

# CD

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SPRING/SUMMER  
2010



**Larry Broyles:**  
An adventurous life of  
service, engineering &  
survival!

Larry Broyles, City Engineer

For 25 years Larry Broyles has served the City of Glendale drawing on his vast engineering experience to guide the construction of the city's infrastructure. Engineering runs in Larry's blood – literally! After being told they were too young for a .22 rifle, Larry and his twin brother decided they would engineer one. Taping a .22 shell to the end of a BB gun worked quite well, until a sloppy tape job landed a bullet in Larry's left shoulder! Luckily, he survived but tempted fate again while serving in Vietnam. Upon returning from the field one morning, Larry caught a ride on a helicopter that was returning empty mermits (similar to a metal ice chest) from the night before. The chopper hit a pocket of turbulence and Larry grabbed one of the mermits as it fell out the open door. Fortunately, the door gunner saw what was happening and grabbed Larry to prevent him from falling out of the chopper.

His adventurous life continued as an engineer working on projects in Colorado, Wyoming, Utah, and finally Arizona. As Town Engineer for Jackson, Wyoming, Larry convinced a local millionaire that a wastewater treatment plant would fit nicely next to his two polo fields! Honing his negotiating skills even further, Larry crossed the fields of Colorado and Kansas making deals with farmers to allow the construction of a 500 mile Amoco pipeline. At one point Larry served as Town Engineer for four municipalities. During this stint, it wasn't unusual for him to attend four council meetings a week and arrive home at 3:00 a.m. after driving from meeting to meeting.

Although his engineering career has taken him many places, it is the people along the way that Larry has enjoyed most. Oh, and he's still quite adventurous, but now prefers to be daring on the golf course or while flying model airplanes!

# Times

## planning for climate change

By Karen Stovall

On May 3, four Planning Department employees attended a brown bag lunch presentation entitled *Planning for Climate Change: Sustainable Futures for Western Communities*. The event was co-hosted by the North Central Division of the American Planning Association and the Arizona Housing Alliance. The speaker, Susan Culp of the Lincoln Institute of Land Policy, went over the topics covered in the report that she co-authored *Planning for Climate Change in the West*. Topics included:

- changing climate conditions
- understanding federal, regional, and state responses
- the appropriate role of planning
- barriers to implementing local policies
- recommendations for communities

The recommendations for communities section was particularly informative. Covered under this topic were recommendations for local planners and communities to:

- 1) establish a baseline level of greenhouse gas emissions
- 2) gain the participation of respected state and local officials in policy discussions
- 3) focus policy discussion on the co-benefits of climate change such as sustainability, economic and energy efficiency, improved quality of life, and cost savings, rather than green house gas reduction
- 4) improve public education and available information about the impacts of climate change
- 5) participate in peer learning networks with communities of similar size
- 6) provide a choice of policy options rather than a rigid all or nothing approach
- 7) demonstrate the economic benefits of climate change policies through the use of case studies

Click the following link to access the Lincoln Institute of Land Policy's report:  
<https://www.lincolnst.edu/pubs/>

# START YOUR BUSINESS OFF RIGHT

## Advice for new commercial tenants

By Stephen A. Dudley

If you are considering a new tenant space for your business, taking the opportunity to visit the Development Services Center at Glendale City Hall can save you time, money, and effort and ensure that you are in compliance with local codes.

In today's economy, there are prime commercial tenant spaces available. Whether you are starting a new business or relocating your existing business, it is important to do your homework regarding local ordinances.

First, it is imperative to verify that your business can be located at a given site. These requirements stem from the Glendale Zoning Ordinance. In Glendale, you can contact the Development Services Center at City Hall and a Development Services representative can verify the zoning for a property.

Building permits are required for the construction of a tenant suite. This will require the submittal of construction drawings for approval by the city of Glendale Building Safety Department. If the tenant space exceeds 3,000 square feet or will be occupied by more than 20 people, these drawings must be prepared by a licensed Arizona architect. In addition, a licensed commercial contractor must be hired to perform the construction work. Sometimes, even when a tenant does not plan to do any construction work, the new tenancy may be classified as a

different occupancy in the building code. This may require that specific improvements be made, such as additional exit doors, additional restrooms or improved ventilation. Make an appointment to meet with a plans examiner to determine these requirements for your prospective tenant space.

Another key element for a tenant suite is signage. Building permits are also required for exterior signs. The Development Services Center can advise you on the size and type of signage allowed by the Glendale

Zoning Ordinance and the sign permit submittal requirements. A licensed, commercial sign contractor will be required.

Finally, a business sales tax license is required to conduct business in the city of Glendale. An application for this license can be filed with the Tax and License Department on the first floor of Glendale City Hall.

### Important Phone Numbers:

- |                                 |                |                                    |                |
|---------------------------------|----------------|------------------------------------|----------------|
| ■ Glendale Development Services | (623) 930-2800 | ■ Arizona Registrar of Contractors | (602) 542-1525 |
| ■ Glendale Tax and License      | (623) 930-2210 | ■ American Institute of Architects | (602) 252-4200 |

## MOTOR POOL: it's catching on!

By Maria Terrones

The city has established a motor pool of vehicles available at City Hall and Field Operations. City employees can utilize these vehicles at no cost to their departments. There are currently five cars, two SUVs, two F-150 Pickups (one with a shell), and two Ford Rangers (one with a shell). The goal of the Motor Pool Program is to reduce the fleet and overall costs. To reserve a vehicle at City Hall you can call extension 2800 or e-mail mpreservations

and request a vehicle. Keys can be picked up at the second floor reception desk. You can request a car hourly, daily or weekly. The cars cannot be taken outside of Maricopa County. We have been scheduling the cars since December 2008 and have seen an increase of employees utilizing the cars. This is one way of saving money for your department and going green at the same time!



Need to reserve a car?

Call ext. 2800 or e-mail

[mpreservations@glendaleaz.com](mailto:mpreservations@glendaleaz.com)

Cars may be checked out hourly, daily or weekly.

# Education and Healthcare

## Thrive in Glendale

High population density and strong household incomes are attracting new educational and healthcare facilities and spurring existing facilities to expand.

Two targeted industry sectors, education and healthcare, continue to shine in Glendale. Many factors contribute to the continued success during this difficult economic environment. The fact is that the majority of Glendale has the high population density and strong household incomes these sectors increasingly desire. Education and healthcare institutions require proximity to their target markets and tend to cluster together for synergy. This is great news for Glendale's growth prospects! With Northwestern University, Glendale Community College, Thunderbird School of Global Management, Arizona College of Allied Health, and now, DeVry University calling Glendale home, our community educates, prepares, and trains an exceptional workforce. In addition, ASU-West resides on the city border. Our newest addition, DeVry University, will offer students associate, bachelor and master degrees in technology,

business, science, and the arts. DeVry's classes commence in July and expect over 500 students in short order. DeVry University's arrival is great news for the city.

We must not forget to applaud the success and significance that Northwestern University has brought to our city as well. Celebrating its 15th year in Glendale, Northwestern is concluding its \$140 million expansion to include dental and optometry buildings which increases the school's investment in Glendale to over \$2 billion. An additional 120 high paying jobs will be created as a result of this expansion. Northwestern continues to be a pivotal institution providing Glendale and the entire state of Arizona with much needed medical professionals.

Similar in strength to our educational cluster, Glendale's healthcare institutions, providers and companies continue to expand. The city features two



The new six story tower at Banner Thunderbird Medical Center.

respected hospitals, Banner Thunderbird Medical Center and Arrowhead Hospital, and nearly 70 medical clinics. Banner Thunderbird recently completed a \$289 million renovation including one level underground and a six-story tower featuring a new emergency services department and improved patient care. The Talavi area has become a hotbed of healthcare activity with the recent arrival of Phoenix Heart, John C. Lincoln's Harbor Pointe Internal Medicine Group, and Advanced Healthcare of Glendale with its first class 54-bed medical facility. Most recently, the Humana Corporation decided to locate

its RightSource prescription services group to 91 Glendale bringing over 630 workstations and offices, many of these dedicated to pharmacists and technicians.

Our healthcare sector is strengthening as Glendale's existing medical assets anchor and attract new opportunities. Our Economic Development team is proud to work closely with all of Community Development to help attract, retain, and expand new and existing businesses in Glendale. Working together will ensure continued success and growth within our targeted industries.

## Lions and Tigers and Bears, Oh Wait –

By Tom Kaczmarowski

Lions and tigers and bears, oh wait – I mean poisonous snakes and spiders and huge, ugly bugs and rain forests, oh my! That was more the flavor of the unique opportunity I had to travel to a small Ecuadorian village of 250 in March with the Arizona State University Student Chapter of *Engineers without Borders*. Our journey began by landing in the mountainous capital of Quito at 9,800 feet above sea level.



We then traveled 100 miles by bus (for \$1.50!) to the town of Puyo and then trekked through the forest to the small village of Tsuraku. The village is populated by members of the Shuar Tribe who were head-hunters in their past (I hoped *distant* past!). The natives spoke a combination of Shuar and Spanish dialects and were very friendly, outgoing and inquisitive.

The ASU students have installed a four-inch water line to provide the village with a reliable source of drinking and

cooking water. As the students' professional mentor, I was able to guide them through the assessment phase of their project. The water line is similar to that

servicing homes and businesses in Glendale, but instead of running under streets, it goes through the heart of the jungle!

This experience made me realize how much we take for granted. So the next time you turn on your taps and receive clean, safe water, think of how fortunate we are – especially since there are no head-hunters lurking...



# Look What's Happening at the Airport Terminal...

Airplane and helicopter flight instruction, aircraft rental, aircraft detailing, and helicopter tours are all offered out of the Glendale Municipal Airport.

By Cindy Turski



Arizona Flight Training Center opened its doors to the public for aircraft rental and flight training at the Glendale Municipal Airport in mid-January this year. The company offers flight training from zero time through flight instructor, and also has programs for those interested in turbine transition training as well as jet type ratings. The company specializes in Military Transition Courses for military aviators who want to obtain their FAA Airline Transport Pilot and Certified Flight Instructor ratings.

Company President Rick Rademaker is a 6000 hour pilot with Airline Transport Pilot and Certified Flight Instructor ratings for Single-Engine, Multi-Engine, and Instrument Airplane. The company vision is to train student pilots to a level of competence that allows the individual to perform to the best of their ability and exceed FAA Practical Test Standards minimums, rather than only meeting them. This will ensure a safer, more competent pilot at the controls.

Arizona Flight Training Center provides aircraft for student training and rents aircraft to qualified pilots. They can also provide instruction for those who own their own aircraft, perform Biennial Flight Reviews, and Instrument Competency Checks.

623-877-9334 Office  
623-398-9292 Cell  
[www.arizonaflighttrainingcenter.com](http://www.arizonaflighttrainingcenter.com)



## GrassRoots Aero, Inc.

GrassRoots Aero, Inc. was established in November 2009 as an Aircraft Detailing and Flight Training company, headquartered in Peoria, Arizona. In January 2010, Keith Larson leased an office at Glendale Municipal Airport in Glendale, Arizona. He services aircraft of all sizes; single engines to corporate jets. A dry washing technique allows him to detail an aircraft anywhere and not worry about the Environmental Protection Agency requirements for water drainage.

Keith also provides tailwheel training in a Bellanca Citabria. This type of training is for individuals with at least a Private Pilot Certificate so that they can fly aircraft with a tailwheel (taildragger). There aren't many planes made anymore that require this type of training, but there are numerous older aircraft still around. You'll find that Keith has a passion for vintage aircraft and designs the motif of the company around 'old school' aviation.

In 1988, Keith washed airplanes at a local flying club, in trade for flight time for his Private Pilots License. After graduating from Kansas State University in December 1992, he started his flying career as a flight instructor. After 18 years of flying for various individuals, airlines, and corporations, Keith decided to go back to how it all started; detailing aircraft. During those years, he had the privilege of flying over 40 different types of aircraft ranging from a 1943 Piper Cub to new corporate jets. He brings this experience to his new company ensuring client confidence.

Keith Larson  
1-800-728-0315  
[www.grassrootsaero.com](http://www.grassrootsaero.com)



## Helicopter Flight Instruction

Gold Coast Helicopters offers helicopter flight instruction from zero experience to the most advanced pilots. The vast experience of the instructors ensures that students receive top notch training. They offer training in the fully capable Bell 206 turbine powered helicopter or in the economical Robinson helicopters.

Specialty training in:

- Private Pilot
- Instrument Training
- Commercial
- Certified Flight Instructor
- External Load
- NVG (Night Vision Goggle - initial/recurrent training)
- Emergency Procedures (initial/recurrent)
- Night Currency
- High Altitude Mountain Training



## Tours, Sightseeing

See it all, from a very unique perspective. Why be where all the people are? GCH can give you the best view of town. They will give you a tour and show you all your favorite landmarks such as the University of Phoenix Stadium, Jobbing.Com Arena, US Airways Arena, Piestewa Peak, or anywhere in Arizona, Utah, California and New Mexico. GCH pilots can fly up to four passengers anytime, anywhere.

GCH  
623-935-3388 Office  
623-640-6673 Cell  
[flightops@goldcoasthelicopters.com](mailto:flightops@goldcoasthelicopters.com)

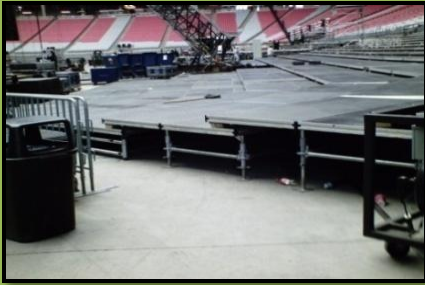
# University of Phoenix Stadium Undergoes Impressive Transformation

The city of Glendale has had the honor of hosting championships for two professional sporting events. The National Football League's Super Bowl XLII and the World Wrestling Entertainment's WrestleMania XXVI were both held at the University of Phoenix Stadium here in Glendale. Both of these events filled the stadium to capacity, but WrestleMania was able to add more seats due to the smaller competition area. Filling 72,219 seats, WrestleMania had about 1,000 more attendees. The majority of added seats were placed on tiered floor panels supported by scaffolding. The seats immediately around the ring were special commemorative folding chairs which could be taken home by the fans sitting in them.

Action in the ring took place under a "pyramid" that had a 188 foot square base and stood 105 feet high. The bases were connected to each other with 1-inch steel cables to keep them from sliding out and were filled with water to keep them from overturning. This framework supported lighting, speakers, video screens to enlarge the action, and a platform on top for shooting pyrotechnics through the open roof.



The entrance stage for the wrestlers was even more impressive. The framework consisted of steel and aluminum trusses assembled with steel pins rather than bolts. The base area was 198 feet by 96 feet and stood 118 feet tall. Thirty columns were used for the structure. Six of the column bases were loaded with ballast totaling 33,200 pounds.



## NUMBERS TO WRESTLE WITH:

- 66 wrestlers
- 11 events
- 72,219 attendees
- 33,200 pounds of ballast
- 86,000 pounds of video panels
- And a whole lot of steel!

After the framework was erected, it was covered with approximately 86,000 pounds of video panels. Computer programs were used to project images on the surface of the panels. One of the images was a stone Mayan temple with a doorway for the wrestlers to emerge onto the entrance stage.

Sixty-six wrestlers were present for 11 events, including the 26-man battle royal, 10-diva tag team, and 10-man ladder match events.

## Is an electric vehicle in your future?

The Building Safety Department prepares to help homeowners "plug-in" to this new technology.

By Mike Mosij

Are you concerned about increasing gasoline prices, uncertainty and disruption of oil supplies, or air pollution? Have you heard about the new plug-in electric vehicles coming soon to a car dealer near you? Yes, the future of transportation seems to be headed to cleaner and more efficient electric drive systems.

There are several basic electric vehicle technologies that are either currently available or coming to the market in the near future. One is

BEV, which stands for "Battery Electric Vehicle." These vehicles are 100% battery powered. The Nissan LEAF is an example due out later this year. Refueling is accomplished by connection to an electrical system by means of an industry wide standardized plug designed specifically for this purpose. These vehicles also recapture as much as 5 to 15% of the energy used while braking is applied.

The other type of technology is known as the PHEV, which stands



Chevy Volt



Nissan LEAF

for "Plug-in Hybrid Vehicle." These are powered by two energy sources, usually a battery system and an internal combustion engine. The Chevy Volt is an example of this technology. There are many other design variations. Some may use only the battery system for the first several miles, switching over to the engine to generate power for the rest of the vehicle range. Others may use battery power to sustain motion and the engine for acceleration, hill climbing, etc.

In the later part of this year, the unveiling of a network of electrical

charging stations will take place, with many to be installed in public areas. Also, plans are in the works for private homeowner charging stations. The Building Safety Department is developing a plan submittal process to help ensure that charging systems are properly wired and safely installed. Stay tuned for more information in future newsletters as it becomes available. If you are interested, make sure you do your homework to learn all your options.

For more information, visit <http://www.etecevs.com/home.php>

# ZONE 4 GROUNDWATER TREATMENT PLANT:

## A quantum leap for the city's water infrastructure

by Arif Rahman

### PROJECT PURPOSE

The CIP Division of the Engineering Department is currently overseeing a \$45 million project that will add another dimension to the city's water supply. The Oasis Water Treatment Plant currently treats surface water from the Salt, Verde or Colorado Rivers for delivery into the city's drinking water system. Responding to an increased demand for water, the Zone 4 Groundwater Treatment Plant will supplement treated surface water with treated groundwater.

### MAJOR COMPONENTS

Three new wells were drilled to an approximate depth of 1,700 feet to extract groundwater. Two existing SRP wells will also be utilized. Over 5 miles of new pipe will convey the well water to the new ion exchange facility at the Oasis Water Campus. With the capacity to treat 10 million gallons per day, this plant will be the largest of its kind west of the Mississippi River.

### WHY TREAT GROUNDWATER?

Groundwater typically contains nitrates, which at high levels can do harm, especially to infants

whose systems are not yet fully developed.

An excess of

nitrates will reduce the amount of oxygen in the blood resulting in "blue baby syndrome." High levels of nitrates can also cause cancer. For these reasons the Environmental Protection Agency has set a limit for the amount of nitrates that can remain in drinking water for it to be considered safe.

The ion exchange facility will remove nitrates as well as other potentially harmful substances such as arsenic.

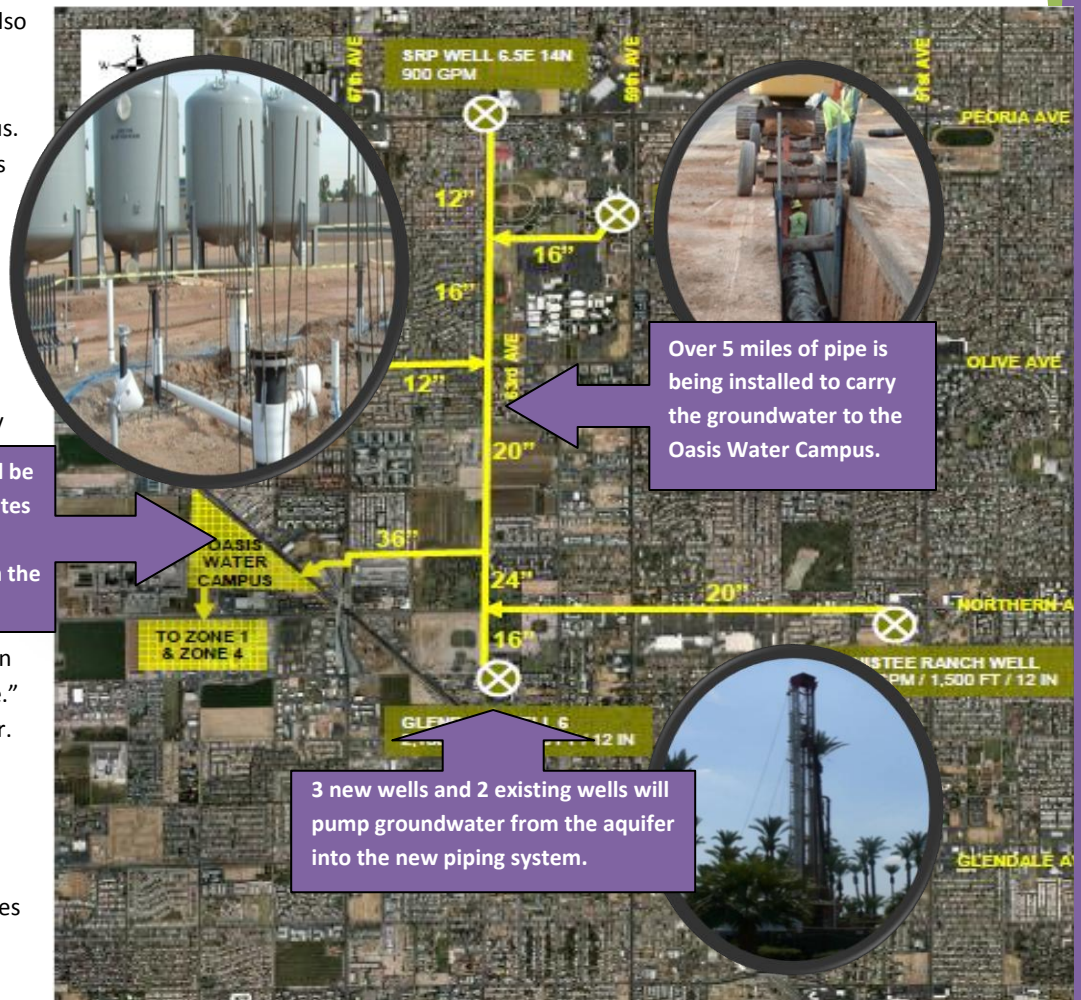
### HOW IT WORKS

The process to remove nitrates from groundwater is very similar to how a water softener works. The ion exchange facility will consist of five large tanks, 8 feet in diameter and 10 feet high. The tanks are filled with resin beads which contain chloride ions on their surface. When the groundwater filters through the tanks the nitrates trade places with the chlorides so they get attached to the beads and removed from the water. The chloride that remains is a normal constituent of water. Once the resin beads get saturated with nitrates they are cleaned or "regenerated" using a salt solution and then they are ready to be used again.

### BENEFIT TO THE CITY

The addition of the Zone 4 Groundwater Treatment Plant provides the Utilities Operations Division flexibility in meeting the water demand and water quality targets for this area of the city. They will have the benefit of blending the treated surface water and groundwater to reduce overall operational costs and optimize water quality. The additional supply source will be extremely valuable in the winter months during the SRP canal dry up which results in decreased surface water supply.

The plant is scheduled to be operational in March of 2011.



# PHOTOVOLTAIC SYSTEMS:

## Many things to consider before flipping the switch



Have you wondered if your home may be a good candidate for installing solar panels? If so, there are numerous things to consider before investing in a photovoltaic (PV) system. Many of these items are highlighted below.

If you decide a PV system is right for you, contact the city of Glendale Planning Department to discuss the Planning and Zoning regulations for your area. Planning issues to consider include building setbacks, height limitations, color and reflectivity.

The city's Building Safety and Fire Departments will also need to review and approve the system. The city will be

looking for specific items on the construction plans. A list of items may be obtained from the Building Safety Department. A building permit will be required and the installation will be inspected by the city. The utility companies will not proceed with rebates or system activation until they receive notification from the city that the system has been installed in a safe manner.

For additional information or questions related to structural or electrical items, contact Adam Venetis in Building Safety. For issues related to planning, contact Remigio Cordero. Both Adam and Remigio can be reached at (623) 930-2800. The permit application may be obtained from the Building Safety Web site.

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## things to consider related to PV systems

### SUNLIGHT

Your PV system should be oriented so it gets sunlight for most of the day. However, it is important to note that efficiency of solar cells decreases as temperature rises.

### ADEQUATE ROOF OR GROUND AREA

In determining how much area you want to dedicate to the system, don't forget to incorporate clear areas around the system for access and maintenance.

### STRUCTURALLY SOUND ROOF

How your roof is built will determine if it is suitable for panel installation. Roofs built with trusses are typically strong enough to hold the panels, but patio roofs are typically not.

### SIZE OF SYSTEM VS. ELECTRICAL OUTPUT

The number of panels in your system will determine how much electricity is generated, however, it is important to look at the cost of the system and compare it to the expected savings.

### SAFETY CONSIDERATIONS

A PV system generates direct current (DC) as long as any light source hits it (sunlight, flashlight, lightning, etc.), thus being able to isolate the system during emergencies or routine maintenance is critical.

### LIFE CYCLE COSTS

Carefully read all warranties to determine what is covered and for how long. There may be hidden costs if key elements need to be replaced during the payback period.

### QUALIFIED CONTRACTOR

The last few years have seen many companies and contractors enter the solar market. Research companies thoroughly to ensure they are qualified to do the job.

### METERS AND SERVICES

An additional meter will be installed to tell the utility company how much solar power is being generated. The size of the PV system may also warrant upgrading your electrical service.

### ROOF WARRANTY

Modifications will be made to your roof for a rooftop installation. Check to make sure these modifications do not invalidate your roof warranty.

### HOMEOWNERS ASSOCIATION

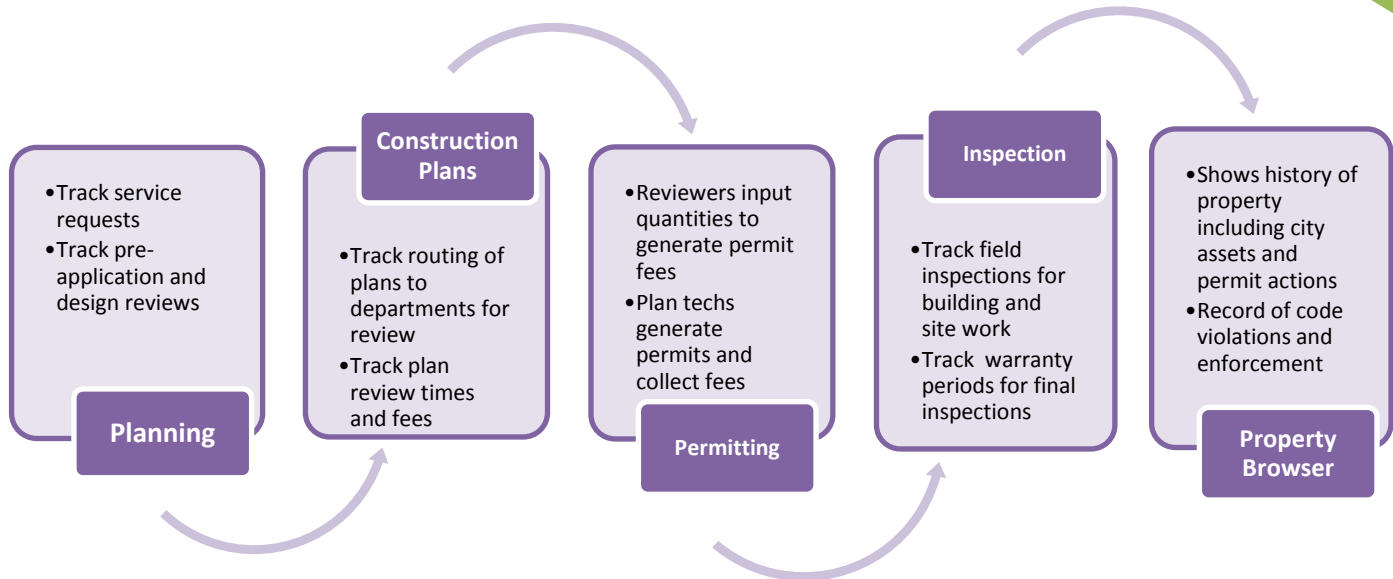
Homeowners associations may have stipulations in the CC&R's related to solar installations. However, the rules established by the federal government typically prevail.

# Hansen:



## How Community Development uses this specialty software

Hansen is software designed specifically for government agencies to facilitate citywide processes. Community Development uses Hansen to track projects from their inception to building completion and beyond. All departments involved in the development process have access to each step facilitating inter-departmental communication. The flow chart gives an overview of many Hansen functions.



# Just for fun!

See if you can find these Hansen terms in the word search below.

### WORD LIST

ADDRESS	INSPECTION DETAIL
AP STATUS	PARENT CHILD
APPLICATION SPECIALIST	PASSWORD
BUILDING SAFETY	PERMITS
CITYWIDE	PLAN REVIEW
CODE	PLANNING
CODE DEFINITION	PROJECT
CRYSTAL	PROPERTY BROWSER
DATA	REPORTS
ENGINEERING	REVIEW ACTIVITIES
FEES	SETUP
FORMULAS	SQL PLUS
HANSEN	TEST
INFOR	WORK TYPE
INSPECTION	WORK ORDER

A	X	R	S	E	I	T	I	V	I	T	C	A	W	E	I	V	E	R	X	C
P	P	W	E	I	V	E	R	N	A	L	P	R	U	Y	X	L	K	S	A	O
S	A	P	R	O	P	E	R	T	Y	B	R	O	W	S	E	R	Q	U	E	D
T	S	X	L	R	Z	P	S	S	A	I	P	R	R	E	P	O	R	T	S	E
A	S	B	U	I	L	D	I	N	G	S	A	F	E	T	Y	M	A	Z	D	D
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C	T	O	M	S	P	L	N	F	O	L	P	A	I	Q	E	R	I	F	U	I
E	X	R	R	S	C	E	R	O	U	N	E	P	Y	T	K	R	O	W	M	T
J	E	D	G	A	E	N	L	P	R	N	S	T	V	S	T	N	R	S	R	I
O	A	E	R	R	L	T	T	P	X	M	Q	P	B	S	N	V	Y	O	O	O
R	U	R	I	A	P	R	U	U	P	D	L	Z	E	R	B	M	F	M	F	N
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Q	G	S	T	I	M	R	E	P	N	T	M	P	T	H	I	I	N	R	E	X
N	O	I	T	C	E	P	S	N	I	A	C	R	Y	S	T	A	L	Q	S	P
R	P	G	N	I	N	N	A	L	P	S	S	E	R	D	D	A	L	M	O	N
D	Y	P	A	R	E	N	T	C	H	I	L	D	F	I	Q	Z	Z	I	C	P
A	P	Z	Y	R	G	G	E	S	Q	L	P	L	U	S	R	A	Q	T	S	L
P	R	M	L	I	A	T	E	D	N	O	I	T	C	E	P	S	N	I	P	T