

Exterior Sprinkler Systems for Home Property Protection



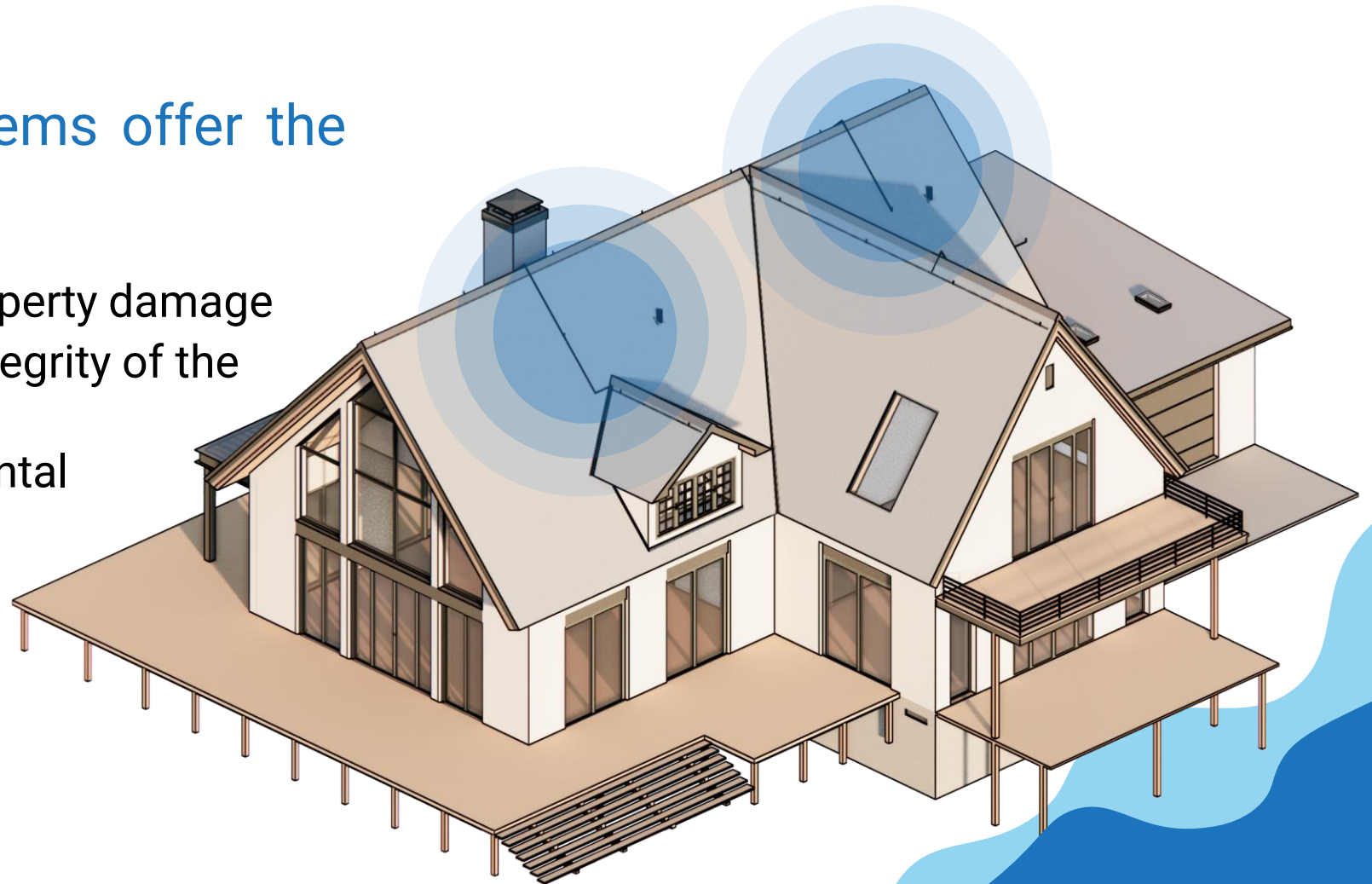
**Engineered
Fire Systems**

Goals of Exterior Sprinkler Systems



- Exterior sprinkler systems offer the following benefits:

- Reduce likelihood of property damage
- Protect the structural integrity of the home
- Minimize the environmental impact of the wildfire
- Assist firefighters in defense efforts



Common Misconceptions of Exterior Sprinkler Systems

“ These systems require precious time to set up during a wildfire event

FALSE

The systems are ready-to-go and can be enabled by a single button press. Additionally, they can be remotely enabled, allowing you to activate the system even if you are not at your house.

”

“ Exterior sprinklers can be installed instead of defensible space and structural hardening

FALSE

NFPA's Firewise USA program encourages exterior sprinklers as a complement to, not a replacement for, other property protection measures.

”

“ Exterior sprinkler systems can be combined with interior sprinkler systems

FALSE

Interior system and exterior systems need to be separate systems. Exterior systems need their own water supply and power.

”

“ These systems are ugly and obtrusive

FALSE

We design the systems with metallic pipe and low-profile sprinklers (usually copper or brass). The systems are carefully customized to blend into your roof and eaves.

”

Case Studies



- **Minnesota 2007 Ham Lake Fire:**

188 homes within the affected community had exterior sprinklers. All 188 sprinklered properties survived, over 100 neighboring properties were lost to the fire.

- **The Prefecture of Gifu:**

A Japanese 11th Century UNESCO World Heritage site, the Prefecture of Gifu, is located in a highly-fire prone area and protected by a community scale sprinkler system. The picture (right) is from the biannual testing of the system.

- **FEMA Pre-disaster grants:**

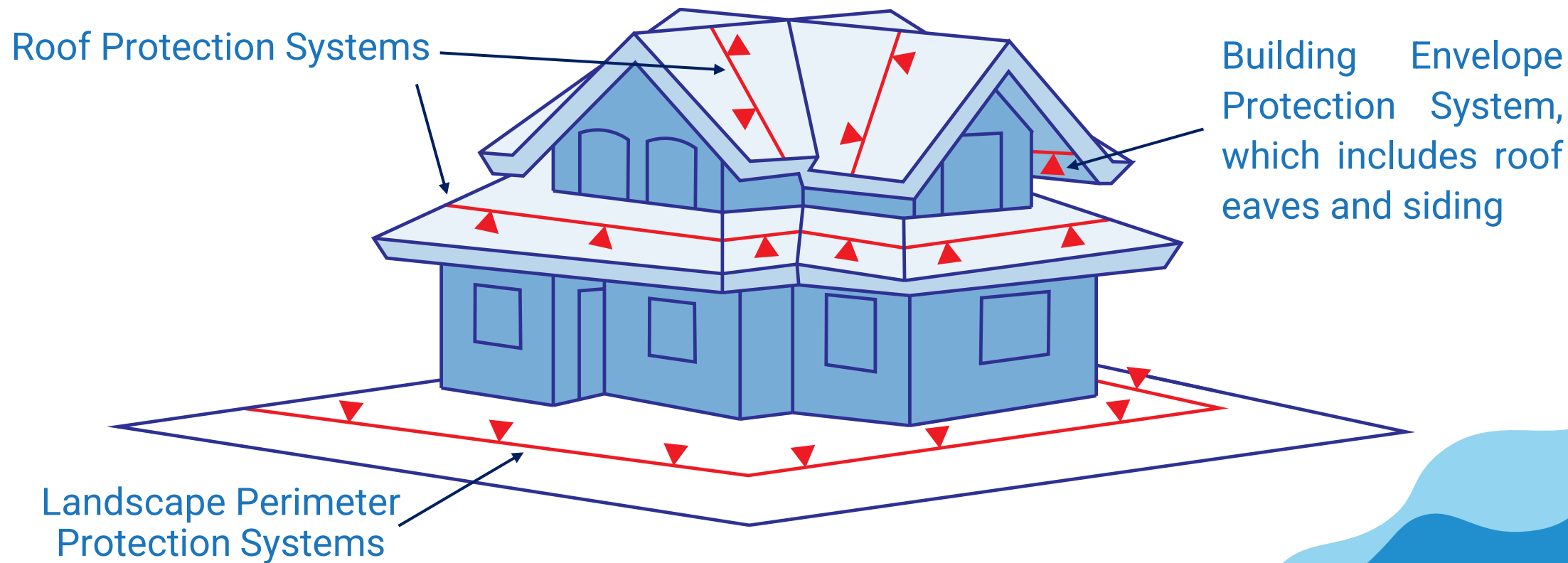
FEMA has issued pre-disaster grants to fire prone regions within California that include funding for exterior fire sprinkler systems.



Photo credit: Moss and Fog

Types of Exterior Sprinkler Systems

There are three primary types of exterior sprinkler systems to consider. A home may be protected by one or multiple of these options.



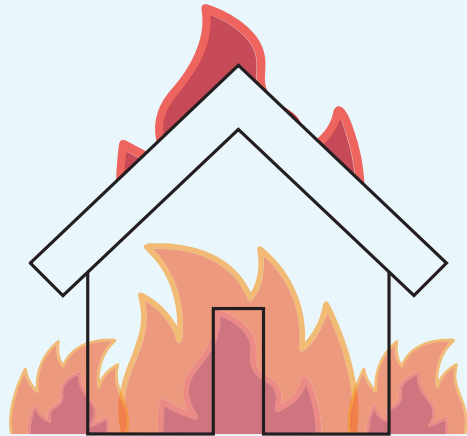
Science of Exterior Sprinkler Systems



Home ignition occurs in one of the ways:

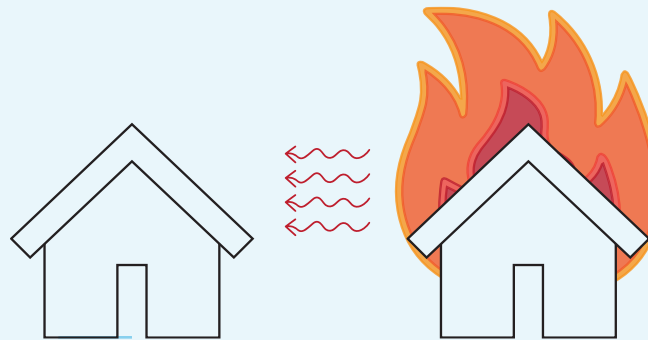
Flame contact:

- Wildfire comes into direct contact with the structure.



Radiant heat :

- Heat transfer from nearby fire causes ignition of the structure



Windborne embers:

- Nearby embers blown onto structure. Embers can travel 1 mile on the wind.



(most homes are lost by this method)

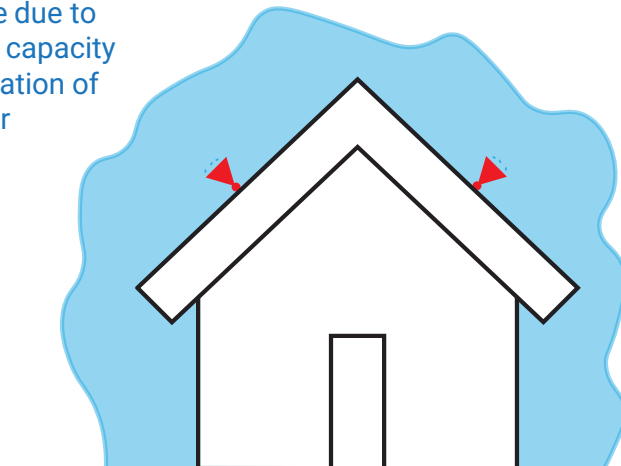
Science of Exterior Sprinkler Systems



Exterior sprinkler systems protect your home by:

- Hydrating combustible elements of the structure and surroundings, making the structure less susceptible to ignition.
- Increasing the humidity around the structure and creating a cooler microclimate.

Energy removed from atmosphere due to specific heat capacity and vaporization of water



The Physics

Exterior Sprinkler System Requirements



Private & onsite water supply

- Water providers are beginning to disallow exterior sprinkler systems to be connected to public water grids. This is because if several of these systems are in a neighborhood, they can drain the public water supply that fire fighters need to access.
- As a result, we design all exterior sprinkler systems to be supplied by private, onsite water supplies



Photo credit: Water storage tanks inc

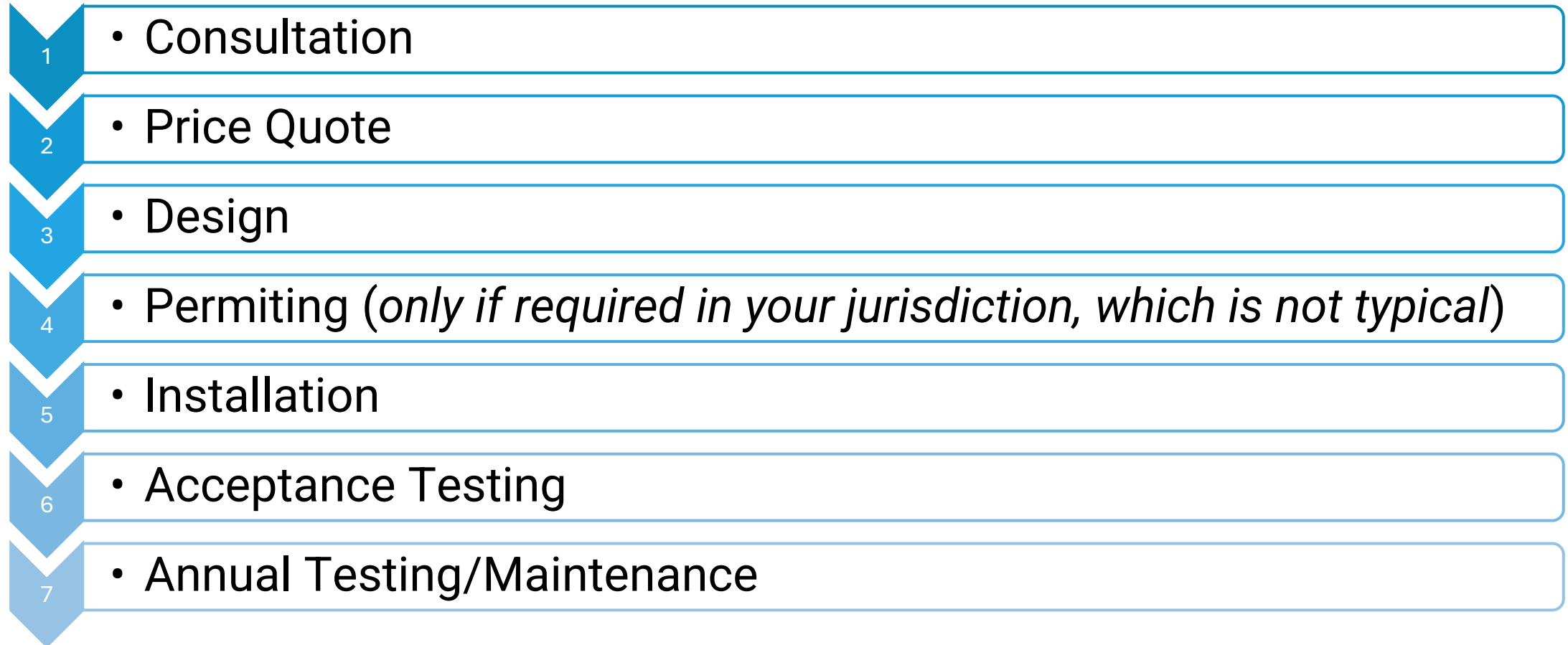
Private & onsite power supply

- Power outages are common in wildfire scenarios. We design all exterior sprinkler systems to be powered by private, onsite generators to ensure that your system will function when needed.



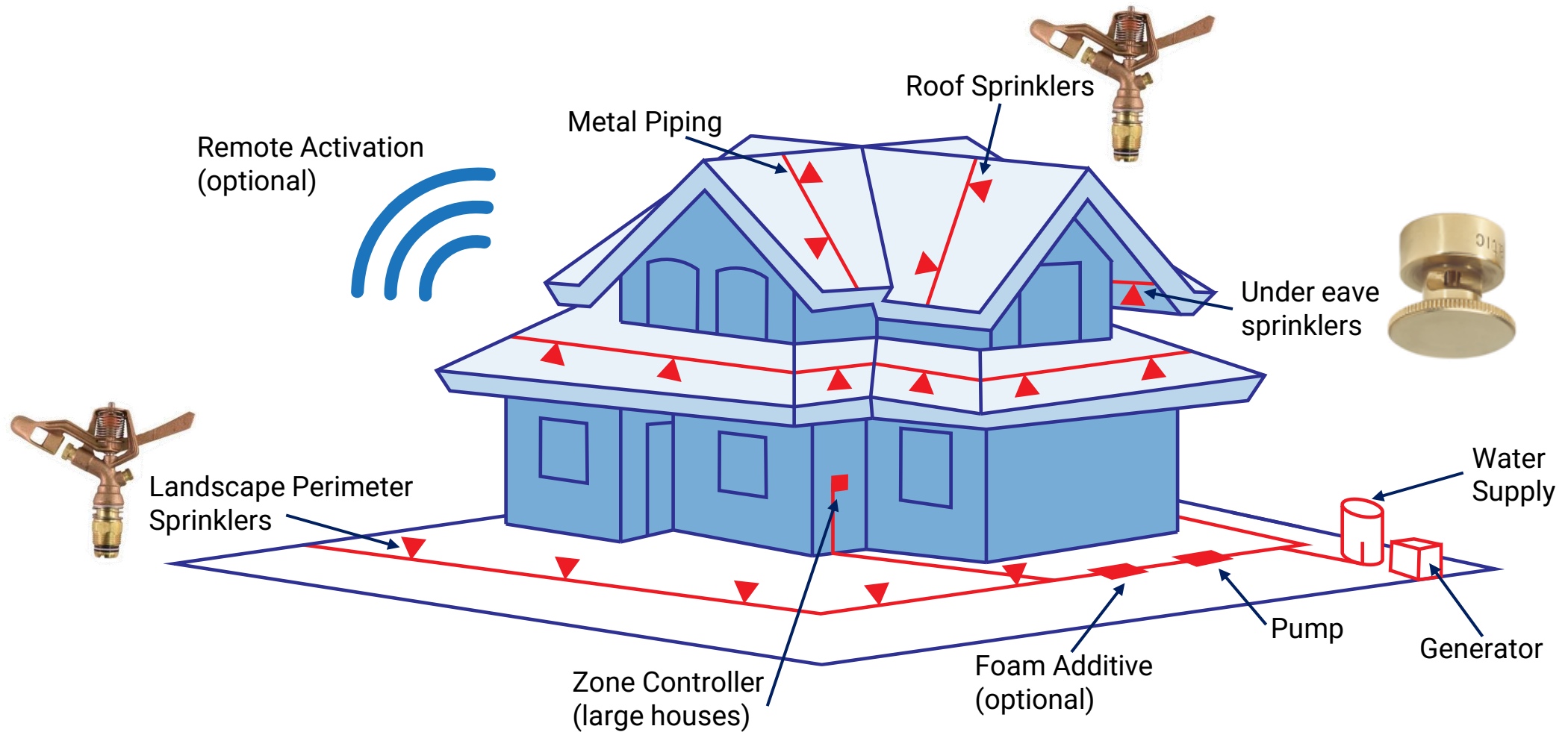
Photo credit: Home Depot

Steps and Timeline



NOTE* Most projects are completed within 4 months from the Start of Design.

System Overview



Water Supply Details

- Water supply is sized for 3 hours of operation at a minimum. The ideal sizing is for 8 hours of operation.
- A 2,000 sf home with a Roof and Building Envelope Protection System requires approximately 5,000 gallons of water for 3 hours of operation.
- In areas where freezing is not a concern, water supplies can be above or below-ground storage tanks, pools, or ponds.
- In colder areas, water supplies can be water tanks with freeze protection measures.

Photo credit: Texas Metal Tanks



Generator and Pump Details



- Generator and pump are sized to meet water demands and runtime for your property
- Typically, generators will be 3 to 5 horsepower (2,235 to 3,725 watts)
- Generators have key fob start (to active within 200ft)
- Optional feature to include remote start app to turn on generator from anywhere.

Photo credit: Westinghouse

The graphic features a blue and black Westinghouse portable generator on the right. Overlaid on the left is a dark grey information panel with white icons and text. At the top left of the panel is the Westinghouse logo. To the right of the generator is a blue circular seal with a white border, containing the text 'LIMITED WARRANTY' around the top edge, a large white number '3' in the center, and 'YEARS' around the bottom edge.

Westinghouse
6600 PEAK WATTS
5300 RUNNING WATTS
PORTABLE GENERATOR 5300/6600

14.5 Hr
Run Time

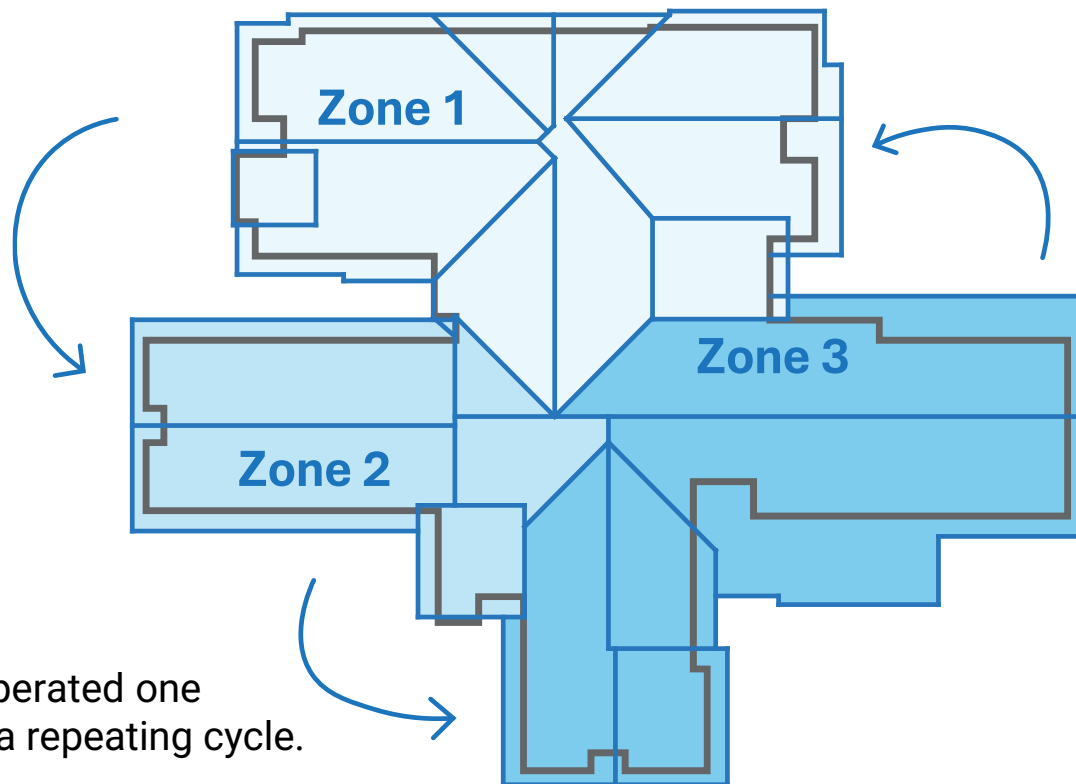
Remote /
Electric Start

Home &
RV Ready

Zone Control (optional)



Zone controllers can be used to protect larger structures without needing to proportionally increase the water supply, generator power and pump power.



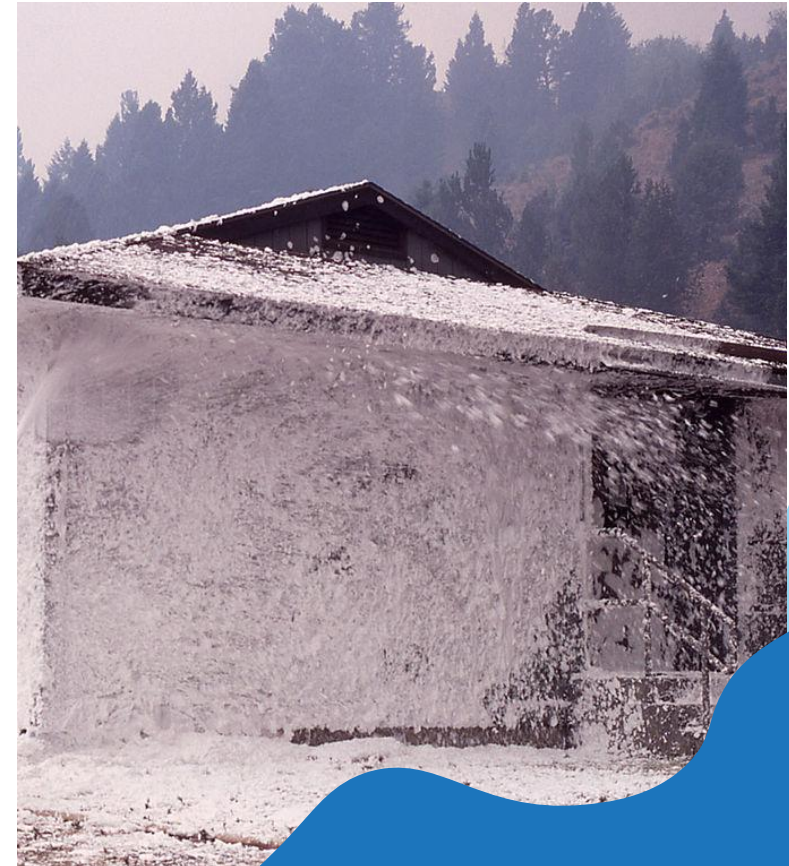
Zones are operated one at a time, in a repeating cycle.



Photo credit: Rainbird

Foam Systems (optional)

- Foaming agents act as “surfactants” which allow water to absorb more effectively into combustible materials and resist evaporation longer
- Foam allows a structure to resist greater radiant heat loads by remaining wet for a longer period of time
- A foam eductor adds foam agent into the system through a pump’s suction and discharge sides



Set up a consultation.

We can answer questions and set up an exterior sprinkler protection plan that will provide peace of mind in event of a wildfire.



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