



Guidelines for Proper Propane Tank Installation for High Country Systems

Snowfall 2011: The winter and spring of 2011 saw record snowfall in the Sierra Nevada. Storm after storm deposited dozens of feet of snow in the higher elevations of Placer County. The weight of that snow settling on propane systems caused failures in both the Donner Summit and Lake Tahoe Basin areas. Nearly 100 leaks occurred when propane systems – the pipes, fittings, valves and regulators – broke. Fire department staff found that most of the system failures were due to improper installations. Above 5,000



feet of elevation, propane systems require different materials and installations than at lower-elevations (Placer County

Code, Article 15.12). That first became evident during the winter and spring of 1982 when installations suitable for lower elevations failed at higher elevations. Many of the failures during the winter and spring of 2011 could have been avoided if property owners understood what a proper installation actually is and made sure that their systems were properly installed and maintained. In addition, it is the property owner ' s responsibility to remove snow and ice from the most vulnerable portions of the system. With that in mind, the North Tahoe Fire Protection District, the Truckee Fire Protection District, Squaw Valley Fire

Department and Placer County have assembled these general guidelines for propane systems in the high country.

Propane Company Installation: Setting a tank and connecting the plumbing is usually done by the propane vendor. In light of the many failures, propane companies are upgrading many installations to meet or exceed the current code.

Building Permits: At the time of new home construction, the Placer County Building Service Division issues a cumulative building permit that incorporates building, plumbing, mechanical, and electrical permits and covers LPG or natural gas piping inside the home to an exterior point of connection (the second-stage regulator or gas meter provided by the gas vendor) . Building Services reviews construction drawings and performs inspections of the internal piping during the construction of the new home. Should the piping within your home require repair or if you desire to add piping or outlets to the system, please check with the Placer County Building Service Division for the proper permit.

Fire Agency Sign off: Your local fire protection district may require a separate propane tank installation permit and may inspect the system connections from the tank to the second-stage regulator. Typi-

cally the fire district inspection will check for proper setbacks, materials, location of regulators and other issues. Check with your local fire agency to be sure.

Inspections: Once a system has been properly installed and inspected, it is the responsibility of the propane purveyor to conduct an annual inspection of the system. Most purveyors also inspect tanks and plumbing each time the tank is filled. However, it is ultimately the property owner's responsibility to keep the exposed tank and plumbing free of snow and other debris to allow for proper inspection and prevent the weight of snow from crushing the legs of the tank, crushing the concrete pads, or damaging the tank riser.

Operating Your System: If your cabin or home in the high country is only used in the summer months, make sure the gas is shut off at the tank before winter.

First-Stage and Second-Stage Regulators: A first-stage regulator, on the tank, is typically housed under the dome where it can be protected from snow and ice and other heavy or falling objects.



A second-stage regulator, on the house, is required to be under an approved regulator cover on the gable end of the structure. A typical installation for the second-stage regulator would be under a protected staircase.



Schedule 80: All pipe and fittings used above 5,000 feet and installed above ground need to be Schedule 80. The Schedule 80 rating means that pipe and fittings have a thicker wall than either Schedule 40 or Schedule 20, which makes the pipe and fittings stronger. Sweeps, which are curved sections of pipe used to transition from plastic to metal pipe instead of rigid, angled connections, also need to be Schedule 80. For example, materials in a 1-inch diameter Schedule 80 pipe have a thickness of 0.179 inches. Materials used in a 1-inch diameter Schedule 40 pipe are only 0.133 inches thick.

Underground Installations: Some tanks are completely buried underground. While these installations avoid most of the potential problems with above-ground tanks, they do present their own poten-



tial issues. Water leaking into the raised dome can impact valves, regulators and piping and can cause issues if the water freezes. All first-stage regulators installed in the domes of underground tanks need to be installed so vent openings are run vertically and are above the highest possible water level. Water issues can come from snowmelt or a high water table. During the winter and spring of 2011, there were no known propane system failures with underground tanks.

Penetrations: There are limitations as to where a gas line can enter a structure. There are minimum distances from windows and doors or other openings into a structure that must be met for an installation to meet code. Make certain whoever installs your system knows these requirements. The Placer County Building Services Division can assist with information on these requirements.

Tank Supports: Above-ground tanks cannot sit directly on the ground. The shell of the tank cannot make contact with the ground. There are typically two



systems to accomplish this. The first is a precast reinforced concrete pad that sits under the tank legs.



The second system uses saddles, which are precast reinforced concrete devices that allow a tank to sit off the ground. Saddles can be a few inches to a maximum of four feet tall at the belly of the tank. They have a round cutout shape that corresponds to the

configuration and size of the tank. A tank properly fitted into a saddle, on tarpaper to protect the integrity of the tank's surface, is nearly impossible to move.



Risers: The tank riser is the section of pipe that runs from the first-stage regulator, into the ground, and connects to the

yard piping that runs to the house. All risers should be constructed of Schedule 80 or stronger pipe and fittings. On a tank that sits in a saddle, the tank riser is obviously longer than a riser on a tank sitting on pads at grade. In these cases, the riser should be secured either to a cross brace or the side of the saddle. Flexible risers are being used in more installations as long as they meet standards for material strength (equal to or greater than Schedule 80 pipe). Check with your local fire district for a listing of approved flexible risers.

Tank Location: Tanks are required to meet 3 minimum setback requirements; from the structure, the nearest property line which may be built upon, and the street. For details, check with your local fire agency.

Tank Markers: A yellow snow stake shall be placed at the tank on the opposite side of the plumbing, indicating the tank's location when covered with snow. The marker should not be affixed to any part of the plumbing. The weight of accumulated snow on a



marker attached to a tank's plumbing can exert enough pressure to cause the piping system to fail. Property owners should

know how to inspect their propane systems to ensure they are properly installed. If you have any questions please contact your local propane provider or your local fire agency.

Dial 911

Gas Odor: If you smell gas in or around your residence evacuate immediately. If the odor is confined to the interior of the home, shut the gas off at the second stage regulator or at the tank, whichever is easier. If you smell gas outside of the home shut the gas off at the tank. Move uphill, upwind, and away from your residence at least 150 feet and then call 911 to report the emergency. If the odor is confined to the interior you can shut the power off outside the home. Do not turn any electrical switches on or off inside the home as you exit. Do not approach the home or go back inside until the fire department has deemed that the property is safe to re-enter.

For more information, please contact your local fire agency.

