

Fire Protection – July 2022

White Paper for Planning Commission Discussion
Prepared by John Veranth

This discussion is focused on the fire safety questions addressed to Planning by the town council, especially requirements for fire hydrants in new subdivisions. The existing subdivision standards 151.041 (H) (4) state “Where feasible, all lots shall be located within 400 feet of a fire hydrant”. Key questions are the specific distance requirement, the adequacy of water supply, and the degree of discretion used by the town’s fire code authority in applying the ordinance and referenced codes.

However, fire hydrant and water supply cannot be addressed in isolation. Decisions affect development costs imposed by the subdivision ordinance and the community goal of providing adequate fire protection for all structures in the wild land-urban interface.

Background

Many jurisdictions in Utah, including small southern Utah towns, impose specific requirements for distance from subdivision lots to the nearest hydrant ranging from 250 feet to 500 feet. The Utah Wildland-Urban Interface Code, which Boulder has adopted requires “water supply” within 1000 feet of a building. There are multiple “fire codes” and the various fire code requirements are complex, for example the 2015 edition of the National Fire Protection Association code allows 600 feet to a dwelling and 800 feet between hydrants but the 2018 International Fire Code shows 500 feet between hydrants. Both codes have hydrant spacing adjustments depending on building size, hazard, and distance from fire access roads. In practice for Boulder with 5-acre lots and 1:3 width to depth in the LDR and GMU zone a hydrant would normally be required for every two lots along a new road regardless of whether 250 feet or 600 feet is required.

At present the Boulder ordinances do not mention water supply to the hydrants. Boulder Farmstead has main lines and storage tanks meeting International Fire Code standards, specifically 1000 gallons per minute for one hour which equals 60,000 gallons storage. However, their existing distribution system does not reach all the existing parcels and potentially subdividable land within town limits.

Many of the national rules were written for typical urban subdivisions with 1/4 acre lots and are need to be modified for rural situations. Explicit rural exceptions exist in these codes, for example: International Fire Code 2018 (the current code adopted by State of Utah) Section 507.1.1 “Fire flow may be reduced for an isolated one- and two-family dwelling when the authority having jurisdiction over the dwelling determines that the development of a full fire-flow requirement is impractical.

There is a recognized code, National Fire Protection Association 1142, that provides guidelines for the design and installation of water supplies for rural firefighting. This code sets water supply requirements based on the size of the building, and for a single-family home the calculation comes out around 6000 gallons. Black Boulder Mesa has private firefighting water supply similar to the intent of NFPA 1142. The Utah Wildland-Urban Interface Code cites NFPA 1142.

Pete Benson points out that volunteer fire department response time, all-weather road access, vegetation removal along the road, fire breaks around structures, and the fire resistance of building construction materials are more important than hydrant location in actual emergency situations.

Putting out a fire to save a burning building is not the only priority for the community. Other fire protection goals include: life safety and building evacuation (often called initial attack and flame front control), keeping a fire from spreading to adjacent structures, and property, and protection of buildings from encroaching wildland fire.

There may be long-term benefits to the town from requiring new subdivisions to meet all current best practices for infrastructure including streets, utilities, storm drainage, and fire protection. However, requiring typical suburban subdivision design standards contradicts the desire to keep the informal traditional character of Boulder. Increasing development costs for subdivision lots will have less impact on investors in high-end million dollar homes and much more impact on housing affordable to local residents.

Alternative for Planning Consideration:

- 1) No action alternative: Find that the existing ordinances and fire codes incorporated by reference are adequate.

- 2) Minimum change: Modify 151.041 Requirements for Preliminary Subdivision (H) (4) by striking “Where feasible” making fire hydrant distance an absolute requirement for new subdivisions. Defer other changes until they can be addressed in a comprehensive revision of the subdivision ordinance.

- 3) Propose a new, consolidated fire safety section in the land use ordinances as follows:
 - 3.1) Explicitly require new subdivisions plats to provide water supply storage, distribution lines, and hydrants meeting the requirements of the International Fire Code. (It is better to incorporate the codes by reference rather than putting specific numbers in the ordinance since codes are revised periodically.)
 - 3.2) For building permits on existing lots and historic parcels require either fire fighting water from a community water company meeting International Fire Code OR require a private firefighting water supply meeting NFPA 1142 Standard for Water Supplies for Suburban and Rural Firefighting.
 - 3.3) Require a fire access road (the defined code term) meeting the International Fire Code and the Utah Wildland-Urban Interface Code for both new subdivisions and for obtaining building permits on existing parcels and lots.

3.4) List and repeal all superseded provisions in the current ordinances and insert necessary cross-references in subdivisions and building permits sections to the consolidated fire safety section. Also, review for inconsistency between the codified ordinances and the recently adopted Wildland-Urban Interface Code.

Implications of Alternative 3

3.1 This would basically require connection to the Boulder Farmstead system and a hydrant within 500 feet of each new lot. Given the size of a 5-acre lot this could still mean as much as 1000 feet from from hydrant to house. This provision would greatly increase the cost of creating a new subdivision far from existing water mains since either extension of the 8 inch line (at least \$25/ foot) or a new storage tank would be required. The hydrant requirement would indirectly have the same effect as the Lee Nellis's recommendation to require new subdivisions to be on the community water supply rather than on wells.

3.2 NFPA 1142 is directly applicable to situations like Boulder, and has sections describing using cisterns and ponds for firefighting, freeze protection for tanks, and design of supply lines and hydrant connections. Current ordinances do not explicitly address fire hydrants when applying for a building permit on existing lots and parcels. All references to "hydrants" are in Section 152 - Subdivisions or Section 153 - Campgrounds. Adding this new code reference would provide fire protection meeting a recognized standard and consistent with the Wildland-Urban Interface Code when approving development on existing lots and parcels far from the community water supply.

3.3 Adding explicit road requirements would address an omission that the current ordinances that do not explicitly address fire protection access when applying for a building permit on existing lots and parcels. There is currently no explicit requirement for fire access unless land is being subdivided.

3.4 This is essential housekeeping which is needed to avoid contradictions in the ordinances.

Next Steps

If the Planning Commission is in general agreement with Alternative 3 the next step would be to draft specific ordinance text for public hearing in August.