

## Management Decision Table

### Primary Distinction Between NFPA 13, NFPA 13R and NFPA 13D for a 4 or 5-Storey Private Townhouse

**Management position:** NFPA 13 is the full fire-sprinkler / fire-pump infrastructure route; NFPA 13R and NFPA 13D are residential routes that can use a domestic/composite water supply and domestic pump arrangement if hydraulic capacity, reliability and AHJ acceptance are demonstrated.

| Decision Factor                                             | NFPA 13 – Full Sprinkler System <sup>1</sup>                                                                                                                                                                                                                                                 | NFPA 13R – Low-Rise Residential Sprinkler System <sup>2</sup>                                                                                                                                                                                                      | NFPA 13D – One-/Two-Family Dwelling Sprinkler System <sup>3</sup>                                                                                                                                                                                                    | Management Decision Meaning for 4-Storey Private Townhouse                                                                                                                                                |
|-------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Primary protection philosophy</b>                        | Broader life-and-property protection standard. It standardises design, installation and testing of sprinkler systems and private fire service mains.                                                                                                                                         | Residential life-safety standard with some property protection; written for low-rise residential occupancies and economic practicality.                                                                                                                            | Private dwelling life-safety standard. Objective is to control residential fire, prevent flashover in the sprinklered room of origin, and improve escape/evacuation.                                                                                                 | NFPA 13D/13R are better risk-matched to owner-occupied private family dwellings. NFPA 13 is the most conservative and most infrastructure-heavy route.                                                    |
| <b>Basic scope</b>                                          | General sprinkler installation standard. Used when the adopted building code/AHJ requires a full sprinkler system.                                                                                                                                                                           | Residential occupancies up to and including 4 stories in buildings not exceeding 60 ft / 18 m above grade plane.                                                                                                                                                   | One- and two-family dwellings and manufactured homes. Townhouse portions can qualify only where they meet the dwelling definition and the building code permits this route.                                                                                          | For a genuine 4-storey private townhouse, NFPA 13R is directly height-aligned. NFPA 13D is preferred only if the project can legally remain in the dwelling/townhouse code route.                         |
| <b>Applicability to 4-storey townhouse</b>                  | Technically acceptable if SBC 201/AHJ requires full sprinkler protection, but it is not the most economical residential solution.                                                                                                                                                            | Directly suitable for 4-storey residential buildings within the height limit and subject to AHJ acceptance.                                                                                                                                                        | Possible only where the townhouse remains accepted as a one-/two-family or townhouse dwelling under the adopted building code.                                                                                                                                       | Best strategy: recover SBC 1101/NFPA 13D if possible; otherwise use NFPA 13R as the more residential-proportionate fall-back for 4 storeys.                                                               |
| <b>Applicability to 5-storey counted townhouse</b>          | Most likely default if the building remains outside SBC 1101 and outside NFPA 13R height scope.                                                                                                                                                                                              | Not normally available once the building is counted as 5 stories because NFPA 13R is limited to 4 stories.                                                                                                                                                         | Weak position if the building code disqualifies the townhouse from the one-/two-family/townhouse route.                                                                                                                                                              | The 5-storey code count should be corrected architecturally if the project wants to avoid NFPA 13 and dedicated fire-system infrastructure.                                                               |
| <b>Design sprinkler demand inside dwelling</b>              | Hydraulic demand is determined under NFPA 13 design approaches. It is typically larger because NFPA 13 captures broader fire-control, hose allowance and system-demand criteria.                                                                                                             | Inside dwelling unit: all sprinklers in the compartment up to a maximum of 4 sprinklers requiring the greatest hydraulic demand.                                                                                                                                   | Inside dwelling: all sprinklers in the compartment up to a maximum of 2 sprinklers requiring the greatest hydraulic demand.                                                                                                                                          | Key hydraulic difference: NFPA 13D normally has the lowest water demand; NFPA 13R is intermediate; NFPA 13 is the highest-demand route.                                                                   |
| <b>Minimum residential discharge basis</b>                  | Hazard/density/area or other NFPA 13 design method applies. Hose stream allowance and longer water-supply duration may be required depending on design basis.                                                                                                                                | Minimum 0.05 gpm/ft <sup>2</sup> / 2.04 mm/min or sprinkler listing, whichever is greater, for residential sprinklers in dwelling units.                                                                                                                           | Minimum 0.05 gpm/ft <sup>2</sup> / 2.0 mm/min or sprinkler listing, whichever is greater.                                                                                                                                                                            | NFPA 13R and 13D are similar in density, but NFPA 13D normally calculates fewer sprinklers and therefore produces lower pump/water demand.                                                                |
| <b>Water supply duration</b>                                | Duration is hazard- and design-method based. NFPA 13 can require substantially longer duration and hose allowances; minimum 30 mins light hazard.                                                                                                                                            | System demand must be supplied for at least 30 minutes.                                                                                                                                                                                                            | Stored water is generally sprinkler demand x 10 minutes; a 7-minute option exists only for qualifying one-storey dwellings under the standard.                                                                                                                       | Water storage and pump sizing increase in this order: NFPA 13D → NFPA 13R → NFPA 13.                                                                                                                      |
| <b>Fire pump vs domestic pump</b>                           | Management cost position: treat as requiring a dedicated fire pump/fire-water infrastructure. Strictly, if the utility water supply alone proves sufficient, a pump may not be needed; otherwise NFPA 13 pump design follows fire-protection demand and normally NFPA 20 fire-pump practice. | Can be arranged from reliable waterworks or other acceptable water supplies. Fire pump is acceptable, but Annex guidance confirms a separate fire pump is not required for every building and AHJ may review a combined domestic/fire protection pump arrangement. | Can use a reliable waterworks system with or without an automatically operated pump, or other approved sources. Domestic/multipurpose water systems are recognised; the same domestic water pump may serve if hydraulic demand, pressure and reliability are proven. | Commercial impact: NFPA 13 = dedicated fire pump allowance. NFPA 13R/13D = opportunity to use the home domestic water pump/common domestic-fire pump, subject to hydraulic calculations and AHJ approval. |
| <b>Domestic/fire combined supply</b>                        | Combined service mains are recognised, but the NFPA 13 design demand normally dominates. Shared tank/pump arrangements must preserve adequate fire water or cut off simultaneous non-fire use during fire.                                                                                   | Common domestic/fire mains are contemplated. Domestic demand is added unless domestic flow is prevented on sprinkler activation.                                                                                                                                   | Multipurpose piping and common water connections are recognised for dwelling applications. Domestic fixtures can also support certain test arrangements.                                                                                                             | NFPA 13R/13D provide a stronger technical basis to argue for domestic/composite water infrastructure rather than a standalone fire pump room.                                                             |
| <b>Fire department connection / external infrastructure</b> | Usually the most external fire-service infrastructure: FDC, control valves, supervision, main drain, signage, hydraulic placards and acceptance testing.                                                                                                                                     | More infrastructure than 13D. FDC and fire pump provisions exist, depending on design arrangement and AHJ acceptance.                                                                                                                                              | Simplest residential system. Central station monitoring/full commercial fire alarm arrangement is not intended to be mandated for every 13D system.                                                                                                                  | Infrastructure burden generally increases as: NFPA 13D → NFPA 13R → NFPA 13.                                                                                                                              |

<sup>1</sup>NFPA 13: *Standard for the Installation of Sprinkler Systems* (2025 edn, NFPA 2024) ss 1.2.1, 1.3.1-1.3.3, 5.2, 19.1.5-19.1.6, 20.15.2, 28.4.2.1.2; Annex A.19.1.5.

<sup>2</sup>NFPA 13R: *Standard for the Installation of Sprinkler Systems in Low-Rise Residential Occupancies* (2019 edn, NFPA 2018) ss 1.1-1.2, 4.1-4.2, 6.2, 7.1, 8.2, 9.1-9.7; Annex A.9.5 and A.9.7.1.

<sup>3</sup>NFPA 13D: *Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes* (2019 edn, NFPA 2018) ss 1.1-1.2, 3.3.4, 3.3.13, 5.2-5.3, 6.1-6.2, 7.6, 10.1-10.2; Annex A.6.3 and A.7.2.6.

| Decision Factor                         | NFPA 13 – Full Sprinkler System <sup>1</sup>                                                                 | NFPA 13R – Low-Rise Residential Sprinkler System <sup>2</sup>                                                             | NFPA 13D – One-/Two-Family Dwelling Sprinkler System <sup>3</sup>                                                                                     | Management Decision Meaning for 4-Storey Private Townhouse                                                                                                                                                |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Coverage and permitted omissions</b> | Sprinklers generally throughout the building unless NFPA 13 specifically permits omission.                   | Sprinklers throughout the premises, with allowable residential omissions under NFPA 13R.                                  | Broader dwelling-scale omissions are allowed, including areas such as certain garages, attics, crawl spaces and concealed spaces where permitted.     | NFPA 13D is the most economical and least intrusive for private owner-occupied family dwelling use.                                                                                                       |
| <b>Maintenance and homeowner burden</b> | Highest. More valves, devices, inspections, acceptance testing and fire-system interfaces.                   | Medium. Residential but still more formal than 13D, especially for shared/multibuilding systems.                          | Lowest. Designed for dwelling owners and lower system complexity.                                                                                     | From an ownership perspective, NFPA 13D is closest to normal private-house operation; NFPA 13 feels like commercial building infrastructure.                                                              |
| <b>Cost / programme implication</b>     | Highest capex and O&M: pump room, power, controls, fire water storage, FDC, commissioning and maintenance.   | Medium capex and O&M: may still need engineered pump/water supply but can avoid full NFPA 13 burden if accepted.          | Lowest capex and O&M: typically smaller piping, fewer calculated sprinklers, shorter water duration and potential domestic/multipurpose water supply. | Commercial preference should be NFPA 13D if the townhouse can be brought back within the correct dwelling code path; NFPA 13R is the next-best management option.                                         |
| <b>Recommended management position</b>  | Use only if SBC 201/AHJ requires full sprinkler protection or if the 5-storey code count remains unresolved. | Use as a defensible residential alternative for 4-storey townhouse configuration where NFPA 13D/SBC 1101 is not accepted. | Preferred if architectural amendment restores compliance with the one-/two-family/townhouse residential route.                                        | Decision sequence: (1) amend architecture/grade-plane issue to recover SBC 1101/NFPA 13D; (2) if 4-storey remains, negotiate NFPA 13R; (3) if 5-storey remains, NFPA 13 is the likely authority position. |