DEPARTMENT OF LABOR AND INDUSTRY

Meeting Notes: Single Exit Stairway Apartments Technical Advisory Group

Date: Friday, Dec. 12, 2025
Time: 1:00 p.m.
Location: DLI, 443 Lafayette Rd. N., St. Paul, MN 55155 / WebEx

Members

1. Mary Barnett
2. Tom Brace
3. Nathan Bruhn
4. Adam Casillas
5. Nick Erickson
6. Patrick Farrens
7. Stephen Kartak (WebEx)
8. Britt McAdamis (DLI)
9. Greg Metz (Coordinator, DLI)
10. Jerry Norman (WebEx)
11. Tom Pitschneider
12. Ryan Rehn (Coordinator, DLI)
13. Melisa Rodriquez (WebEx)
14. Stephen Smith (WebEx)
15. Amanda Swenson

Members Absent

Jim Fischer
David Selinsky

WJE/Crux Consultants

Carl Baldassarra – WJE (WebEx)
Kyle Christiansen – Crux Consulting (WebEx)
Brian Meacham – Crux Consulting (WebEx)
Nick Ozog – WJE (WebEx)

Staff & Visitors

Larry Farrar – Atty for CCAC, DLI
Makenzie Johnson – DLI
Lyndy Logan – DLI

Staff & Visitors continued…

Mike Bunnell – DLI (WebEx)
Josiah Moore – DLI
Wendy Rannenberg – DLI (WebEx)
Steve Shold – DLI (WebEx)
Amanda Spuckler – DLI
Dan Blom – City of Minneapolis (WebEx)
John Burrow – City of Savage (WebEx)
Sarah Carter – ICC (WebEx)
Ervin Cui – WJE (WebEx)
Mike Eliason – Larch Lab (WebEx)
Kevin Harding – Ministry of Housing (WebEx)
Richard Hauffe – ICC (WebEx)
Ken Kragness – City of Eden Prairie (WebEx)
John Lansing – Center for Building (WebEx)
Sam Naylor (WebEx)
Robert Nelson – Local 9
Jess Nelson-Rademacher – City of Mpls (WebEx)
Kyle Olson (WebEx)
Ryan Parkos – Local 9 (WebEx)
Colin Pearsall (WebEx)
William Skudlarek (WebEx)
Conrad Speckert (WebEx)
Brian Stevens – City of Edina (WebEx)
John Swanson – NFSA (WebEx)
Steve Ubl – City of St. Paul (WebEx)
Brit Vulcan – N4MN (WebEx)
Forrest Williams – DPS (WebEx)
Tony Zappa – City of Edina (WebEx)

Instruction/Procedures

- The meeting was called to order at 1:03 p.m., with 15 members present in person or remotely. A quorum was maintained throughout the meeting.
- WebEx Instructions/Procedures
    - **TAG members:** TAG members attending online may mute and unmute their microphones to participate openly and actively as if they are attending in the room. You can also click the hand icon to be recognized if you find it difficult to get into the conversation.

- **Interested parties/members of the public:** As the Technical Advisory Group is a legislatively mandated body tasked with providing insights for a legislative safety study and is not directly involved in rulemaking, members of the public are welcome to attend and listen to the meeting but will not be allowed to participate.

Agenda Items

1. Restatement of original legislation

- Greg Metz opened the meeting by noting this is the third gathering of the Technical Advisory Group (TAG), established by the Construction Codes Advisory Council at the direction of the Minnesota Legislature. The TAG serves as a recommending body and was not formed for rulemaking or code development.
- The group is reviewing a preliminary report on single egress stairway apartment buildings, based on research conducted throughout 2025, titled Minnesota Single-Exit Stairway Apartment Building Study, Draft Report dated Dec. 7, 2025. The research team will present their findings and gather feedback from TAG members. Once finalized, the report will be submitted to the legislature for potential action.
- TAG members represent legislatively prescribed stakeholder groups. While the meeting is open to the public, public comment will not be heard.

2. Presentation of Findings

Nick Ozog from Wiss, Janney, Elstner Associates, and Kyle Christiansen from Crux Consulting delivered a presentation and summarized their findings, as shown below.

Purpose of Study:

- Evaluate the risk of single egress stairway apartment buildings.
- Compare risk levels between code-compliant two-stair buildings and prototype single-stair buildings.
- Inform legislative decisions, not rulemaking or code development.

Methodology:

- **Risk-Informed Approach**: Combines probability (event tree analysis) and consequence (fire modeling and egress analysis).
- **Event Tree Analysis**: Eight possible end states based on fire scenarios and system performance (sprinklers, alarms, doors).
    - Key findings:
        - Sprinklers fail to flow in ~12% of cases.
        - Sprinklers control fire in ~99% of successful activations.
        - Door positions (unit and stair) affect smoke spread and tenability.
        - Fire alarm failure leads to no evacuation cue.

Building Models Evaluated:

- Two-stair, code-compliant building (large footprint, high occupancy).
- Four-story, single-stair code-compliant building.
- Eight-story, single-stair prototype (6,000 sq ft floor plate).
- Eight-story, single-stair prototype (4,000 sq ft floor plate).

Fire Modeling Results:

- Corridor becomes untenable in ~2.5 minutes if the sprinkler fails and the unit door is open.
- Corridor fire (e.g., micromobility device) leads to untenable conditions in <1 minute.
- Lower occupant loads in single-stair buildings reduce egress congestion.

Risk Findings:

- Building 1 (two-stair) shows the highest risk due to high occupancy.
- Buildings 2–4 show lower risk; risk increases with height and floor area.
- ~97% of risk in all buildings stems from sprinkler failure.
- ~1% of risk involves smoke entering the stairwell.

System Importance (Risk Achievement Worth):

- Sprinkler system: Most critical (8.6x increase in risk if failed).
- Fire alarm: Moderate impact (1.1x increase).
- Door positions: Minor impact unless sprinkler fails.

Draft Recommendations:

- **Add smoke detection** in corridors of single-stair buildings >3 stories. This action alone brings the comparative risk level of prototype Buildings 3 and 4 down below that of code compliant Building 2.
- **Increase enforcement of NFPA 25 & 72** for inspection, testing, and maintenance (ITM) of fire protection systems.
- (Later discussed) Consider NFPA 80 for door inspections, especially stair doors.

3. Question and Answer Summary

Corridor Separation and Modeling Assumptions

- **Concern:** Building 2 was modeled with corridor separation, which exceeds the code minimum for three-story buildings.
- **Clarification:** Minnesota Building Code does not require one-hour fire resistive corridor separation for buildings up to three stories above grade plane. However, Building 2 was modeled with one-hour fire resistive corridor separation based on prior TAG agreement.
- **Implication:** Modeling may not reflect typical construction practices, potentially affecting comparative risk outcomes. However, modeling will reflect what is currently anticipated to be included in the 2026 Minnesota Building Code through current rule recommendations.

Definition of "Three Stories"

- **Clarification:** When recommendations refer to "more than three stories," they mean **more than three stories above grade plane**, not including basements.
- **Impact:** This aligns with current code allowances and helps define the scope of proposed enhancements.

Voice Alarm Systems

- **Issue:** Voice alarm systems were listed as "not quantitatively evaluated."
- **Clarification:** Lack of data prevented quantitative analysis, but consultants acknowledged potential qualitative benefits for occupant communication.
- **Legislative Relevance:** Could be considered in future rulemaking if supported by further research.

Evacuation Modeling

- **Question:** Was phased evacuation considered?
- **Answer:** Entire building evacuation was modeled to represent worst-case scenarios and stress the egress system.

Sprinkler System Scope and Code Comparisons

- **Discussion:** NFPA 13R applies to buildings up to four stories; NFPA 13 applies above that.
- **Clarification:** The study did not evaluate extending sprinkler coverage to attics or bathrooms, focusing on Minnesota code equivalency.

- **Seattle/New York Comparison:** Some confusion about fire escapes; clarified that modern single-stair buildings in those cities do not require fire escapes.

Reliability and Inspection of Fire Protection Systems

- **Concern:** Annual inspections may be insufficient; enforcement and follow-up are inconsistent.
- **Suggestions:**
  - Use third-party reporting systems.
  - Require contractors to report deficiencies to fire marshals.
  - Improve follow-up mechanisms to ensure repairs are completed.
- **Municipal Challenges:** Smaller cities lack staff to enforce inspections effectively.
- **Concerns:** Fire code officials were reluctant to treat evaluation of fire alarm systems for this type of building differently than any other type of building.

Risk Reduction Recommendations

- **Key Finding:** Either of the two enhancements—adding corridor smoke detection or increasing ITM enforcement—can reduce risk in prototype buildings (3 & 4) to match or be lower than Building 2.
- **Clarification:** These enhancements are **independent**; neither is required simultaneously to achieve risk parity.

NFPA 80 – Door Inspection

- **Proposal:** Add NFPA 80 (fire door inspection) to recommendations due to the role of door position in smoke containment.
- **Consultant Response:**
  - Door reliability affects risk but is secondary to sprinkler system performance.
  - Stair doors have a greater impact than unit doors due to broader occupant exposure.
  - NFPA 80 could be added as a third recommendation, especially for stair doors.
  - Risk of failure by stairway doors is fractionally over 1.0 in comparison to the risk of sprinkler failure at 8.6.

Legislative Process and Code Integration

- **Timeline:** Final report due December 31, 2025.
- **Next Steps:**
  - Legislators may use the report to craft bills in early 2026.
  - If rulemaking is recommended, DLI prefers minimal statutory language for flexibility.
- **Mid-Cycle Code Updates:** Possible via supplemental rulemaking (e.g., window cleaning anchors, adult changing stations).
- **Expedited Rulemaking:** Avoided due to the disruption of other rulemaking processes.

Equity and Rural Considerations

- **Concern:** Rural areas without hydrants face challenges with sprinkler systems.
- **Comment:** Cost-benefit may not justify sprinkler installation in some areas; alternative solutions may be needed.

Clarification on Risk Data

- **Observation:** Even without enhancements, prototype single-stair buildings show significantly lower occupant risk than large two-stair buildings due to lower occupancy.
- **Data Basis:** Risk calculations are based on Minnesota fire data for R-2 occupancies.

4. Final Comments from the Technical Advisory Group

Status of the Report – Metz

- The version of the report shared with TAG members and posted on the DLI website is **preliminary**.
- It is **not finalized** and **not ready for public or legislative action**.
- The only reason it was made public at this stage is due to the **Administrative Procedures Act**, which requires that materials discussed in public meetings be publicly accessible.

Purpose of Sharing the Draft - Metz

- The goal was to **gather feedback** from TAG members and their represented groups before finalizing the report.
- The meeting was designed to **solicit comments and questions** to help refine the report.

Next Steps – Metz

- The **final version** of the report will be completed and submitted to the **Minnesota Legislature by December 31, 2025**.
- Once finalized, it will be:
    - Sent to all TAG members.
    - Posted on the DLI website.
    - Delivered to legislators for potential legislative action.

Call for Final Comments – Metz

- TAG members were asked to **submit any final comments by the close of business on Tuesday** following the meeting.
- This tight deadline is due to the upcoming **holiday season** and the need to avoid overburdening the consultant team during that time.

5. Adjournment

The meeting adjourned at 2:36 p.m.

Respectfully submitted,

Lyndy Logan

Executive Secretary, CCAC