These reductions will help hospitals to attain long-term sustainable and cost-effective operation.

One effective energy conservation strategy is identifying all installed steam traps and developing a steam trap maintenance program. The DOE estimates facilities that have not checked their steam traps in 5 years operate 20% of their trap population in a failed condition. Developing a steam trap program can help prevent the incremental increase in natural gas and water consumption caused by unidentified failed open steam traps.

A not-for-profit Medical Center integrated regional healthcare delivery system in San Diego, with 7 hospitals and 2,600 affiliated doctors. This Medical Center comprises of 343-bed hospital in San Diego’s South Bay offering a large array of healthcare services. A Spirax Sarco team of experts pointed the Department of Energy estimates out to hospital utilities managers who initially believed their traps were functioning much better than the estimates. Nevertheless they agreed to a Spirax Sarco Steam Trap Survey.

**Surprising Survey Findings**
The survey team tested all of the steam traps at the facility and identified failed open traps, along with inadequate drip trapping and incorrectly installed steam traps. Not only did the survey team find a 15% plus failure rate, but also identified incorrectly applied process steam traps, traps installed backwards, a lack of drip traps and no trapping provided at critical low points in steam supply lines.

Of the hospital’s 38 steam traps, six of the traps tested were not functioning correctly; they were either failed open or closed or rapidly cycling. However, since the majority of the steam traps were installed on humidification systems that operate on average only 240 hours per year, the energy loss through failed open traps was minimal.

**Four-Part Optimization**
The importance of this survey was the uncovering of significant efficiency, reliability and operational improvement opportunities. The Spirax Sarco team presented to hospital managers a proposal recommending economical corrections to the issues discovered:

- Upgrading to steam system best piping practices
- Replacing misapplied trap types and incorrect installations, standardizing throughout on Spirax Sarco Universal Float and Thermostatic or standard Float and Thermostatic traps
- Stabilizing boiler pressure
- Improving operation of the heating hot water heat exchanger

Hospital managers approved all the upgrades recommended.

**Finally Operating as Intended**
Shortly after startup of the upgraded steam system, utilities managers found the improvements to be delivering the benefits as promised. The newly installed drip legs and traps effectively corrected condensation buildup, improving heating, saving energy and reducing risk of waterhammer. This improved distribution
system also corrected the flooding issues with the low-pressure boilers. The repositioned isolation valves in horizontal pipe runs corrected condensation buildup on the valves, preventing premature failure of the isolation valve packing, valve seizing and incomplete shut-off.

Repairing the failed open steam traps reduced energy losses and improved boiler operation. Correcting the installation of the backwards installed trap enabled the heat exchanger to operate efficiently. Adding a steam trap and check valve to the outlet of the exchanger prevented live steam from reaching the electric condensate pump receiver, lengthening the pump’s service life and also preventing condensate stalling within the exchanger.

Overall, the hospital has significantly increased its condensate return, reducing the need for boiler make-up water and the fuel required to preheat it.

**Trap Surveys—A First Step Toward Enhanced Sustainability**

The Medical Center’s utilities managers have shared their success with their colleagues at their other locations. These larger facilities hold an estimated total potential of $300,000 for optimization work.

This experience shows that Spirax Sarco Steam Trap Surveys offer benefits even for facilities with well maintained trap populations, uncovering opportunities for improved steam loop engineering. The implications are bright for both fiscal and environmental sustainability, which is good news for healthcare services providers.