

**“A 15 Year Update on the
Impact and Effectiveness of
the Scottsdale Sprinkler
Ordinance”**

15 Years of Built-in Automatic Fire Sprinklers: The Scottsdale Experience

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The findings of this report are dedicated to two primary groups of people: First, to all the people who have suffered a significant loss as a result of the incredibly destructive power of fire. How many of our children, elderly, community members, and firefighters would still be alive today to contribute to our communities if technology would have been embraced and the use of built-in protective systems had gained a much wider acceptance?

Second, to all of fire service professionals who have dedicated their lives to making our communities a safer place to live. Throughout the fire service there are thousands of special individuals who work everyday to ensure the safety of those they serve. This includes not only responding to an incredible number of emergency request, but also the development of new life safety and fire codes, providing the public with safety education, and conducting safety compliance inspections for our community. It is important to remember that all of these varied community safety activities have had a dramatic effect on improving the safety levels of our communities. Special thanks must go to those leaders who have shown the commitment and courage to challenge the status quo approaches of traditional fire protection measures. These leaders have embraced true customer service, proactive fire prevention measures, and build-in fire protection.

The original *Scottsdale Sprinkler Report* and information could not have been completed and distributed without the assistance of the Home Fire Sprinkler Coalition, the National Fire Protection Association, the City of Scottsdale, and Rural/Metro Fire Department.

"The cornerstone of the Scottsdale Fire Prevention Program is the installation of fire sprinkler systems in all commercial and residential units. This has controlled and will continue to control the amount of fire risk in the community. The sprinkler program, coupled with an active inspections program, provides the citizens of Scottsdale with a higher degree of safety than is available in most communities."

*University City Science Center;
Assessment of the Fire and Emergency Services for the City of Scottsdale – 1989*

Executive Summary

The debate surrounding build-in fire protection for residential properties continues to rage on as intensely as ever more than 20 years after the general concept of residential sprinkler protection began to materialize and the preliminary testing occurred. The records are very clear showing how the use of automatic sprinkler systems in commercial and residential properties have saved thousands of lives and untold millions of dollars in fire loss. This type of proactive fire protection has dramatically reduced the suffering individuals and communities would have experienced as a result of the destructive power of fire.

It has been 15 years since the City of Scottsdale mandated to widespread use of automatic sprinkler protection. Numerous fire service professionals and community leaders from across the United States and around the world have reviewed the documented benefits the City has experienced. The use of residential sprinklers in Scottsdale is no longer an experiment! It is a proven method that has been used to dramatically improve the level of fire protection in the community.

This report will illustrate the success that can be experienced by a growing community with progressive leaders who had the foresight and courage to require built-in, automatic sprinkle protection for all newly constructed occupied structures in their jurisdiction. The report will take a detailed look at the history, philosophy, successes, failures, challenges, and possible future of using automatic sprinkler protection as a tool to assist with meeting the fire and life safety mission of the community. The successful experiences, which have occurred in Scottsdale, would not have happened without numerous improvements in the technical aspects of residential design, constant review and evaluation of the progress, and, most importantly, the continued support from the local political leadership.

The benefits have been numerous. The civilian fire fatality rate has been reduced by a minimum of 50 percent with at least 13 lives saved as a result of build-in fire sprinkler protection. In this community, millions of dollars in fire loss and the associated negative business interruption activities have been avoided. As the cost of construction continues to increase, the difference in the fire loss comparisons between a protected and non-sprinkler property become more dramatic. The average loss for a fire incident in a building protected with an automatic sprinkler system was over 90 percent less than the average loss for a structure fire incident without automatic sprinkler protection. One or two sprinkler heads controlled or extinguished the fire in 92 percent of the incidents. This statistics proves that a small amount of water applied early during a fire incident is

more effective than the much larger amounts that are typically flowed by firefighters. The installation impact and direct cost of the system are no longer major obstructions to acquiring this build-in protection. In residential properties, several design and technical improvements have allowed the installation cost to average between \$0.55 and \$0.75 per square foot for typical homes. This is usually less than one percent of the total cost of a new home and has not caused a negative impact on the development or construction of new homes in the community.

**Evaluation of Automatic Sprinklers in Scottsdale
January 1, 1986 thru January 1, 2001**

? Total Working Fires in Sprinkler Buildings		199
? Types of Activations	Commercial	102
	Multifamily	48
	Single-family	49
? Total Value of Complexes		\$767,334,000
? Total Structural Fire Loss for 199 Incidences		\$703,300
? Total Lives Saved		13
? Average Loss per Sprinkler Incident		\$3,534
	Without Omega Failure at Joshua Tree Apartments	\$2,276
? Average Fire Loss at Non-Sprinkler Structural Incidents		\$45,019
? Fires Controlled with Two or Less Sprinkler Heads (183/16)		92%

As of January 1, 2001, the City of Scottsdale had over 39,000 single-family homes with automatic sprinkler systems. In addition, another 19,000 of the community's multifamily living units are also protected. In this community of 223,000 people, over 53 percent of all the residential units are currently protected with automatic sprinkler systems. It is estimated that in January of 2006, 20 years after the adoption of the original ordinance, Scottsdale will have more than 49,000 single-family residential properties and over 85 percent of all the commercial structures protected with build-in, automatic fire sprinkler protection.

On three separate occasions, various departments of the U.S. Federal Government have initiated reviews of the nation's fire problem and made written

recommendations for improvement. The initial review occurred in 1973 by the National Commission of Fire Prevention and Control. The report was a landmark document that recommended a dramatic shift in the focus of the fire service. It called for increased use of build-in fire protection features, improvements in the training of firefighters, additional research capabilities and methods used to deliver emergency and life safety protection for a community. A follow-up evaluation occurred in 1987 when the U.S. Fire Administration and Federal Emergency Management Agency conducted a workshop titled *America Burning Revisited*. The document produced made additional comments about the nature of the current U.S. fire problem and assessed the progress of the fire service after the original 1973 *America Burning Report*. The U.S. Fire Administration conducted the most recent evaluation in early 2000. This report titled *America Burning, Re commissioned* once again elevated the status of the fire problem in the United States and the progress made as a result of the two previous reviews. In addition, several comments, findings, and recommendations were made. One of the most telling observations made in the 2000 document stated, *Had past recommendations of America Burning and subsequent reports been implemented, there would have been no need for this Commission.*

The debates occurring today are primarily political. There are many technological answers available to address the early questions about design, installation, cost-effectiveness, and quality of materials. The remaining issues cannot be solved by the fire service alone. There is little reason to believe there will be any dramatic changes in the annual losses that are suffered from fires, without the support of additional major stakeholder groups like city and county managers, local policy makers, architects, researchers, the insurance industry, engineers, the sprinkler industry, and even the general public.

The City of Scottsdale fosters innovation, often challenges the traditional ways of providing quality service for the community, and constantly seeks to maintain the high standard of living for its citizens. Many of the guidelines and recommendations that were identified in the *America Burning* series of reports have been implemented and in effect in this community for many years. Without the vision and support of local community leaders, the success that the City of Scottsdale and Rural/Metro Fire Department have enjoyed over the past 15 years would not have been possible. The courage to objectively evaluate and dramatically change the approach to providing emergency service cannot be understated. The City of Scottsdale is one of the most fire safe communities in the nation because of its commitment to community protection.

The original Scottsdale study, which is a detailed history of the effects the automatic sprinkler code in this community, is also available through the Home Fire Sprinkler Coalition web site.