pdf>

Additionally, in order to further improve the permitting process and reduce any burden on homeowners or contractors, permits for the installation of electric vehicle chargers in single family homes are available on-line at <http://www.e-OneStop.net>. The E-One-Stop offers building permits for 19 types of minor projects on-line without the need to visit the One-Stop Permit Center.

Many studies have been produced regarding the future of electric cars and necessary infrastructure. Many of these studies have a common finding regarding the need for local governments to streamline the permitting process as a method to encourage the use of electric cars.

Projected Number of Electric Cars

In January 2011, President Obama announced in his State of the Union address a goal to have one million electric vehicles on the road by 2015. It is generally believed that this goal is achievable, based on the number of manufacturers developing electric cars and the increased manufacturing capacity for electric cars. General Motors, Nissan, Tesla, Ford, and Fisker Automotive already have electric cars on the market or plan to by the end of the year. Additionally, Honda, Mitsubishi, Toyota and Volvo have plans to launch electric cars by 2015. To sell one million plug-in hybrid and all-electric cars by 2015 (cumulatively), carmakers will have to sell about 200,000 each year starting in 2011.

Other studies have also projected the number of electric cars that will be on the road in the future in the United States. Projections in these studies are based on assumptions in oil prices, reduction in battery cost, improved infrastructure for alternative fuels, and available subsidies. Because these factors can vary

widely and are difficult to predict, the projections made are more theoretical than scientific. Following are the projections of studies:

Name of Study	Electric Car Sales Projected by 2020 (% of total car sales)	Estimated % of Total Registered Passenger Vehicles by 2020
Bloomberg New Energy Finance (2010)	9%	3.3%
Powering Autos to 2020 by the Boston Consulting Group	5%	1.8%
Policy Options for Electric Vehicle Charging Infrastructure in C40 Cities by the Clinton Climate Initiative (2010)	5%	1.8%
Electric Vehicle Geographic Forecasts by Pike Research (2011)	5%*	2.0%*
Electric Vehicles in the United States by University of California, Berkeley (2009)	18%**	6.6%**

* Forecast for 2017

** This study assumes a low purchase price and operating cost of electric vehicles, a battery leasing program, high oil prices, subsidy program, and significantly improved infrastructure to extend the range of electric vehicles.

The projections listed above are for the United States. Based on current usage of alternative fuel vehicles and hybrids, studies indicate that electric car usage in California will be higher than the national average, and the Bay Area will be even higher than the State. Although speculative, electric car ownership is expected to continue to accelerate beyond 2020.

Other Cities

No other city in the Bay Area requires new residential construction to be pre-wired for electric car chargers and other local cities are not currently considering such a requirement. The City of San Francisco studied this issue last year and ultimately decided not to require new construction to be pre-wired. The City of Mountain View has negotiated with developers on a project-by-project basis to include pre-wiring in certain projects.

Sustainability Commission Comments

This study issue was presented to the Sustainability Commission on September 13, 2011 (draft minutes are included in Attachment D). The Commissioners stated that pre-wiring in all types of residential construction is important and should be a requirement. For single family detached and townhouses, where a private garage is attached to each dwelling unit, the Commission recommended that the garages should be pre-wired for electric car chargers during new construction.

For condominiums or apartments projects with shared parking, the Commissioners stated that 50% of the parking spaces should have the ability to install an electric car charger. There was discussion regarding if the assigned or unassigned parking spaces should be pre-wired for electric chargers. However, there did not appear to be a consensus on this issue.

Planning Commission Comments

This study issue was presented to the Planning Commission on October 10, 2011 (draft minutes are included in Attachment E). The Commissioners agreed that some parking spaces in condominium and apartment projects should be pre-wired for electric car chargers. However, there were varying comments regarding the number, location, and type of parking spaces. Following is a summary of the comments made:

- In apartments, the pre-wired parking spaces should be for assigned/covered spaces only and not for the un-assigned spaces.
- All of the assigned spaces should be pre-wired and a fixed percent of the un-assigned spaces.
- Condominium units should be treated separately since they are ownership units and residents will typically stay longer. Require a lower percentage of spaces to be pre-wired in apartments, but actually install the charger.
- Pre-wiring should be available within a certain distance of each parking space.

Issues for Consideration

Single Family Detached and Townhouses

Pre-wiring for electric car chargers in new residential construction with private attached garages/carports (typically single family detached and townhouses) requires minimal additional cost to developers for materials or labor, up to \$800. This is because the wiring is installed during the framing stages before the sheetrock is installed.

Condominiums and Apartments

Pre-wiring for electric car chargers in new residential construction with shared parking (condominiums and apartments) is more complicated. Several more issues are involved including the number of parking spaces that should be pre-wired, the location of pre-wired parking spaces, sizing of electric panels at the site, and the total operation cost.

Number of Parking Spaces to be Pre-wired: The estimates for the number of electric cars on the road in 2020 vary from 1.8% to 3.3%, with one study

forecasting an optimistic percentage of over 6%. By 2030 those numbers will continue to increase. It is most likely that the percentage will be larger in California and even larger in the Bay Area specifically. Staff recommends that 12.5% of required parking spaces (one out of every eight spaces) be pre-wired to allow electric car chargers in new condominiums and apartments. This percentage should accommodate optimistic projections of electric car ownership to 2030. This percentage can be adjusted in the future depending on trends in electric car ownership.

Location of Pre-Wired Parking Spaces: The location of the pre-wired parking spaces would be determined for each project as part of the overall site parking management plan. The pre-wired spaces can be grouped together, should be conveniently located in areas that would be available for any resident, and can be either assigned or unassigned parking spaces. If they were assigned spaces, the parking management plan should describe how spaces can be re-assigned for use by various residents (similar to the current process for assigning disabled accessible parking spaces).

Rather than trying to specify in the ordinance how these spaces should be dispersed throughout a site, staff recommends that this issue be determined on a project specific basis depending on the unique characteristics of each site.

Sizing of Electric Panels at the Site: There will be a cost for the increased capacity of the electric service; however, the increased cost for this work is dependent on the design of the overall electrical supply equipment and cannot be estimated on a general basis.

Cost of Operations (Electricity Cost): In addition to the actual cost to pre-wire, the future homeowners association or property manager will incur the cost of electricity used for car charging. There are several ways that this cost can be paid for, such as installing a charging unit that contains a point-of-sale unit (where the user can pay with a credit card similar to a gas pump), or charging a flat monthly fee for use of the charger. Staff believes this is an issue for the developer to decide and should be included in the parking management plan for the project.

All of the above issues will result in increased costs for development. Staff believes that this is an important issue and some additional cost is acceptable in order to encourage and facilitate the use of electric cars.

Because Sunnyvale will be one of the first cities with this type of requirement, staff believes the ordinance should specify the number of pre-wired spaces but should not mandate further details. Staff proposes to work with developers to determine the details for each project through the approval of a parking

management plan, which is typically required for all residential projects. Provisions for operations and locations of pre-wired parking spaces would be addressed in these plans.

Incentive for Installation of Charging Units

While this study issue was specific to the pre-wiring of new residential construction, the possibility of requiring charging units was discussed by several Planning Commissioners. Since this is a new technology and the industry is rapidly evolving, it is reasonable to assume that charging unit performance will continue to improve in the future. However, it may be beneficial to provide incentives for developers to install some charging units. Types of incentives offered may include allowing an increased number of compact parking spaces or allowing some tandem parking spaces.

Staff recommends including the consideration of incentives in the residential green building study which is scheduled to be heard by the Council in April 2012.

FISCAL IMPACT

The change to the Municipal Code would have a minimal fiscal impact; however, depending on the alternatives selected, there may be some fiscal impact to the Building Division as additional plan review and inspection resources may be needed if extensive new requirements are implemented. The primary financial impact will be to developers for the cost of pre-wiring.

PUBLIC CONTACT

Public contact was made by posting the Council agenda on the City's official-notice bulletin board outside City Hall, at the Sunnyvale Senior Center, Community Center and Department of Public Safety; and by making the agenda and report available at the Sunnyvale Public Library, the Office of the City Clerk and on the City's Web site.

Notification of this study was sent to approximately 25 residential developers and a community meeting was held on September 8, 2011. This item was also reviewed by the Sustainability Commission and Planning Commission with opportunity for public input.

The California Apartment Association Tri-County also provided input on this subject. They expressed support for pre-wiring; however, the 50% - 100% of parking spaces suggested by the Sustainability and Planning Commissions was too high. Rather they suggest a requirement of up to 15%. They also suggest that apartment developments of less than 30 dwelling units be exempt as the cost of pre-wiring for these smaller projects is not economically feasible.

Staff also contacted the Nissan and Toyota dealerships in Sunnyvale. Nissan is currently selling the Leaf electric car and Toyota will be introducing the plug-in hybrid Prius within the next six months. Representatives from both dealerships agreed that pre-wiring for electric car chargers in new residential construction would be beneficial for future electric car owners. They also confirmed that the Level 2 charging units are recommended by the manufacturers and are the most effective for individual electric car owners. The Level 2 charging unit is also the industry standard for charging units and will continue to be the focus for the foreseeable future.

ALTERNATIVES

1. Adopt the Resolution of Finding and Determining the Need for Modifications to the Building Code (Attachment B) and the proposed ordinance (Attachment C), with an effective date of July 1, 2012, to require the following:
 - new residential construction where private garages/carports (typically single family detached and townhouses) are attached to individual dwelling units, require the garage to be pre-wired for a Level 2 electric car charger, and
 - new residential construction where shared parking is provided (typically condominiums and apartments), require 12.5% of required parking spaces to be pre-wired for Level 2 electric car chargers. Operational issues and locations shall be specified in a parking management plan.
2. Adopt the Resolution of Finding and Determining the Need for Modifications to the Building Code (Attachment B) and the proposed ordinance (Attachment C), with modifications.
3. Direct staff to include provisions in the City's green building program to encourage or provide incentives for the installation of electric car chargers in apartments and condominiums. This would be included in the residential green building program review that is scheduled for the City Council action in April 2012.
4. Take no action.

RECOMMENDATION

Staff recommends Alternatives 1 and 3. Staff is recommending pre-wiring to provide power for a Level 2 electric car charger. Staff notes that pre-wiring 12.5% of required parking spaces or one out of every eight spaces for apartments and condominiums is aggressive based on the projections of the

future market share and ownership of electric cars. However, pre-wiring a higher percentage of spaces will allow greater flexibility for locating charger units within projects. Staff does not recommend requiring the installation of the actual charging units because of the rapidly changing technology. Property managers and homeowners associations will likely respond to the future demand for charging units, so the key objective is having developments pre-wired to accept these units. However, staff does recommend exploring the inclusion of incentives for installing charging stations in the City's green building program.

Reviewed by:

Hanson Hom, Director, Community Development
Prepared by: Ali Fatapour, Chief Building Official

Approved by:

Gary M. Luebbers
City Manager

Attachments

- A. Study Issue Paper
- B. Resolution Finding and Determining the Need for Modifications to the California Building Codes
- C. Draft Ordinance
- D. Sustainability Commission Meeting minutes from September 13, 2011
- E. Planning Commission Meeting minutes from October 10, 2011

2011 Council Study Issue

CDD 11-01 Requiring Electric Car Chargers in New Residential Developments

Lead Department Community Development

History 1 year ago None 2 years ago None

1. What are the key elements of the issue? What precipitated it?

This study would examine the feasibility of requiring new residential dwelling units to be pre-wired for electrical vehicle charging. The majority of electrical vehicles on the market use 220 volt power for charging. All new homes are currently provided with 220 volt power from PG&E by their standards/requirements (which are set by the California Public Utility Commission). PG&E has been providing 220 volt power to residential buildings for over 60 years, as this type of power is a commonly used for appliances in residential buildings (i.e. clothes dryers or electric ranges). With the 220 volt power already supplied, adding a receptacle to the garage for vehicle charging would not be difficult or costly for a property owner.

Pre-wiring the garage may increase the number of citizens purchasing electrical vehicles. Increased usage of electrical vehicles would result in improved air quality by reducing the emissions from fossil fuel-burning vehicles.

2. How does this relate to the General Plan or existing City Policy?

Air Quality Sub-Element

Policy A.2 - Reduce automobile emissions through traffic and transportation improvements. Since traffic congestion delays increase the level of emissions, congestion management has air quality benefits.

3. Origin of Issue

Council Member(s) Griffith, Whittum

4. Staff effort required to conduct study Moderate

5. Multiple Year Project? No Planned Completion Year 2011

6. Expected participation involved in the study issue process?

- Does Council need to approve a work plan? No
- Does this issue require review by a Board/Commission? No
- If so, which?
- Is a Council Study Session anticipated? No

7. Briefly explain cost of study, including consultant hours, impacted budget program, required budget modifications, etc. and amounts if known.

8. Briefly explain potential fiscal impact of implementing study results (consider capital and operating costs, as well as potential revenue).

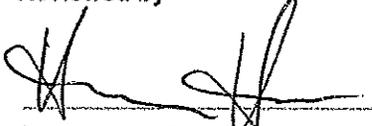
9. Staff Recommendation

Staff Recommendation Against Study

If 'For Study' or 'Against Study', explain

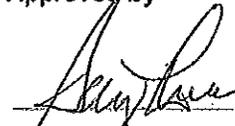
Staff believes the study is not necessary since all residences are already provided with the voltage necessary to charge an electrical vehicle. Homeowners can easily add the required receptacle in the garage if needed. Additionally, demand for electrical cars is market driven and, therefore, developers would likely offer this option if the demand grows for electrical vehicles.

Reviewed by


Department Director

9/30/10
Date

Approved by


City Manager

10-19-10
Date

RESOLUTION NO. _____
A RESOLUTION OF THE CITY COUNCIL OF THE CITY
OF SUNNYVALE FINDING AND DETERMINING THE
NEED FOR MODIFICATIONS TO THE 2010 CALIFORNIA
GREEN BUILDING STANDARDS CODE

WHEREAS, the City of Sunnyvale is adopting the 2010 California Green Building Standards Codes with changes and modifications;

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF SUNNYVALE that it finds and determines there is a need to adopt the changes or modifications because of local climatic, topographic, geological and related geographic conditions.

General Findings

1. Climatic

a. **Precipitation.** Precipitation ranges from 4.83 to 30.30 inches per year with an average of approximately 13.86 inches per year. Approximately 90% falls during the months of November through April and 10% from May through October. This area experienced a major drought in 1977-78 and a moderate drought the next five years; it is possible that more droughts will occur in the future. The local climate is characterized by markedly delineated rainy and dry seasons, which tend to maximize the expansive characteristics of soil.

b. **Relative Humidity.** Humidity generally ranges from 60% during daytime to 80% at night. It drops to 20% during the summer months and occasionally drops lower.

c. **Temperatures.** Temperatures have been recorded as high as 108° F. Average summer highs are in the 78°-82° F. range.

d. **Winds.** Prevailing winds are from the Northwest or Southeast. However, winds are experienced from virtually every direction at one time or another. Velocities are generally in the 5-mph to 15-mph range, gusting to 7.4 mph to 30 mph, particularly during the summer months. Extreme winds, up to 60 mph, have been known to occur.

e. **Summary.** These local climatic conditions affect the acceleration, intensity and size of fire in the community. Times of little or no rainfall, of low humidity and high temperatures create extremely hazardous conditions, particularly as they relate to wood shake and shingle roof fires and conflagrations. The winds experienced in this area can have a tremendous impact upon structure fires of buildings in close proximity to one another commonly found in Sunnyvale. During wood shake and shingle roof fires, or exposure fires, winds can carry sparks and burning brands to other structures, thus spreading the fire and causing conflagrations. In building fires, winds can literally force fires back into the building and can create a blowtorch effect, in addition to preventing "natural" ventilation and cross-ventilation efforts. To reduce the effects of greenhouse gas, building methodologies and techniques can be effective

2. Geological, Geographic and Topographic

a. **Geographic Location.** Sunnyvale is located in the Santa Clara Valley. It has taken its place as the second largest city in the heart of the "Silicon Valley," the center for an expanding and changing technology industry.

b. Seismic Location. Sunnyvale is situated on alluvial soils between San Francisco Bay and the San Andreas Fault zone. The City's location makes it particularly vulnerable to damage to taller and older structures caused by seismic events. The relatively young geological processes that have created the San Francisco Bay Area are still active today. Seismically, the City sits between two active earthquake faults (San Andreas and the Hayward/Calaveras) and numerous potentially active faults.

c. Seismic and Fire Hazards. Gypsum wallboard and exterior portland cement plaster have performed poorly during recent California seismic events. The shear values for gypsum wallboard and portland cement stucco contained in the code are based on mono-directional testing. It is appropriate to limit the use of these products until cyclic loading testing are performed and evaluated. Fire following an earthquake has the potential of causing greater loss of life and damage than the earthquake itself.

Hazardous materials, particularly toxic gases, could pose the greatest threat to the largest number, should a significant seismic event occur. Public safety resources would have to be prioritized to mitigate the greatest threat, and may likely be unavailable for smaller single dwelling or structure fires.

Other variables may tend to intensify the situation:

1. The extend of damage to the water system;
2. The extent of isolation due to bridge and/or freeway overpass collapse;
3. The extent of roadway damage and/or amount of debris blocking the roadways;
4. Climatic conditions (hot, dry weather with high winds);
5. Time of day will influence the amount of traffic on roadways and could intensify the risk to life during normal business hours;
6. The availability of timely mutual aid or military assistance;
7. The large portion of dwellings with wood shingle roof coverings could result in conflagrations.

d. Size and Population. The City has an area over 24 square miles in size and a population estimated to be 140,450.

e. Development. Sunnyvale is a community, which is projected to add 7,200 new residential units within the next twenty-five years, primarily in multi-family configurations, for which building security is a matter of acute importance.

f. Public Safety Department. Sunnyvale utilizes a public safety (joint police/fire) department with personnel who function as both fire suppression and police officers, resulting in fewer personnel than otherwise would be required for a city of its size. A premium is therefore placed on built-in physical techniques and devices as crime preventative measures. It is therefore also imperative that fire detection and suppression occur as quickly as possible to minimize loss of property and life. For these reasons the most stringent provisions are required concerning fire detection, alarm and suppression systems.

g. Roads and Streets. The number of vehicle miles driven in the City is steadily increasing and considerable efforts in traffic and roadway improvements are being made to ease the crush of commuters to and through the City to their homes and places of work. Because of the City's high concentration of jobs, much of the peak traffic is made by nonresidents traveling to or from Sunnyvale. The impact of planned developments and traffic flow will continue to have an effect on the Department of Public Safety and delivery of fire services.

h. Industry. Sunnyvale is the site of many manufacturing and research industries which use toxic, flammable and explosive chemicals and materials in potentially hazardous combinations. Special precautions thus are required to minimize the risk of damage to adjoining persons and properties.

i. Mixed Industrial/Residential Uses. High-density residential uses are located near high-risk industries, necessitating special precautions.

j. Transportation. Sunnyvale is divided by an interstate highway, which potentially could affect response times of fire suppression equipment.

k. Soil Conditions and Topography. Sunnyvale lies at the southern end of San Francisco Bay and is built atop the alluvial deposits that surround the margins of the Bay. The alluvium was created by the flooding of the many streams emptying into the San Francisco Bay depression, and from intermittent seawater inundation that has occurred over the last 2 or 3 million years. The areas closest to the Bay are overlain by unconsolidated fine silty clay, known as "Bay Mud" which varies in thickness from a few feet to as much as 30 feet. Generally, the older, more stable alluvium is to the south and the younger, less stable material is to the north. Bedrock lies beneath the area at depths generally 300' or more. The topography is essentially flat, dropping from an elevation of 300 feet to sea level. The slope across the City is in a northeasterly direction from the high point in the southwest corner to the Bay. The average slope is approximately 0.9%.

The Silicon Valley is within a very active seismic area and local soil conditions can be highly expansive (clay soils). The Northridge earthquake provided hundreds of examples of damage to plain concrete footings. This type of damage is extremely expensive to repair, in contrast to the small expense of providing nominal footing reinforcement. Footing reinforcement is also necessary to prevent damage due to pumping action caused by local expansive soils, which shrink and swell during seasonal drying and wetting conditions.

Most of the surface soils in the Silicon Valley are relatively young and unconsolidated sedimentary materials formed from a wide variety of parent materials. The varying chemical composition, degree of weathering, and the relatively acid environment have created soils of varying types, which are particularly corrosive in nature. Much of the surface soil in the Silicon Valley is highly expansive (i.e., shrink-swell behavior) and has low bearing strength.

l. Water/Sewer. Some parts of the Silicon Valley have hard water, which is corrosive to ferrous pipe. The groundwater table is unusually high in many places. Expansive soils create unstable conditions, which increase the potential of breaks in sewer laterals. To maintain health and sanitary services, it is necessary to gain access, to periodically maintain public sanitary laterals.

m. Buildings, Landscaping and Clearances. Many of the newer large buildings and building complexes are of designs, which greatly limit visibility and approach to and accessibility by Public Safety resources. Many houses and other buildings with wood roofs and/or sidings are so close together that fire will readily spread from one to another by both radiation and convection.

n. Summary. The stated local geological, geographic and topographical conditions increase the magnitude, exposure, accessibility problems and fire hazards presented to the

Department of Public Safety. Lying beneath Sunnyvale are thick layers of sand, gravel and clay, known as alluvium, which amplify the effects of earthquakes. Based on the damage caused in Santa Clara Valley by the 1906 earthquake and the poor performance of alluvial deposits during earthquakes, this area could be subject to severe damage.

Findings.

With the exception of changes justified on administrative grounds, the local amendments of the 2010 California Building Codes are justified by all of the aforementioned general findings.

BE IT FURTHER RESOLVED that the City Clerk is hereby directed to cause a copy of this resolution, together with the ordinances making the changes and modifications to the enumerated codes, to be filed with the State Department of Housing and Community Development.

Adopted by the City Council at a regular meeting held on _____, by the following vote:

- AYES:
- NOES:
- ABSTAIN:
- ABSENT:

ATTEST:

APPROVED:

City Clerk
(SEAL)

Mayor

APPROVED AS TO FORM AND LEGALITY:

David E. Kahn, City Attorney

ORDINANCE NO. _____

AMENDMENT C
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AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF SUNNYVALE AMENDING CHAPTER 16.43 (GREEN BUILDING CODE) OF TITLE 16 (BUILDING AND CONSTRUCTION) OF THE SUNNYVALE MUNICIPAL CODE, WITH CERTAIN AMENDMENT THERETO

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF SUNNYVALE DOES ORDAIN AS FOLLOWS:

SECTION 1. CHAPTER 16.43 AMENDED. SECTION 16.43.040 (Pre-Wiring for Electric Car Chargers) is hereby added to read as set forth in Exhibit "A" attached and incorporated by reference.

SECTION 2. CONSTITUTIONALITY; SEVERABILITY. If any section, subsection, sentence, clause or phrase of this Ordinance is for any reason held to be invalid by a court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this ordinance. The City Council hereby declares that it would have passed this ordinance, and each section, subsection, sentence, clause and phrase thereof irrespective of the fact that any one or more sections, subsections, sentences, clauses or phrases be declared invalid.

SECTION 3. CEQA EXEMPTION. The City Council finds, pursuant to Title 14 of the California Code of Regulations, Section 15061(b)(3), that this ordinance is exempt from the requirements of the California Environmental Quality Act (CEQA) in that it is not a Project which has the potential for causing a significant effect on the environment. The Council therefore directs that the Planning Division may file a Notice of Exemption with the Santa Clara County Clerk in accordance with the Sunnyvale Guidelines for the implementation of CEQA adopted by Resolution No. 118-04.

SECTION 4. EFFECTIVE DATE. This ordinance shall be in full force and effect thirty (30) days from and after the date of its adoption.

SECTION 5. POSTING AND PUBLICATION. The City Clerk is directed to cause copies of this ordinance to be posted in three (3) prominent places in the City of Sunnyvale and to cause publication once in *The Sun*, the official newspaper for publication of legal notices of the City of Sunnyvale, of a notice setting forth the date of adoption, the title of this ordinance, and a list of places where copies of this ordinance are posted, within fifteen (15) days after adoption of this ordinance.

Introduced at a regular meeting of the City Council held on _____, 2011, and adopted as an ordinance of the City of Sunnyvale at a regular meeting of the City Council held on _____, 2011, by the following vote:

- AYES:
- NOES:
- ABSTAIN:
- ABSENT:

ATTEST:

APPROVED:

City Clerk
Date of Attestation: _____

Mayor

(SEAL)

APPROVED AS TO FORM AND LEGALITY:

David E. Kahn, City Attorney

Chapter 16.43.

GREEN BUILDING CODE

- 16.43.010. Title.
- 16.43.020. Adoption by reference.
- 16.43.030. Fireplaces and wood-burning appliances.
- 16.43.040. Pre-Wiring for Electric Car Chargers

16.43.010. Title.

This chapter shall be known and may be cited and referred to as the “Green Building Code for the City of Sunnyvale.”

16.43.020. Adoption by reference.

The “2010 California Green Building Standards Code” is hereby adopted by reference, with changes and modifications as hereinafter set forth, as the green building code of the city of Sunnyvale.

16.43.030. Fireplaces and wood-burning appliances.

California Green Building Code Section 4.503 is amended to read:

(a) **Section 4.503 Fireplaces and Wood-Burning Appliances.** Any installed gas fireplace shall be a direct-vent sealed-combustion type. Any installed wood-burning fireplace, stove, or pellet stove shall comply with U.S. EPA Phase II emission limits where applicable.

(b) This section shall not apply to the repair, reconstruction or replacement of any lawful, existing wood-burning appliance.

(c) This section shall not apply to a gas fireplace. However, the conversion of a gas fireplace to burn wood shall constitute the installation of a wood-burning appliance and shall be subject to the requirements of this chapter.

(d) It is unlawful to burn the following in any fireplace or wood-burning appliance:

- (1) Coal;
- (2) Garbage;
- (3) Glossy or colored paper;
- (4) Paint;
- (5) Paint solvent;
- (6) Particle board;
- (7) Plastic or items made from plastic;
- (8) Rubber or items made from rubber;
- (9) Salt water driftwood;
- (10) Treated wood; and
- (11) Waste petroleum products.

California Green Building Code Section 5.503 is amended to read:

(a) **Section 5.503 Fireplaces and Wood-Burning Appliances.** Any installed gas fireplace shall be a direct-vent sealed-combustion type. Any installed wood-burning fireplace, stove, or pellet stove shall comply with U.S. EPA Phase II emission limits where applicable.

(b) This section shall not apply to the repair, reconstruction or replacement of any lawful, existing wood-burning appliance.

(c) This section shall not apply to a gas fireplace. However, the conversion of a gas fireplace to burn wood shall constitute the installation of a wood-burning appliance and shall be subject to the requirements of this chapter.

(d) It is unlawful to burn the following in any fireplace or wood-burning appliance:

- (1) Coal;
- (2) Garbage;
- (3) Glossy or colored paper;
- (4) Paint;
- (5) Paint solvent;
- (6) Particle board;
- (7) Plastic or items made from plastic;
- (8) Rubber or items made from rubber;
- (9) Salt water driftwood;
- (10) Treated wood; and
- (11) Waste petroleum products.

16.43.040. Pre-Wiring for Electric Car Chargers.

California Green Building Code Section 4.106.4 is hereby added:

(a) Section 4.106.4 Pre-Wiring for Electric Car Chargers. Effective July 1, 2012, parking spaces shall be pre-wired to accommodate Level 2 electric car chargers in accordance with section 16.32, as follows:

1. all garages or carports accessory to single family dwelling
2. all garages or carports in residential developments with attached individual garages or carports
3. 12.5% of the total required parking spaces in residential developments that provide common shared parking



**SUNNYVALE SUSTAINABILITY COMMISSION
MEETING MINUTES SEPTEMBER 19, 2011**

The Sustainability Commission met at 7:00 p.m. in the West Conference Room, 456 W. Olive Ave., with Chair Sue Harrison presiding.

CALL TO ORDER

Commission Chair Sue Harrison called the meeting to order at 7:00 p.m.

ROLL CALL

Members Present: Chair Sue Harrison
Vice Chair Regina Wheeler
Commissioner Barbara Fukumoto
Commissioner Gerry Glaser
Commissioner Dan Hafeman
Commissioner Joe Green-Heffern

Members Absent: Commissioner Amit Srivastava

Staff Present: Environmental Division Manager Lorrie Gervin
Assistant to the Director Cathy Merrill
Director of Environmental Services John Stufflebean
Permit Center Coordinator Diana Perkins

PRESENTATION

Diana Perkins, Permit Center Coordinator from Department of Community Development provided an overview of the report "Requiring Electric Car Chargers in New Residential Developments (Study Issue)" and solicited input from the Commissioners. Commissioners offered suggestions requiring types of wiring and voltages, solar power, changes in City Building Codes, and percentages of parking spaces and space availability. The final report is planned to be presented to the City Council on November 15, 2011.

No action from the Commission was required.

CONSENT CALENDAR

1.A) ACTION: Approval of draft minutes of Sustainability Commission meeting of August 15, 2011.

Commissioner Hafeman requested the August 18, 2011 minutes be pulled from the Consent Calendar in order to correct a statement under Non-Agenda items to read: "Commissioner Hafeman suggested a future agenda for discussion about speed limits in Sunnyvale *"along El Camino Real"*. The Commissioner stated the intent was to address speed limits only along El Camino, not though out the entire City.

MOTION: Commissioner Green-Heffern moved and Commissioner Glaser seconded to approve the August 15, 2011 minutes with a change in wording to state "Commissioner Hafeman suggested a future agenda for discussion about speed limits in Sunnyvale *along El Camino Real*."

VOTE: 5- 0 (Commissioner Wheeler abstained and Commissioner Srivastava absent)

PUBLIC ANNOUNCEMENTS - None

PUBLIC COMMENTS

Chair Harrison opened the public hearing for comments.

Linda Larsen, Sunnyvale resident, expressed concerns regarding an increase in housing costs to cover new requirements to install electric car chargers, when many residents do not drive electric vehicles.

There were no other public comments.

Chair Harrison closed the public hearing.

PUBLIC HEARINGS/GENERAL BUSINESS

1. Study Issue Review

Cathy Merrill, Assistant to the Director, provided an overview of the study issue process and explained if the Commission wished to advise the City Council on their ranking of Study Issues, the ranking would need to be completed by the end of October.

Following is the list of proposed 2012 study issues to be ranked by the Commission.

ESD-01	Consolidated Tracking of Energy and Water in City Operations
ESD-02	Sustainability Demonstration Fund
ESD-03	Water Conservation Metrics for Residents
ESD-04	Impact of Sea Level Rise on Land Use
ESD-05	Community Greenhouse Gas Inventory
ESD-06	Community Solar Program

Environmental Services Director John Stufflebean noted that Study Issue #12-03 Water Conservation Metrics for Residents was more of an operational 'Just Do It' rather than a study issue. He agreed that the Department would implement this in the near future and keep the Commission apprised of the Department's progress. He suggested the Commission may want to drop this as a proposed Study.

While discussing Study Issue #12-04 Commissioner Glaser agreed to email his suggested wording to Environmental Division Manager Lorrie Gervin. Discussion continued on the remaining study issues.

The Commission completed their discussion of the study issues and Chair Harrison opened the public hearing.

There being no one in the audience wishing to speak, Chair Harrison closed the public hearing and asked if anyone wished to drop or defer a proposed study issue.

MOTION: Commissioner Fukumoto moved and Commissioner Hafeman seconded to drop the proposed study issue # 12-03 Water Conservation Metrics for Residents.

VOTE: 6-0 (Commissioner Srivastava absent)

Assistant to Director Merrill shared the results of the Commission's study issue ranking.

Rank	Item	Study Issue
1	ESD-05	Community Greenhouse Gas Inventory
2	ESD-02	Sustainability Demonstration Fund
3	ESD-04	Impact of Sea Level Rise on Land Use
4	ESD-06	Community Solar Program
5	ESD-01	Consolidated Tracking of Energy and Water in City Operations

MOTION: Commissioner Fukumoto moved, Vice-Chair Wheeler seconded, to accept the ranking noted above.

VOTE: 6-0 (Commissioner Srivastava absent)

2. Sustainability Metrics in Community Condition Indicators

This agenda item will be deferred to the next meeting.

3. Residential Water Bill Format

This agenda item will be addressed when staff returns to the Commission with the new water conservation information to be included on residential water bills.

4. Green Cities California Membership

Director Stufflebean offered to return the Commission with information on what is required to join Green Cities California for the Commission's consideration.

5. Commission Advocacy Recommendations to Council

This agenda item will be deferred to the next meeting.

NON-AGENDA ITEMS AND COMMENTS

Board and Commission Member Oral Comments

Commissioner Hafeman plans to attend the Sealy Corporate Engineers monthly meeting and will report back to the Commission next month.

Commissioner Hafeman complimented the City for continuing its Composting Workshop program.

Commissioner Fukumoto announced the BAWSCA Landscape Education Hands-on Workshops that are currently planned for October 1st and 8th at City Hall.

Commissioner Fukumoto attended the Safe Routes to School Program and will bring information on that effort back to the Commission at a future date.

Staff Oral Comments

Environmental Services Director Stufflebean extended an apology on behalf of the City's administration for not bringing the Green Building Action item to the Sustainability Commission before it was considered by the City Council. He noted that management will be working together to make sure public hearing items come to the appropriate Commission for action prior to the City Council's public hearing.

Given the number of items to come before the Commission at their next meeting, the Commissioner's requested a special meeting on October 10, 2011.

ADJOURNMENT

Chair Harrison adjourned the meeting at 9:34 p.m..

Respectfully submitted,

Lorrie Gervin, Environmental Division Manager

Reviewed by: John Stufflebean, Director of Environmental Services



APPROVED MINUTES
SUNNYVALE PLANNING COMMISSION
October 10, 2011
456 West Olive Avenue, Sunnyvale, CA 94086

7:00 PM – Outreach Meeting – Council Chambers

1. **Location:** Regarding Lands in Sunnyvale Adjacent to Moffett Federal Air Field
Subject: Public Outreach Meeting to present the Moffett Field Comprehensive Land Use Plan
Santa Clara County Airport Land Use Commission (ALUC)
Staff Contact: Gerri Caruso, (408) 730-7591
gcaruso@ci.sunnyvale.ca.us
Notes: (55 minutes)

2. **Comments from the Chair** (5 minutes)

8:00 PM - Public Hearing – Council Chambers

The Planning Commission met in regular session with Chair Hendricks presiding.

CALL TO ORDER/SALUTE TO THE FLAG

ROLL CALL

Members Present: Chair Glenn Hendricks; Vice Chair Gustav Larsson; Commissioner Maria Dohadwala; and Commissioner Brandon Sulser.

Members Absent: Commissioner Bo Chang (excused); Commissioner Arcadi Kolchak (excused); and Commissioner Nick Travis (excused).

Staff Present: Trudi Ryan, Planning Officer; Kathryn Berry, Senior Assistant City Attorney; Diana Perkins, Plan Checker; Gerri Caruso, Principal Planner; Shaunn Mendrin, Senior Planner; and Recording Secretary, Debbie Gorman.

SCHEDULED PRESENTATION - None

PUBLIC ANNOUNCEMENTS/PUBLIC COMMENTS

Speakers are limited to three (3) minutes. If you wish to address the Planning Commission, please complete a speaker's card and give it to the Recording Secretary or you may orally make a request to speak. If your subject is not on the agenda, you will be recognized at this time; but the Brown Act (Open Meeting Law) does not allow action by Planning Commission Members. If you wish to speak to a subject listed on the agenda, you will be recognized at the time the item is being considered by the Planning Commission.

CONSENT CALENDAR

1.A. APPROVAL OF MINUTES of September 26, 2011

Vice Chair Larsson moved to approve the minutes of September 26, 2011. Comm. Sulser seconded. Motion carried 4-0, with Comm. Chang, Comm. Kolchak and Comm. Travis absent.

PUBLIC HEARINGS/GENERAL BUSINESS

2. FILE #: 2011-7495
Location: 589 W. Java Dr. (APN: 110-26-033, 044, 047)
Proposed Project: Parcel Map and Major Moffett Park Design Review to add a new, six-story 315,000 square foot office building where 24,000 square feet for a special use amenities building and one parking structure (78% Floor Area Ratio).
Applicant/ Owner: Yahoo! / Java SNV Holdings LLC
Environmental Review: Mitigated Negative Declaration
Staff Contact: Shaunn Mendrin, 408-730-7429, smendrin@ci.sunnyvale.ca.us

ACTION: Vice Chair Larsson made a motion on 2011-7495 to adopt the Mitigated Negative Declaration and approve the Major Moffett Park Design Review and Tentative Map with attached conditions. Comm. Sulser seconded. Motion carried 4-0, with Comm. Chang, Comm. Kolchak and Comm. Travis absent.

APPEAL OPTIONS: This action is final unless appealed to the City Council no later than October 25, 2011.

3. Standing Item: Potential Study Issues

Trudi Ryan, Planning Officer said several potential study issues were discussed at the previous Planning Commission meeting on September 26, 2011. She commented that the Planning Commission may want to vote on whether to sponsor them and discussed each.

Comm. Dohadwala moved to sponsor a study issue to study the use of Redwoods in the City relative to water conservation and to consider the long-range impacts of Redwoods on the City landscape. Comm. Sulser clarified with Comm. Dohadwala said she likes Redwoods, however the study would be in regards to water conservation and whether Redwoods should be encouraged. Comm. Sulser seconded the motion, commenting that Redwoods are unique and interesting trees.

ACTION: Comm. Dohadwala moved to propose a study issue regarding the use of Redwoods in the City relative to water conservation and to consider the long-range impacts of Redwoods on the City landscape. Comm. Sulser seconded. Motion carried 4-0, with Comm. Chang, Comm. Kolchak and Comm. Travis absent.

Comm. Dohadwala moved that the design requirements be reviewed for single and multi-level residential and that requirements of options be considered so a certain number of the units would have greater vertical accessibility throughout. Comm. Sulser seconded the motion. The motion failed 2-2 with Chair Hendricks and Vice Chair Larsson dissenting.

Vice Chair Larsson moved to propose a Study Issue to examine pedestrian circulation plans for the ITR areas without plans. Comm. Sulser seconded the motion and asked staff whether the pedestrian circulation for the ITR 4b area would be included with the Lawrence Station Area Plan. Staff said yes. Vice Chair Larsson clarified that he is not suggesting that each of the areas need to have a plan, just that the areas would be looked at to determine whether it would be appropriate. The seconder said the clarification was acceptable as part of the motion.

Vice Chair Larsson moved to propose a study issue to examine ITR area 6 and the East Sunnyvale ITR area to determine whether it would be appropriate to develop a pedestrian circulation plan for the areas. Comm. Sulser seconded. Motion carried 4-0, with Comm. Chang, Comm. Kolchak and Comm. Travis absent.

NON-AGENDA ITEMS AND COMMENTS

- COMMISSIONERS ORAL COMMENTS
- STAFF ORAL COMMENTS

City Council Meeting Report

Ms. Ryan advised that the Planning Commission has a Joint Study Session scheduled for Tuesday, November 29, 2011 at 5:30 p.m. with the City Council, the Bicycle and Pedestrian Advisory Commission, and the Sustainability Commission regarding the status of the Land Use and Transportation Elements and the Climate Action Plan.

Ms. Ryan discussed planning related items considered by City Council at the September 27, 2011 and October 4, 2011 meetings.

Other Staff Oral Report

INFORMATION ONLY ITEMS

- Memo regarding "Requiring Electric Car Chargers in New Residential Developments" (Study Issue – Building Division)

Diana Perkins, Plan Checker, said this Study Issue is to examine the feasibility of requiring new residential dwelling units to be prewired for electrical vehicle charging. Ms. Perkins provided background information and asked for the Planning Commission's feedback and comments on this Study Issue.

Comm. Sulser discussed with staff apartments and prewiring. Ms. Perkins said the LEED program requires 3% of the parking spaces to be prewired and the Sustainability

Commission would like to see 50% of the parking spaces to be prewired. Trudi Ryan, Planning Officer, further discussed that the prewiring would be provided in development and tenants or homeowners would provide the chargers. She said this would prevent having to prewire in the future which would be more costly and complicated. Comm. Sulser commented that purchasing a charger would be a capital expenditure and that he would not spend the money for a charger as an apartment renter.

Vice Chair Larsson asked if the 3% LEED requirement was for prewiring only, or if it includes the charging station. Staff said the requirement is for installing charging stations. Vice Chair Larsson commented that he does not know if a 50% prewiring requirement is the correct number and suggested possibly a 20% prewiring requirement.

Comm. Dohadwala confirmed with staff that this would be for new apartments and condominiums and asked about the cost involved. She said she could see people being more willing to purchase chargers for condominiums than apartments. Ms. Perkins said level 2 chargers charge a car in four to eight hours, and said the unit cost is about \$1,800 to \$2,200 with the varied wiring costs. Ms. Perkins said wiring under new conditions costs about \$7,000 to \$10,000 for the prewiring of a single cluster. Comm. Dohadwala said she thinks apartments and condominiums should be considered separately with the apartments providing a lower percentage of full charging stations. Comm. Dohadwala said that, for condominiums, prewiring should suffice allowing interested owners to purchase the charging stations.

Vice Chair Larsson discussed prewiring clusters with staff. Vice Chair Larsson said he could see a distinction being made for covered and uncovered parking spaces for apartments, that he would not expect chargers for the uncovered parking, and that he could see a requirement for a certain number of spaces. Vice Chair Larsson discussed possible design constraints, with staff confirming that cost is the constraint.

Chair Hendricks said that if 100% of dedicated parking was required to be prewired, then some percentage of prewiring should be required for visitor parking. He said this issue could restrict the options of where a person with an electric car could live, and is almost discriminating. He said it is strange that the issue does not address business developments.

Vice Chair Larsson added that even if the conduits are not brought right up to every parking space that if they were designed to be close to all parking spaces, then there would be only a minimal cost to extend conduits in the future.

ADJOURNMENT

With no further business, the Commission meeting adjourned at 9:16 p.m.

Respectfully submitted,

Trudi Ryan
Planning Officer