

Propane on Donner Summit - Part III

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In [Part I](#) and [Part II](#) of this article the current status of propane use on the summit was laid out based on the propane survey project that mapped each installation in Serene Lakes. The conclusions that can be drawn from the survey are

- Propane is used by 2/3 of the cabins in Serene Lakes making it the fuel source of choice on the summit.
- The prevalent propane installation being used on the summit is an above-ground tank system as described in [Part I](#) of this article.
- The current status of the installations on the summit is a mixed bag. Many systems are properly installed in easily accessible locations and well maintained, but many installations are not.
- Current codes are minimal and in many cases ambiguous and not up to date. Moreover, the enforcement of codes has been very unevenly implemented over the last 20 years resulting in minimal standardization and the mixed bag status we have today.
- Many vendors and homeowners have been lax in maintaining systems. While the vendor supplies the equipment and is responsible for maintaining it, the homeowner does have a responsibility to report problems with their systems and insure that a vendor is properly maintaining their system.

In this part of the article I would like to suggest some corrective steps that the summit community could take to improve propane safety. I am not pretending that I am an expert on propane here, but I think these suggestions are common sense solutions that anyone would make based on the survey data.

Is Propane Safe?

This may seem like a strange question at this point of the article, but after last winter many cabin owners have probably asked themselves this question and there have even been a few calls for banning it on the summit. What makes propane a real danger is that as a gas it not only effects the lot where it is leaking from, but it can spread and threaten a whole neighborhood. This was made shockingly apparent by the voluntary evacuation edict put in place last winter. The real question with potentially dangerous substances like a volatile flammable gas is "Is it safe enough?" and more specifically to the summit "Is it safe enough in the extreme weather conditions present on the summit?" The answer comes down to a risk assessment in which the benefits of using the gas are weighed against its potential danger. In the case of propane the benefits of a readily accessible fuel source are apparent. The potential danger is something that is in the control of the users and can be modified to minimize the danger to make it a very low risk.

Consider the following "risk assessment" for a cabin owner on the summit. The question is "What is the risk my propane system will leak some day this winter assuming it is properly installed and maintained?" If we consider last year, which was by no means normal and is probably the worst case scenario, there were approximately 40 leaks in Serene Lakes according to the fire department. There are approximately 6 months (180 days) of winter on the summit and as the survey showed 511 propane installations. Doing the math

$$40 \text{ leaks} / 511 \text{ cabins} \times 180 \text{ days} = .04 \% \text{ leaks/day} \text{ or } 1 \text{ chance of a leak in 2500 days}$$

Compare that to the 1 chance in 1500 that you will be seriously hurt or killed in a traffic accident in California someday this year. Even though your chances of death or injury are higher, no one is going to stop driving. The

reason is that it is an acceptable risk for the benefits of driving. While this exercise may be simplistic, the point is that even under the current conditions on the summit where many propane installations are not fully up to code and as safe as they could be, they are still pretty safe. That is by no means an endorsement of the current situation and I think it is imperative that steps be taken to bring all systems up to code to minimize the risks as much as possible.

The Code

After last winter there have been calls for changes to the existing [Placer County propane usage codes](#). The latest codes are dated from 1984 which interestingly was right after the winter of 1982-83 when the summit experienced similar snowfall levels to last year. While the current code goes a long way toward insuring system safety, after the experience of last winter there are some changes that should be considered.

- Current code requires schedule 80 pipe which at the time it was written was the strongest pipe available. Current technology has developed the flexible supply line which is supposed to be a better solution for neutralizing the pressure of heavy snow on tanks and plumbing. This technology is widely used by many high elevation communities and Place county should amend their code to take advantage of this solution.
- Tank and secondary regulator location are only minimally addressed in current code. It really leaves location approval to the Fire department. The survey data makes it clear that many tanks are located in spots that are difficult, if not impossible, to access under deep snow conditions during the summit winters. The same is true for many secondary regulators. This issue is discussed further later in this article.
- Current code does not address protection devices or covers for propane systems and Truckee fire does not have clear policies either. A few installations in Serene Lakes do have covers over their installations, but there is not standard approved configuration.

While changes to the code should further improve system safety, these changes are dependent on the Placer County bureaucracy, which moves at its own pace. A more timely and effective step would be to make sure that all existing installations are brought up to the current code requirements. Observations during the propane survey clearly showed that most above-ground tanks currently installed are not up to code for a number of reasons. There are current initiatives in progress to replace the tank plumbing and these should be continued and if possible accelerated. We have already missed the opportunity to have all systems compliant by this winter, but there seems to be no excuse to not have all of the installations brought up to code by the beginning of next winter. This one is really for the vendors, home owners and Truckee fire to cooperate on.

Location, location, location

It is the current wide variations in tank and secondary regulators locations that prompted the creation of the propane survey. The survey confirmed that without a guide, when an emergency responder approaches a reported leak on a lot, there is no way to locate a tank in very high snow that covers the tank snow stakes. Even in the future when tanks can be located with the use of the propane directory, it will still be a major undertaking for emergency responders to get to many of the tanks in their current locations. Many homeowners that had leaks last winter learned the consequences of having their tanks in difficult locations. Prices for digging the tanks out with heavy equipment ranged from \$3000-\$10000.

There is no denying that a propane tank is not an aesthetically pleasing yard ornament. It is for that reason that many cabin owners try to hide their tank by placing it in a remote location on their property. After last winter it seems that safety should definitely trump aesthetics. Placing an above-ground tank behind a cabin is

effectively making that tank inaccessible during a heavy winter and letting the chips fall where they may as far as whether the plumbing will be able to withstand the force of the snow. If aesthetics is that important an underground tank is probably going to be much safer in this situation, but without a remote filler (which are not approved by the fire department), there will be no way to fill it. On some lots, even though the tank may not be in the rear of the cabin, it is still more than 20 ft from an access point (usually the driveway) in heavy snow. Now this is where I'm going to get a little preachy, but it just does not make sense to me that a tank, especially an above-ground tank, should be located more than 10-15 ft from an access point both for safety and filling concerns. Right now the code and Truckee fire specify location based on the gable end of a home (to protect it from roof shedding) and the set backs for snow storage (to protect it from snow blowers). Accessibility should be just as important in my mind. Having seen the difficulty fire fighters had last winter in getting to some of the leaks, you would think that this would be a primary concern for the fire department as well. And again, not to belabor the point, for the fire department to demand that homeowners dig out remotely located tanks that they approved the installation of seems somewhat hypocritical.

The location of secondary regulators may be even more important. If a tank leaks out in a snow bank there is probably less danger of ignition than if a regulator leaks or is damaged and causes over-pressurization within a home. Cabins blow up when propane pools inside and then is ignited by one of the many ignition sources within the home. Fortunately most secondary regulators are pretty well protected under decks, stairs and covers in Serene Lakes. However, some are not and this is a cause for concern.

So how do we get there?

It is not the intent of this article to provide all the answers. I am not a trained expert on propane and the information on propane that I have presented here is available to anyone with access to Google. What this article does contribute to the problem are the results of examining every propane installation in Serene Lakes and preparation of a propane directory. The observations that have been made as a result of the survey show the current status of propane use and some of major safety issues that still need to be addressed.

The good news for residents and visitors to the summit is that the safety of propane use improving. Public agencies such as Placer County and Truckee fire are considering and implementing changes in codes and policies to increase safety. Propane vendors are upgrading their systems to meet both existing and new requirements. Most cabin owners are trying to make sure their systems are safe by supporting safety upgrades by the vendors and many have converted their systems to underground installations. There have been community initiatives like the SLPOA Propane Taskforce, of which I am a member, in which concerned homeowners have spent many volunteer hours to research the problems and meet with safety officials and propane vendors. The taskforce has been involved in many of the new safety initiatives by public agencies and vendors and has produced a [safety report for homeowners](#). The survey and mapping project discussed in this article to produce the Propane Directory was performed under the auspices of SLPOA.

I would like to conclude this article with the following suggestions for continuing to improve propane safety on the summit. **These suggestions are strictly my own and do not represent SLPOA or any other organization that may have been mentioned here.** I am by no means advocating the establishment of a "propane nanny state" but some reasonable changes that could improve everyone's safety on the summit.

- Efforts to bring all propane systems in Serene Lakes up to current code requirement should be continued with a goal of having all installations meeting those codes by October 2012.

- Current codes should be brought up to date by Placer county to include the use of new technologies like flexible fill lines by July 2012. The codes should also address tank accessibility (as discussed above) by requiring that above-ground tanks be no more than 10-15 feet from a point on a property that is accessible during high snow fall (that would be the driveway for most lots). Tanks further than 15 ft away from an access point should be installed underground. I realize this change in the code could be a financial burden for owners of existing installations and may not be popular with many owners. At the very least going forward this code should be applied to new installations.
- The implementation and enforcement of codes needs to be standardized and more evenly applied by Truckee Fire which is the public agency that is really tasked with enforcement. While the majority of installations have a standard configuration, it is evident from wide variations in tank and secondary regulator installations on many lots observed in the survey, that this has not been the case in the last 20 years for many of these systems that have been installed. I know we really have to be careful with what we wish for with enforcement from public agencies, but it does seem that there are some basic requirements that have been discussed in this article that can be formulated into standard policies that the fire department can enforce evenly and consistently for each lot.
- Whatever improvements are made as the result of current initiatives, they will go for naught without better maintenance of systems in the future. Again the majority of systems are pretty well maintained, but there is a large minority of systems that are not. System maintenance is really the responsibility of propane vendors (who usually own the systems) and the homeowners that use them. There are really no official enforcement mechanisms currently in place for ensuring proper system maintenance, which probably explains the poor condition of some systems. Building codes only regulate tank installations, not ongoing maintenance. Considering the increased wear and tear that the extreme winters of the summit place on propane systems, proper maintenance of these systems is crucial to their safety. Most homeowners are conscientious about their systems, but there are many that for whatever reason don't pay any attention to them. Unfortunately, many of the propane vendors do not seem to have put maintenance as a top priority either. Again being careful about what we ask for, it seems this situation cries out for some basic regulation. I would suggest that there needs to be an inspection system set up between propane vendors and Truckee Fire to monitor system maintenance. This is not unprecedented since it is already required for anode inspections for underground tanks. It does not seem unreasonable that a system (including tanks and secondary regulators) should be inspected once every 5 years and if the system does not pass, then the vendor has to bring it into compliance or the system cannot be filled (this is what happened for some systems last winter). This will indirectly involve the cabin owner who will have an incentive to make sure their vendor is properly maintaining their systems. I know that public agency budgets are stretched these days, but it does not seem unreasonable that Truckee Fire could inspect 100 systems a year (on a 5 year cycle). A \$25 inspection fee (\$5 a year for a cabin owner) does not seem out of line and would defray some of the inspection cost.

I hope everyone reading this article has a better understanding of what is involved in the use of propane on the summit. Armed with the information presented here we should all be able to make informed decisions about how to use this convenient fuel source in a way that is safe for the entire summit community.