From: [redacted]
To: Emi Sugiyama
Subject: [City of Cupertino] Assignment: Technical Concern: Cumulative Evacuation System Failure on the Linda Vista Corridor (re: Evulich Court Project)
Date: Monday, March 2, 2026 7:52:28 AM
Attachments: Technical Rebuttal to Hexagon Transportation Analysis.pdf
Letter to Assistant Chief Hector Estrada.pdf
260224 PC Public Hearing - Emergency Evacuation, Evulich Project .pdf
Evacuation Traffic Model and Analysis.pdf

You have been assigned to this ticket (#156808).

DerChang Kau
Feb 27, 2026, 3:23 AM PST

To: Assistant Chief Hector Estrada, Santa Clara County Fire Department
CC: Cupertino City Council & Clark, Cupertino Planning Commissioners & division, Mercury Newspaper, Alice Lin and Frank Swanson
From: DerChang Kau
Date: Feb. 27, 2026
Subject: Technical Concern: Cumulative Evacuation System Failure on the Linda Vista Corridor (re: Evulich Court Project)

Dear Assistant Chief Estrada,

I am DerChang, a 3-decade Cupertinian. I am writing to you as a resident of the Linda Vista corridor. I know you are a hands-on leader who prioritizes public safety and operational readiness over theoretical paperwork. This is why I am bringing a critical "cumulative impact" safety concern to your attention regarding the proposed 51-unit townhome development at 10857 Linda Vista Drive.

I am seeking your advocacy regarding the proposed 51-unit development at Evulich Court. Currently, your department's "Finding of Consistency" is being used by the developer to bypass CEQA environmental review. However, that finding appears limited to the **interior** of the project site (hydrant pressure, turn radii, and hose-pull).

We are deeply concerned that the "cumulative impact" on the Linda Vista "Spine" during a wildfire has not been modeled and the risk is not properly assessed. The implications for life safety are catastrophic.

The Tactical Reality: A Single-Point-of-Failure

Imagine a wind-driven wildfire encroaching from the South/Southwest (Stevens Creek County Park). The tree canopy over Linda Vista

becomes a "fuel tunnel." Residents have only one exit: North, funneling toward East bound of McClellan Road.

In this scenario, the Fire Department's ability to defend the neighborhood depends on the residents being able to clear the road. Our analytical modeling—based on the current VHFHSZ classification—shows that at the proposed R3 density, the addition of 51 high-density units will push the road Utilization Ratio of 110%. Mathematically, this creates a "System Failure." Once the evacuation surge begins, cars will be trapped in a standing queue. From an operational standpoint, this is a significant "trap hazard." If the road capacity is exceeded, the bottleneck at the intersection will prevent not just residents from leaving, but emergency vehicles from efficiently entering the corridor to stage for structure protection or rescue operations.

- **The Hexagon Report Gap:** The developer's traffic study models only **30 cars per hour**.
- **The Evacuation Reality:** We are facing a surge of **250+ vehicles** attempting to exit in a 30-minute window.
- **The Result:** A mathematical "System Failure" where the exit rate at McClellan is slower than the arrival rate. This creates a standing queue that stretches the length of the spine.

Why the Current Assessment is Incomplete

The developer's counsel argues that because the project meets internal Fire Code, it is exempt from further CEQA review. We believe this is an operational oversight.

1. **Merging Shockwaves:** Concentrating 51 units at one entry point creates a "forced merge" scenario. Our models show this adds **28 minutes** of stutter-delay to the uphill residents already in the queue.
2. **Order-to-Safety Time:** Total evacuation time jumps from a survivable less than 30 minutes to **90+ minutes**. In a fire moving 200 acres in 20 minutes, a 90 plus-minute bottleneck is a non-survivable event.

Our Request to the Fire Department

We believe this project cannot be adequately reviewed through a standard site-plan exemption. To ensure the safety of our neighborhood, we respectfully ask the Fire Department to:

1. **Expand the Scope:** Review the cumulative impact of this density on the *entire* Linda Vista evacuation corridor, rather than just the project interior.
2. **Model the "Surge":** Evaluate whether the egress route can maintain a "Total Order to Safety" time within the 30-minute critical fire-spread window (200 acres in 20 minutes) as established by recent regional wildfire events (eg. 2025 Pacific Palisade Fire).

If our neighborhood's evacuation capacity is mathematically compromised, we believe this project does not meet the "safety

requirements" necessary for a CEQA exemption. We cannot allow "paper compliance" to override the physical reality of a wildfire. We would welcome the opportunity to walk the corridor with you or a member of your team to show you the physical bottlenecks that our models have identified.

Again, our ask is your review of **Emergency Evacuation Corridor Analysis** for the entire "Spine," not just the project interior. Specifically, we request that the Fire Department clarify to the Planning Commission that:

- Internal site compliance does **not** equate to neighborhood evacuation safety.
- A CEQA exemption is inappropriate without a **Cumulative Evacuation Surge Study** that accounts for the 155-unit total load on the Linda Vista bottleneck.

Attached you will find 4 documents

1. Detailing the evacuation model and assumption
2. Our plead to the public hearing of Cupertino City Planning Commission.
3. Technical Rebuttal to Hexagon Transportation Analysis
4. This letter.

Thank you for your dedication to the safety of our community. We are eager to provide you with our full analytical data package to assist in your review.

Respectfully,

DerChang Kau
Intel Fellow, Retired
Adjunct Professor, National Taiwan University
[redacted]

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Impacts of 2025 CAL FIRE FHSZ Classifications on Project “Evulich Court”

Monta Vista "Spine” and Wildfire Accident Risk Overview
Evacuation Traffic Modeling
Evacuation Plan Analysis

Supporting Materials on Evacuation Traffic Model
- Utilization Ratio – ρ = Demand / Capacity
- Traffic Utilization Ratio Matters
- Queuing Delay (D_Q)
- Merging Delay (D_M)

About the author

DerChang Kau, a resident of Linda Vista Drive, Cupertino

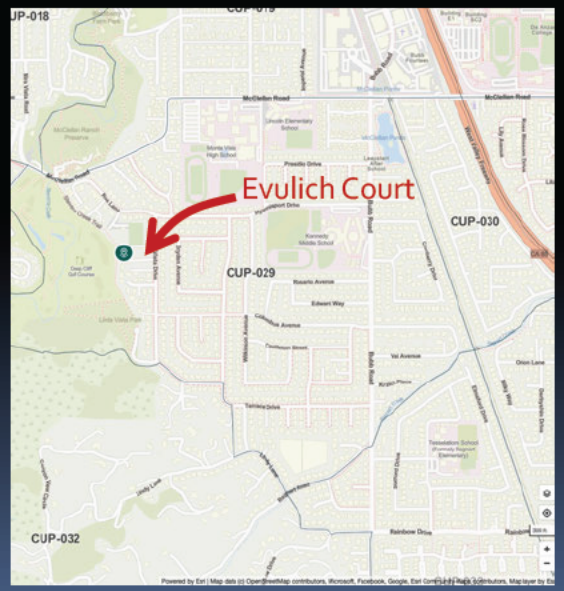
Technical Credential (if it matters)

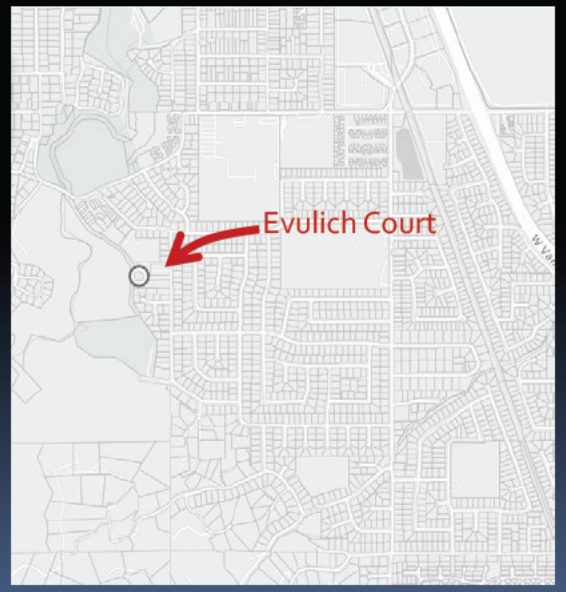
Retired Intel Fellow, Technology and Manufacturing

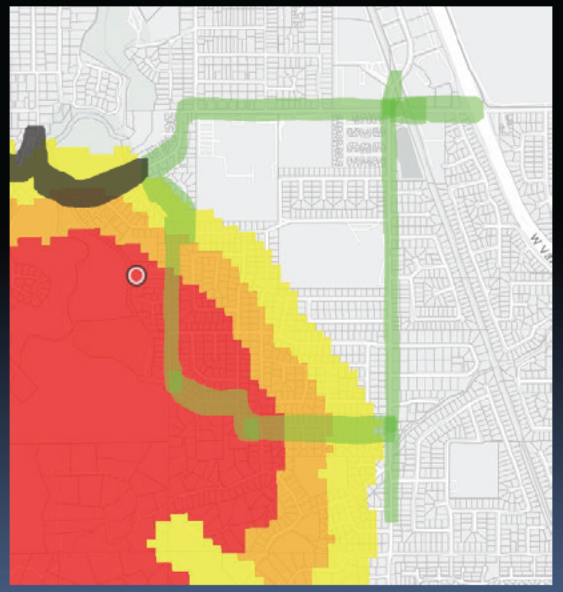
Adjunct Professor, Graduate School of Advance Technology, National Taiwan University

The Monta Vista neighborhood of Cupertino

- In the Monta Vista neighborhood of Cupertino, residents between 10807 and 11197 Linda Vista Drive are located in a unique geography where the road essentially acts as a single spine.
- Because Linda Vista Drive is a winding road with several "dead-end" side streets and restricted access points, the evacuation strategy must account for the fact that the primary route is northward toward McClellan Road.
  - Primary Route: Follow Linda Vista Drive north. This will take you directly to McClellan Road. From McClellan, you can head east toward the more urban parts of Cupertino (away from the foothills).
  - Secondary/Alternative: Depending on where the fire is located, some residents near the 11000 block may attempt to exit via Canyon Vista Drive to connect back to Linda Vista or other neighborhood arteries, but eventually, almost all traffic must funnel toward McClellan Road or Stevens Creek Blvd.







Fire Hazard Severity Zone (FHSZ) maps, the **March 2025 CAL FIRE LRA update**

Wildfire Accident Risk Overview

Hyper-Local Risks for 10807–11197 Linda Vista

- **The "Choke Point":** The lower part of Linda Vista Drive (closer to McClellan) can become congested. If you receive an **Evacuation Warning**, it is highly recommended to leave early, especially if you have trailers, pets, or large vehicles.
- **Vegetation Overhang:** This stretch of road has significant tree canopy. In a high-wind fire event, "spotting" (embers jumping ahead of the fire) can ignite trees along the road, potentially blocking the only exit.
- **Dead-End Cul-de-Sacs:** If you live on a side street off this stretch (like Baxley Court or various private drives), you must be aware that you have zero "rear" exits.

Evacuation Density Risks

- The density is a major point of concern for fire safety because:
- **Funneling:** All 150+ households (plus residents on side streets like Rae Lane and Baxley Court) must use Linda Vista Drive to reach McClellan Road.
- **The Park Choke Point:** The entrance to Linda Vista Park is expected to be the sole entry/exit for the new Vista Heights development, adding concentrated traffic to the middle of your evacuation route.
- **Vehicle Load:** With an average of **2.9 to 3.1 people per household** in Monta Vista, a full evacuation of just this street segment could involve **450+ people and 250+ vehicles** attempting to exit simultaneously onto a winding two-lane road.

Evacuation Traffic Modeling

Boundary Conditions & Variables

- Segment Geography: A single-access, winding, two-lane road acting as a "single-point-of-failure".
- Baseline (R1): 70 existing units (approx. 112 vehicles).
- Proposed (R3): 155 total units (approx. 248 vehicles).
- Critical Safety Window: 30 minutes, based on a 20-minute fire spread rate of 200 acres (Pacific Palisade Fire Data)

Evacuation Analytical Model & Results

	Baseline(R1 Status)	Planned (R3 Status)	Logic & Boundary Conditions
Total Units (N)	70 Units	155 Units	Includes Evulich & Vista Heights.
Vehicle Load (V)	112 Cars	248 Cars	Constant: 1.6 vehicles/HH consolidation.
Capacity (μ)	600 Cars/Hr	450 Cars/Hr	Constant: Winding road capacity. R3 assumes 4-way stop failure.
Utilization (ρ)	37%	110%	Formula: [Demand / Capacity]. ρ>1.0 = System Failure.
Queuing Delay (D_Q)	2.5 mins	45.0+ mins	Formula: [(ρ / (1-ρ)) * intrinsic delay Time]. Exponential delay at saturation.
Merging Delay (D_M)	4.0 mins	28.5 mins	Based on "Critical Gap Acceptance" for 51 units entering the spine.
Human Factor (D_H)	20.0 mins	20.0 mins	Constant: Time from alert to vehicle in gear.
TOTAL ORDER TO SAFETY	26.5 mins	93.5+ mins	Sum of: [D_Q+D_M+D_H].

Evacuation Plan Analysis

- Current Neighborhood (Approx. 70 Homes)
  - At an average of 1.6 vehicles per household (typical for emergency evacuations where families try to consolidate), there are roughly 120 vehicles that must exit this specific stretch.
  - Flow Rate: A single lane of a winding residential road under stress typically handles 600–800 vehicles per hour.
  - Physical Exit Time: Technically, 120 cars could pass a single point in about 12–15 minutes.
  - The "Human Factor" Delay: In reality, total evacuation time includes "mobilization time" (packing, hitching trailers, getting pets). For 70 homes, the neighborhood would likely be clear in 30 minutes from the time the order is issued, assuming no road blockages.
- Expanded Neighborhood (Planned ~150+ Units)
  - With the addition of the Evulich Court (51 units) and Vista Heights (35 units) projects, the vehicle count jumps to approximately 240–260 vehicles.
  - The Bottleneck: The main issue isn't just the number of cars; it’s the intersection of Bubb Road and McClellan. If traffic lights are out, this intersection becomes a four-way stop, which can drop flow rates by 50%.
  - Estimated Time: Under these conditions, the physical exit time doubles. Adding in the complexity of more neighbors merging from high-density driveways, the total time to clear the street would likely stretch to 90+ minutes.

Supporting Materials

Utilization Ratio – ρ = Demand / Capacity

Traffic is like running water in the pipe. The Utilization Ratio is the pressure in that system. When ρ exceeds 1.0, the "pipes" burst—meaning the line of cars stops moving, and the time to exit becomes theoretically infinite unless the demand is reduced.

Demand – λ

- **30-minute requirement** is the safety leave window **from the learning of Pacific Palisade Fire**.
- R1 Case: $\lambda_{baseline}$ = 70 Units × 1.6 vehicles/household / 0.5 hours = 224 cars / hour
- R3 Case: $\lambda_{planned}$ = 155 Units × 1.6 vehicles/household / 0.5 hours = 496 cars / hour.

Capacity – Ideal flow rate, μ_{ideal} = 700 cars/hour.

- The intersection of Bubb Road and McClellan is the only exit in an "Emergency State".
  - Power is out, the traffic signals are dead and the intersection functions as a 4-Way Stop.
- Higher density creates a "standing queue" and degrades 4-way stop intersection efficiency from ~85% to ~60%
  - R1 Case: $\mu_{baseline}$ = 600 cars / hour
  - R3 Case: $\mu_{planned}$ = 450 cars / hour.

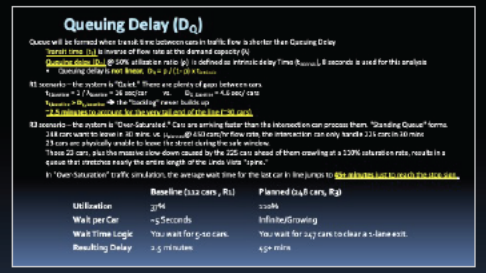
Metric	Baseline (R1 status)	Planned (R3 status)	Analytical Meaning
Demand – λ	224 cars/hr	496 cars/hr	The "Pressure"
Capacity – μ	600 cars/hr	450 cars/hr	The "Pipe Size"
Utilization Ratio – ρ	37%	110%	Result

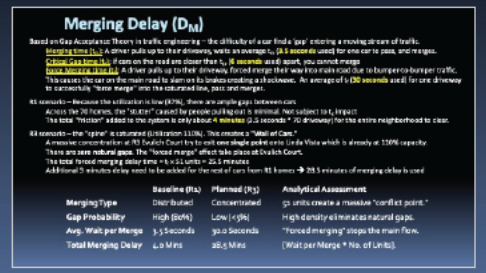
Why and How Traffic Utilization Ratio Matters

- R1 scenario – the traffic Utilization ratio ($\rho_{baseline}$) is 37%
  - The system is "Under-Saturated." Cars arrive much slower than the intersection can process them.
  - There is no queue; you drive straight to the stop sign and leave.
- R3 scenario – the traffic Utilization ratio ($\rho_{planned}$) is 110%
  - The system is "Over-Saturated." Cars are arriving faster than the intersection can process them
  - When $\rho > 1.0$, a "Standing Queue" forms; the line of cars gets longer. ➔ System Failure.

Linking to delays to safety

- Queuing Delay: Because the R3 Utilization is 110%, the queue never clears. You are now waiting for the cars ahead of you to clear a "bottleneck" that is physically too small for the crowd. This is a mathematical proof that the road cannot physically clear the neighborhood in under 30 minutes.
- Merging Delay: The 51-unit project creates a Concentrated Conflict Point that adds 28.5 minutes of 'Shockwave Delay' to the evacuation. This is not a subjective preference; it is a mathematical consequence of forcing high-density merging into a saturated, single-lane 'spine' during a surge event."





Queuing Delay (D_Q)

Queue will be formed when transit time between cars in traffic flow is shorter than Queuing Delay

Transit time (t_T) is inverse of flow rate at the demand capacity (λ)

Queuing delay (D_Q) @ 50% utilization ratio (ρ) is defined as intrinsic delay Time ($t_{intrinsic}$), 8 seconds is used for this analysis

- Queuing delay is **not linear,** $D_Q = \rho / (1- \rho) \times t_{intrinsic}$

R1 scenario – the system is ”Quiet." There are plenty of gaps between cars.

$t_{T,baseline} = 1 / \lambda_{baseline} = 16$ sec/car vs. $D_{Q,\ baseline} = 4.6$ sec/ cars

$t_{T,baseline} > D_{q,\ baseline}$ ➔ the "backlog" never builds up

~2.5 minutes to account for the very tail end of the line (~30 cars)

R3 scenario – the system is "Over-Saturated." Cars are arriving faster than the intersection can process them. "Standing Queue" forms.

248 cars want to leave in 30 mins. vs. $\mu_{planned}$@ 450 cars/hr flow rate, the intersection can only handle 225 cars in 30 mins

23 cars are physically unable to leave the street during the safe window.

Those 23 cars, plus the massive slow-down caused by the 225 cars ahead of them crawling at a 110% saturation rate, results in a queue that stretches nearly the entire length of the Linda Vista "spine."

In "Over-Saturation” traffic simulation, the average wait time for the last car in line jumps to **45+ minutes** just to reach the stop sign.

	Baseline (112 cars , R1)	**Planned (248 cars, R3)**
Utilization	37%	110%
Wait per Car	~5 Seconds	Infinite/Growing
Wait Time Logic	You wait for 5-10 cars.	You wait for 247 cars to clear a 1-lane exit.
Resulting Delay	2.5 minutes	45+ mins

Merging Delay (D_M)

Based on Gap Acceptance Theory in traffic engineering – the difficulty of a car find a 'gap' entering a moving stream of traffic.

Merging time (t_m): A driver pulls up to their driveway, waits an average t_m (**3.5 seconds** used) for one car to pass, and merges.
Critical Gap time (t_g): if cars on the road are closer than t_g, (**6 seconds** used) apart, you cannot merge
Force Merging time (t_f): A driver pulls up to their driveway, forced merge their way into main road due to bumper-to-bumper traffic. This causes the car on the main road to slam on its brakes creating a shockwave. An average of t_f (**30 seconds** used) for one driveway to successfully "force merge" into the saturated line, pass and merges.

R1 scenario – Because the utilization is low (37%), there are ample gaps between cars
Across the 70 homes, the "stutter" caused by people pulling out is minimal. Not subject to t_g impact
The total "friction" added to the system is only about **4 minutes** (3.5 seconds * 70 driveway) for the entire neighborhood to clear.

R3 scenario – the "spine" is saturated (Utilization 110%). This creates a **"Wall of Cars."**
A massive concentration at R3 Evulich Court try to exit **one single point** onto Linda Vista which is already at 110% capacity.
There are **zero natural gaps**. The "forced merge" effect take place at Evulich Court.
The total forced merging delay time = t_f x 51 units = 25.5 minutes
Additional 3 minutes delay need to be added for the rest of cars from R1 homes ➔ 28.5 minutes of merging delay is used

	Baseline (R1)	Planned (R3)	Analytical Assessment
Merging Type	Distributed	Concentrated	51 units create a massive "conflict point."
Gap Probability	High (80%)	Low (<5%)	High density eliminates natural gaps.
Avg. Wait per Merge	3.5 Seconds	30.0 Seconds	"Forced merging" stops the main flow.
Total Merging Delay	4.0 Mins	28.5 Mins	[Wait per Merge * No. of Units].

Cupertino Planning Commission Hearing

10350 Torre Avenue, Cupertino

Feb/24/2026

Emergency Evacuation Subject to Evulich Ct Development Project

Significant Safety Finding

Quantified Results with Life-and-Death Consequences

The Asks: Consistency Review, Supplemental CEQA Review & Mitigation

Addendum: Technical Rebuttal to Transportation Analysis by SummerHill's Consultants

DerChang Kau

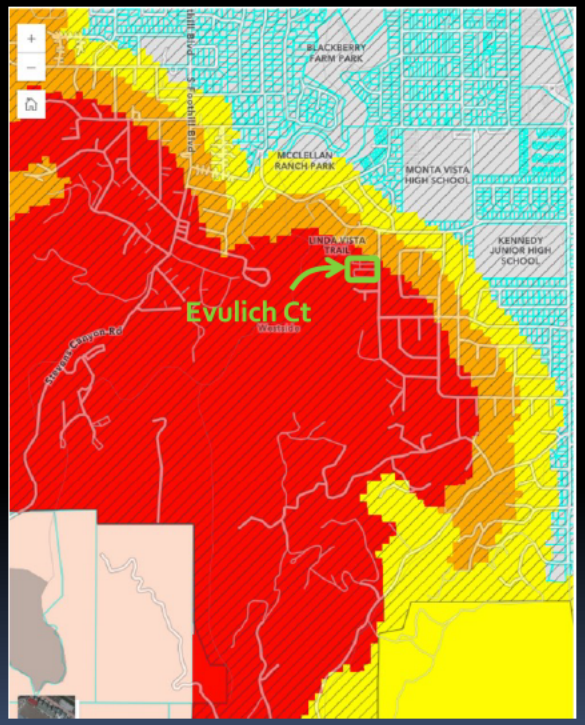
Intel Fellow, Retired

Adjunct Professor, National Taiwan University

[redacted]

Significant Safety Finding re the Proposed Evulich Ct Project

- 2025 CAL FIRE LRA update fundamentally changed the safety baseline for this parcel.
  - Re-zoning of this site to R3/TH in July 2024 was based on the 2007 (FHSZ) maps.
- Total evacuation during a wind-drive wildfire accident will more than double the Critical Safety Window
  - Critical Safety Window: 30 minutes, based on a 20-minute fire spread rate of 200 acres (Pacific Palisade Fire Data)
  - Total evacuation time more than double from less than 30 minutes with current status to 60~90 minutes or more with R3/TH at Evulich Ct



Fire Hazard Severity Zone (FHSZ) maps, the **March 2025 CAL FIRE LRA update**

Mathematically Rigorous, Objective Results with Life-and-Death Consequences

All conclusions derived from transparent assumptions, validated models, and reproducible calculations

Traffic Utilization Ratio Matters

- Baseline @ 37%: The system is "Under-Saturated." No queue; you drive straight to the stop sign and leave.
- Planned @ 110% : The system is "Over-Saturated." a "Standing Queue" forms; the line of cars gets longer.

Delays to Safety

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Human Factor (D_H)	20.0 mins	20.0 mins	Time from alert to vehicle in gear.
Total Evacuation	26.5 mins	93.5+ mins	Sum of: [D_Q+D_M+D_H].

Critical Safety Window: 30 minutes, based on a 20-minute fire spread rate of 200 acres (Pacific Palisade Fire Data)

The Asks

- **Consistency Review:** A formal analysis by the Fire Marshal to determine if 51 units is consistent with the **2025 Health and Safety Element Update** and its "Evacuation-Constrained" criteria.
- **Supplemental CEQA Review:** A re-evaluation of the project's impacts on emergency evacuation plans, given the change in the environmental hazard baseline as of March 2025.
- **Consideration of Mitigation:** We propose that a lower-density, R1-aligned project of **12 single-family homes** serves as the only feasible mitigation to preserve the "Vista" in Linda Vista while maintaining a safe, 30-minute evacuation window.

Technical Rebuttal to Transportation Analysis by Hexagon Transportation Consultants Inc.

Why standard "Peak Hour" metrics fail to protect the Linda Vista High Fire Hazard Corridor

What the Hexagon Report Analyzes (Daily Operations)

- Trip Generation: 51 units, 375 daily vehicle trips, only 26 and 30 trips during the AM and PM peak hour correspondingly.
- Intersection Delay: the "project-generated traffic" add < 1 second of delay to the Linda Vista/McClellan intersection.
- Safety Assessment: limited to whether a garbage truck or fire truck can physically turn around on the new Evulich Court

The Flaw in the Developer's Study (Hexagon Memo)

- Metric Mismatch: Hexagon models 30 vehicles/hour (Daily Commute)
- Disaster Reality: Wildfire evacuation requires modeling a 250+ vehicle surge in a 30-minute window.
- Omission: The study ignores "Threshold 4" safety impacts during power outages such as the Linda Vista/McClellan intersection defaults to a 50% capacity 4-way stop

A Quantifiable Safety Violation

- The Hexagon report addresses "Daily Operations" but fails to provide a "Project-Specific Evacuation Plan".
- The Hexagon report evaluates routine only traffic operations but not covers emergency surge evacuation performance.
- We urge SummerHill Homes consulting with reputable agencies in wildfire evacuation analysis and protection planning.

Learn more on "Wildfire Evacuation Modeling and Traffic Analysis"

- Youtube: FSEG evacuation simulation animations, National Fire Protection Association and PTV Group.
- Research & Academic Presentations: "Simulating wildfires before they happen" (Google Research), How technology is transforming wildfire response in the WUI (Lund University/GHD)

Subject: Re: Feb/24/2026 Planning Commission Public Hearing –
Technical Rebuttal to "Transportation Analysis for the Proposed Townhomes at 10857 Linda Vista Drive in Cupertino, CA" by Hexagon Transportation Consultants, Inc.
https://cupertino.legistar.com/gateway.aspx?M=F&ID=8a56f691-e5d1-472e-9ba9-753651a0bd2e.pdf

To: Cupertino City Planning Commissioners
CC: Planning Staff, City of Cupertino
From: DerChang Kau, [redacted] Cupertino

Dear Chair and Honorable Commissioners,

The "Safety Assessment" on page 22 of the Hexagon report concludes that the project "would not worsen existing geometric hazards". We contend that this finding is based on incomplete data and fails to address the unique life-safety risks of the Linda Vista "Spine."

1. Failure to Model Emergency Surge Conditions

- **The Error:** Hexagon's analysis is based on "Peak Hour" trips, estimating only **30 vehicles** will exit the site during the busiest hour of a normal day.
- **The Reality:** In a wildfire evacuation, the demand is a **simultaneous surge**. Our integrated model shows that **248 vehicles** must exit the spine in a 30-minute window.
- **The Impact:** Hexagon ignores the **Utilization Ratio of 110%**, where demand exceeds road capacity, causing total system failure.

2. Ignoring Intersection Degradation (McClellan Choke Point)

- **The Error:** The report assumes the Linda Vista/McClellan intersection functions at a standard "Level of Service".
- **The Reality:** Disaster events (fire/earthquake) often lead to power outages, turning the signal into a **4-way stop**.
- **The Impact:** This condition drops flow rates by **50%**, doubling the physical exit time and trapping residents in the "tunnel of fire".

3. Omission of Merging Conflict and Shockwave Delay

- **The Error:** Hexagon evaluates the new cul-de-sac for basic garbage truck turning templates but ignores "merging friction".
- **The Reality:** Concentrating 51 units into one entry point on a saturated single-lane road creates **"forced merging"**.
- **The Impact:** As shown in our analytical model, this creates a **28-minute "Shockwave Delay"** that stalls the entire evacuation route for all 155 households.

Conclusion: A Quantifiable Safety Violation

The Hexagon report addresses "Daily Operations" but fails to provide a **"Project-Specific Evacuation Plan"**. Because the project pushes the total "Order to Safety" time from **less than 30 minutes** (current R1) to **more than 90 minutes** (planned R3), it creates a "specific, adverse impact upon public safety" that cannot be mitigated by standard street design.

The General Plan Public Safety Element requires the City to reduce wildfire risk and ensure adequate emergency access and evacuation capability for existing and future residents. The Mobility Element likewise requires that the circulation system function safely and reliably, not only under daily peak conditions but for emergency response. The Hexagon report evaluates routine traffic operations; it does not evaluate emergency surge evacuation performance on the single-access Linda Vista spine.

Because the Hexagon report only focuses on "daily traffic", I strongly recommend city planning department urge SummerHill Homes consulting with reputable agencies in wildfire evacuation analysis and protection planning, such as Reax Engineering for evacuation modeling and Dudek for CEQA fire protection planning to produce flawless and adequate wildfire evacuation risk analysis and mitigation plan.

Thank you.

Sincerely,
DerChang Kau
[redacted]
Cupertino, CA 95014
[redacted]

From:	[redacted]
To:	City of Cupertino Planning Dept.; City of Cupertino Planning Commission; City Council; City Clerk
Cc:	[redacted]
Subject:	The Cupertino Wildfire Evacuation and Public Safety Critique
Date:	Tuesday, March 10, 2026 8:52:26 PM
Attachments:	The Cupertino Wildfire Evacuation and Public Safety Critique.pdf Feedback to Cupertino Health and Safety Element - General Plan Community Vision 2015-2040 - v3.pdf
Importance:	High

March 10, 2026

TO: City of Cupertino Planning Staff and Planning Commission
CC: Mayor and City Council Members
FROM: DerChang Kau, Resident of Cupertino
RE: **Feedback to the Health and Safety Element Update (General Plan: 2015–2040 Community Vision)**

Dear Planning Staff and Commissioners,

As a retired engineer, university professor, and long-time resident of Cupertino, I am writing to express my grave concerns regarding the current wildfire evacuation analysis integrated into the City's Health and Safety Element. While the existing analysis provides a useful "planning level" starting point, it is fundamentally insufficient for a community that is rapidly densifying and facing modern wildfire risks.

My review of the provided documents reveals four critical gaps that must be addressed before the General Plan can be considered adequate to protect residents through 2040:

- **Reliance on Outdated Data:** The analysis utilizes 2023–2025 population data that does not account for the major density increases triggered by the July 2024 rezoning. For example, the evacuation demand for Evulich Court is modeled on its previous 4-unit density rather than the R3 up-zoned density. Consequently, the city is planning for 2040 safety using 2023 conditions.
- **Inadequate "Planning-Level" Methodology:** The City's own consultants acknowledge that constrained areas require **Dynamic Traffic Assignment (DTA)** to accurately simulate traffic flow. While peer jurisdictions like Marin County have already adopted these advanced tools, Cupertino continues to rely on broad evaluations that do not reflect real-world emergency behavior.
- **Neglect of High-Risk Fire Zones:** Critical evacuation zones (CUP-016, 017, 029, and 032) lie within Moderate to Very High Fire Hazard Severity Zones (FHSZ), yet they lack street-level modeling. Notably, **CUP-029 generates 38% of all evacuation trips**, yet its primary outlets—McClellan Road and Foothill Boulevard—are projected to reach V/C ratios of 4.2 and 4.0 respectively. These are not mere "constraints"; they represent total system failure.

- **Misleading Safety Metrics:** The use of Volume-to-Capacity (V/C) ratios dramatically understates the danger. A V/C ratio of 1.0 indicates an over-saturated system where standing queues form and the network fails. Framing a V/C > 2 as merely "more than one hour" of delay obscures the reality that residents may be unable to reach safety in time.

Proposed Action: I urge the City to move beyond high-level assumptions and commit to a **"Total Evacuation to Safety" framework**. This must include street-level dynamic modeling, realistic capacity adjustments for factors like signal outages and poor visibility, and evacuation time estimates that reflect the density of the 2040 General Plan.

The detailed critique and recommendation is attached to this correspondence for your review and consideration.

Cupertino is a center of global innovation; we should be a leader, not a laggard, in data-driven public safety. Our residents deserve an evacuation plan that remains functional during the exact emergency it was designed to manage.

Respectfully,

DerChang Kau, Resident of Cupertino

Feedback to The Health and Safety Element of the Cupertino General Plan: 2015 - 2040 Community Vision

High-Risk Zones Demand Street-Level Evacuation-to-Safety Analysis

Outdated census data and
planning-level methods
cannot manage modern wildfire risk

March 10, 2026

DerChang Kau

Retired Engineer, University Professor and Resident of Cupertino

Preface

Cupertino's current wildfire evacuation analysis relies heavily on **planning-level assumptions**, **dated population data**, and **static traffic metrics** that do not reflect real-world emergency conditions. Across all four sections below, a consistent theme emerges: **the City's Health & Safety Element is not aligned with the evacuation realities of a denser, more wildfire-exposed Cupertino in 2030–2040.**

The documents show that:

- The analysis uses **2023–2025 data**, ignoring the major density increases triggered by the **July 2024 rezoning**. As one section notes, it "*primarily reflects existing households*" rather than future conditions.
- The methodology remains **planning-level**, even though the City's own consultant acknowledges that **dynamic traffic assignment** is required for constrained areas.
- Critical evacuation zones—especially **CUP029**, which generates **38% of all evacuation trips**—are located within **Fire Hazard Severity Zones**, yet the City has not modeled evacuation at the street level.
- The use of **V/C ratios** dramatically understates evacuation risk. At V/C ≥ 1, "*the system is oversaturated and no longer functioning*," yet the report treats V/C > 2 as merely "more than one hour."

Taken together, these findings show that Cupertino's current evacuation analysis **cannot support long-range planning through 2040**. The City must adopt **dynamic, data-driven, future-oriented evacuation modeling** to protect residents and meet the intent of the General Plan's Health & Safety Element.

Section 1 — Dated Data Source

"*Outdated Inputs: Why the Current Evacuation Analysis Cannot Support 2040 Planning*"

The following data sources were used to estimate vehicle evacuation demand for residents, employees, students, and visitors in "Evacuation Route Capacity Report"

- **2023 American Community Survey (ACS) 5-year Estimates:** Used for population, household data, and vehicle ownership distribution.
- **Genasys Protect:** Provides population, household estimates, and designated evacuation zones.
- **StreetLight Data (2024):** Used to evaluate and compare traffic volumes between school and non-school periods.

This analysis represents a snapshot of the city's current evacuation capacity based on the most recent available census and municipal data from **2023–2025**. It does **not** incorporate the increased residential densities anticipated under the **July 2024 rezoning**. As noted in the original text, *"using 2023 ACS data and July 2025 Genasys data, it primarily reflects existing households."*

For example, Evulich Ct. is evaluated using its existing **4-unit R1 zoning**, rather than the **51-unit R3 density** under the rezoning. Consequently, **Figure HS-3** in Chapter 7 of the *Health and Safety Element | General Plan (Community Vision 2015–2040)* does not identify this area as required under **Policy HS-2.13**, which highlights residential parcels with fewer than two ingress/egress routes.

Because the analysis relies on pre-rezoning conditions, the document does not adequately support long-range planning through the year **2040**. The document is therefore inadequate to support a general plan to the year 2040.

Section 2 — Traffic Flow Methodology

"Planning-Level Methods Are Not Enough: Cupertino Needs Advanced Evacuation Modeling"

The referenced sources describe the current "planning-level" assessment as a broad evaluation of transportation system capacity rather than a definitive evacuation plan. While this type of assessment is useful for identifying major bottlenecks and informing policy decisions, it also explicitly acknowledges that more detailed, higher-resolution studies—such as dynamic traffic assignment—are the appropriate next step for areas with significant constraints.

As Fehr & Peers note, community-scale wildfire evacuation assessment is an emerging field. However, general guidance does exist, including ISO 22315 and NIST's ESCAPE framework. Given Cupertino's substantial wildfire exposure and its position at the center of global science and technology innovation, the city is uniquely positioned to take a leadership role in advancing rigorous, data-driven evacuation assessment and mitigation planning. Several jurisdictions, including Marin County, have already begun such modeling efforts to identify evacuation bottlenecks and evaluate mitigation strategies[‡].

Leadership in this area could include:

- Scenario-based wildfire evacuation simulations
- Traffic network evacuation time analysis
- Population departure behavior modeling
- Redundant evacuation route and shelter analysis
- Quantitative evacuation performance metrics (clearance time, route saturation, etc.)

A forward-looking evacuation assessment framework would not only strengthen public safety for current residents but also provide a valuable foundation for evaluating the cumulative evacuation impacts of future development.

‡:https://www.marinwildfire.org/news/the-state-of-the-science-in-wildfire-evacuation-modeling-a-literature-review?utm_source=chatgpt.com

Section 3 — Prioritize Local Level Evacuation Route with FHSZ Map

"High-Risk Zones, High Stakes: Street-Level Modeling Required for FHSZ Evacuation"

This analysis is based on the evacuation routes released by the City of Cupertino in August 2025. Every one of those designated routes lies outside the mapped Fire Hazard Severity Zones (FHSZ). Yet four zones—CUP-016, CUP-017, CUP-029, and CUP-032—are fully or partially within Moderate, High, or Very High FHSZ. Given this reality, it is no longer acceptable to rely on a "planning-level" review of the main evacuation route shown in Figure 2. The City must move beyond high-level assumptions and conduct **street-level dynamic traffic assignment** within these at-risk zones. Anything less leaves thousands of residents exposed.

The findings in CUP-029 alone make the case unmistakable. CUP-029 represents **38% of all evacuation trips** in Scenarios A and C—the single largest share of evacuation demand. This is not a marginal zone; it is the **primary choke point** in a wildfire emergency. In Scenario A, McClellan Road—serving CUP-029 and CUP-032—reaches a V/C ratio of **4.2**, while Foothill Boulevard—serving CUP-017—reaches **4.0**. A V/C ratio of 1.0 already means a road is over capacity. These corridors are projected to operate at **four times** their hourly capacity during an evacuation. That is not a "constraint." That is a **system failure** waiting to happen.

Fehr & Peers themselves state that for "more constrained and congested conditions, higher-effort studies may involve modeled analysis of evacuation scenarios using dynamic traffic assignment to simulate traffic flow and evacuation times when street and freeway networks are at capacity." Cupertino's conditions are exactly what this warning describes. The City cannot continue to treat this as optional.

To protect residents, Cupertino must adopt **dynamic, data-driven tools** immediately. This includes the use of real-time traffic management systems capable of providing dynamic route guidance and monitoring to divert evacuees away from collapsing corridors. Furthermore, phased evacuation strategies must be developed not only for the main arterials but also for the **high-demand FHSZ zones themselves**, where evacuation surges originate. Without this, the extreme congestion projected on McClellan Road and Foothill Boulevard will materialize as modeled or worse, as real-world behavior is never as orderly as a static model assumes.

Cupertino has the data, the expertise, and the responsibility. The City must elevate this work beyond planning-level analysis and commit to the advanced modeling that wildfire-exposed communities across California are already pursuing. Residents deserve evacuation planning that matches the severity of the risk—not a framework that collapses the moment it is needed most.

Section 4 — Improvement to Evacuation-to-Safety Metric

"*Beyond V/C Ratios: A Total Evacuation-to-Safety Framework Is Essential*"

The current assessment fails to correct roadway capacity for emergency conditions. The Volume-to-Capacity (V/C) ratio used throughout the report is an over2023simplified metric, and the accompanying text is misleading. For example, on page 24 the report states:

> "*V/C ratios greater than 2… indicate that these roads would require more than one hour to accommodate the evacuation demand from the evacuation area.*"

This framing dramatically understates the severity of the problem. A V/C ratio above 1.0 does not simply mean "more than one hour." It means the system is **over-saturated** and no longer functioning. Cars are arriving faster than the roadway can process them. A standing queue forms. The system fails.

1. **Capacity Must Reflect Realistic "Adjusted Evacuation Route Capacity"**
   The "Adjusted Evacuation Route Capacity" used in this study relies on planning-level hourly capacities from the Highway Capacity Manual (2000). These values do not represent real-world evacuation conditions and fail to incorporate:
   - **Spatial Adjustments:** Increased residential density from the Housing Element requires downward adjustments to reflect degraded capacity on constrained terrain and limited visibility.

- **Temporal Adjustments:** School pickup periods and short-term curbside parking can severely reduce effective capacity during critical hours.
- **Operational Limitations:** The analysis assumes normal signal operations and does not account for "red-flash mode" during power outages—an extremely likely condition during wildfire events.

2. **Demand Must Reflect Realistic Future Conditions**
   The study is a snapshot of Cupertino's evacuation capacity based on 2023–2025 data. It does **not** account for the substantial density increases triggered by the July 2024 rezoning. Planning for wildfire evacuation using backward-looking data is planning through a rear-view mirror. It guarantees underestimation of future evacuation demand.

3. **Moving Beyond V/C: "Total Evacuation to Safety" Must Be the Standard**
   Fehr & Peers acknowledge that V/C ratios only identify bottlenecks; they do **not** measure total evacuation time. In traffic engineering and management science[¶], V/C is a well-established tool for quantifying queuing and merging delays. When V/C ≥ 1, the system is not merely "congested"—it is **over-saturated**, and two critical delays dominate:

¶: Stanford University,
Department of Civil and Environmental Engineering
Department of Management Science and Engineering

- **Queuing Delay:** As V/C approaches 1, delay increases non-linearly.

$$Delay = \frac{V/C}{1 - V/C} \times travel\ time$$

  When V/C ≥ 1, queues grow indefinitely. The roadway cannot clear vehicles.
- **Merging Delay:** When traffic density eliminates safe gaps, merging becomes impossible without forced maneuvers that further destabilize flow.

Consider CUP-029 at 8PM during a late-summer, wind-driven wildfire approaching from the south. A quickly encroaching fire from the foothills would paint the sky red. The tree canopy along Linda Vista becomes a "fuel tunnel." Residents have only one exit: northbound toward McClellan Road. Roughly 80 vehicles from 51 homes on Evulich Court must merge into an already over-saturated Linda Vista Drive. This is not a theoretical model—it is a life-and-death situation at the choke point.

Wildfires such as the Pacific Palisades Fire have spread at rates of **200 acres in 20 minutes**. Under these conditions, seconds matter. Residents need to be aware not just of potential evacuation bottlenecks, but how much time is required to reach safety. This requires the city to both plan and communicate a comprehensive and up-to-date evacuation plan that considers realistic models of queuing, merging, human behavior, and departure delays.

Human factors—delays in loading children, pets, and essential belongings—further slow departures. Without quantifying these delays, the City cannot provide residents with the knowledge they need to prepare for an evacuation that may unfold in minutes, not hours.

Fehr & Peers states that the V/C metric is only a baseline tool. They identify **dynamic traffic assignment (DTA)** and **phased departure timing** as the necessary next steps for an objective, safety-driven evacuation assessment.

In conclusion, Cupertino cannot rely on planning-level V/C ratios to evaluate wildfire evacuation safety. The City must adopt a **Total Evacuation to Safety** framework grounded in dynamic modeling, realistic capacity adjustments, and future population density. Anything less leaves residents with a false sense of security and exposes the community to unacceptable risk.

Closing Summary

"Why Cupertino Must Elevate Its Evacuation Planning Now"

Cupertino's current wildfire evacuation analysis provides a useful starting point, but it is fundamentally constrained by **outdated data**, **planning-level methodologies**, and **metrics that do not reflect real-world emergency behavior**. Across all four sections, the evidence is clear: the City's Health & Safety Element does not yet meet the level of rigor required to protect residents in a rapidly densifying, wildfire-exposed community.

The analysis relies on **2023–2025 population and traffic data**, even though the July 2024 rezoning dramatically increases residential density. As the document itself notes, it "primarily reflects existing households," leaving future evacuation demand unaccounted for. This gap alone makes the current assessment insufficient for long-range planning through 2040.

Methodologically, the City continues to rely on **broad, planning-level evaluations** despite its consultant's own acknowledgment that **dynamic traffic assignment** and **scenario-based evacuation modeling** are necessary for constrained areas. Peer jurisdictions across California have already adopted these advanced tools; Cupertino should not lag behind.

The risk is most acute in the **Fire Hazard Severity Zones**, from which evacuation surges originate. Zones such as CUP029 and CUP032 generate the largest share of evacuation demand, yet are absent from the City's street-level evacuation models behavior. Projected V/C ratios of 4.0–4.2 on McClellan Road and Foothill Boulevard indicate not congestion, but **system failure** under evacuation conditions.

Finally, the continued reliance on **V/C ratios** obscures the true danger. At V/C ≥ 1, "the system is oversaturated and no longer functioning," however the City's report frames V/C > 2 as merely "more than one hour." Residents need to understand **time to safety**, not just where bottlenecks occur. That requires modeling queuing, merging, human behavior, and departure delays—none of which are captured in the current framework.

In summary, Cupertino has the data, the expertise, and the responsibility to adopt a modern, dynamic, and future-oriented evacuation planning framework. The City needs urgently to meet the intent of the General Plan and to safeguard residents through 2040 and beyond. Cupertino must move beyond planning-level assumptions and commit to advanced, data-driven evacuation modeling that reflects the realities of wildfire risk and future population growth.

Feedback to Update to the Health and Safety Element of the Cupertino General Plan:
2015 - 2040 Community Vision

Outdated Inputs
Planning-Level Methods Are Not Enough
High-Risk Zones Require Street-Level Modeling
Beyond V/C Ratios: A Total Evacuation-to-Safety Framework

March 9, 2026

DerChang Kau
Resident of the City of Cupertino

Outdated Inputs

The City's evacuation analysis is built on pre-rezoning data and cannot support long-range planning.

- Uses 2023 ACS, 2025 Genasys, and 2024 StreetLight data
  - "*Primarily reflects existing households*" — not future density
- Fails to identify parcels with single ingress/egress as required by California Government Code Section 65302(g)(5)¶
  - Evulich Ct. modeled as 4 units, not 51 units allowed under rezoning
- A 2040 General Plan cannot rely on 2023 conditions

The analysis is outdated the moment it is published.

¶ https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=GOV&sectionNum=65302.&article=5.&highlight=true&keyword=Fire%20Hazard%20Severity%20Zone#:~:text=(5)%20Upon%20the%20next%20revision,revision%20of%20the%20safety%20element.

Planning-Level Methods Are Not Enough

Cupertino must move beyond broad, planning-level assessments to dynamic, high-resolution evacuation modeling.

- Current method is a “broad evaluation,” not a plan
  - Fehr & Peers: constrained areas require dynamic traffic assignment (DTA)
- DTA has been adopted widely
  - National guidance exists: ISO 22315, NIST ESCAPE
  - Peer jurisdictions (e.g., Marin County) already use advanced modeling
- Needed tools:
  - Scenario-based simulations, Evacuation time analysis, Departure-behavior modeling, Redundant route & shelter analysis, Quantitative performance metrics

Cupertino should be a leader—not a laggard—in evacuation planning.

High-Risk Zones Require Street-Level Modeling

Four evacuation zones lie within Fire Hazard Severity Zones,
yet the City has not modeled their street-level evacuation behavior.

- All designated evacuation routes lie outside FHSZ
- But CUP016, CUP017, CUP029, CUP032 lie inside Moderate–Very High FHSZ
  - CUP029 alone = 38% of all evacuation trips
  - McClellan Road V/C = 4.2; Foothill Blvd V/C = 4.0
  - These are not “constraints”—they are system failures
- City must adopt:
  - Street-level DTA, Real-time traffic management, Phased evacuation strategies for FHSZ zone

Thousands of residents remain exposed until
Cupertino models evacuation where the risk actually exists.

Beyond V/C Ratios: A Total Evacuation-to-Safety Framework

V/C ratios hide the true danger.

Cupertino needs a Total Evacuation-to-Safety model.

- V/C > 1 means **oversaturation** — "*the system fails*"
- Current study uses **planning-level capacities** from year 2000
- Missing adjustments:
  - Spatial (density, terrain, visibility), Temporal (school pickup, curbside parking), Operational (signal outages, red-flash mode)
- Real evacuation requires modeling:
  - Queuing delays, Merging delays, Human behavior, Departure lag

Residents need to know time to safety, not just where bottlenecks occur.

Evulich Ct. : Evacuation to Safety Modeling

Based on 2023 American Community Survey (Used for population, household data, and vehicle ownership distribution). ➔ Does not include 2024 re-zoning

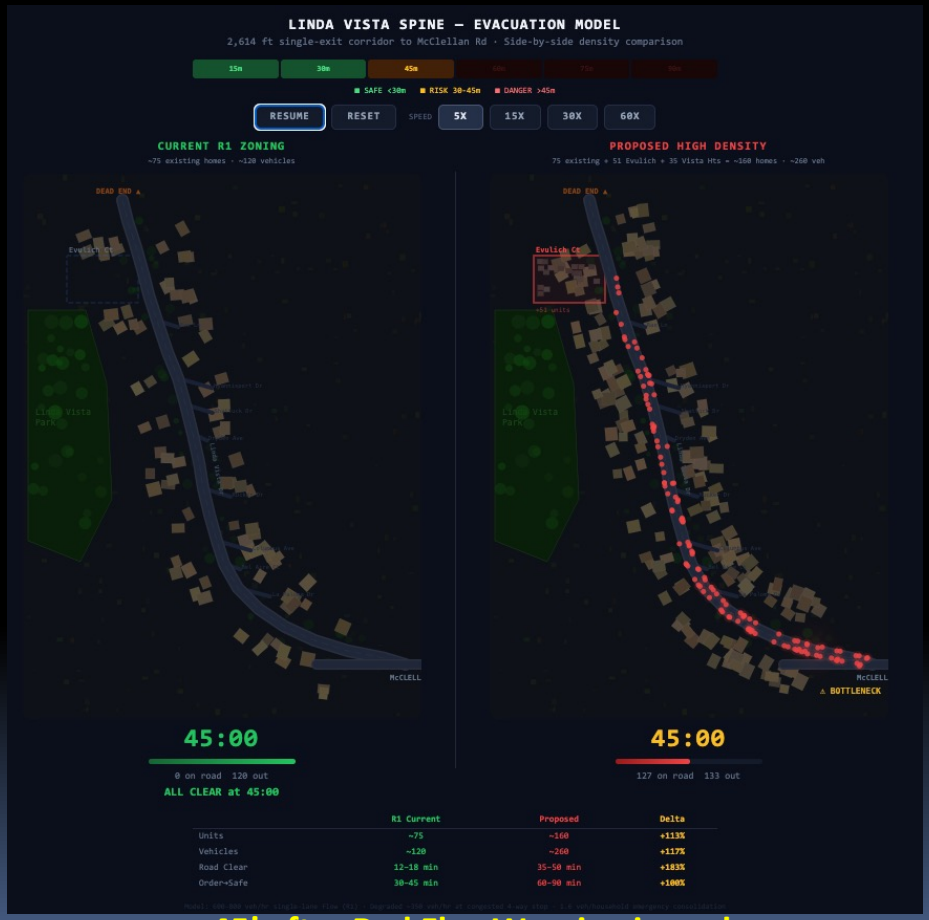
Include 2024 re-zoning of Evulich Ct., a.k.a. 10857~10887 Linda Vista Dr to R3 (51 units in red box)

The visual animation is courtesy of David Yan, yet another resident of Cupertino

5’ after Red Flag Warning issued

15’ after Red Flag Warning issued

30’ after Red Flag Warning issued



45’ after Red Flag Warning issued

Pre-2024 re-zoning

Entire Linda Vista spine safely evacuated in 30 minutes or less

Post-2024 re-zoning

More than 1 ½ hours required for Evacuation to Safety

60’ after Red Flag Warning issued

Summary: Cupertino Must Elevate Its Evacuation Planning

The current evacuation analysis is not sufficient for a wildfire-exposed, rapidly densifying Cupertino.

The City must adopt modern, data-driven methods to meet 2040 safety needs.

- Dated data source
- Over simplified methods despite known constraints and consultant guidance
- High-risk zones (CUP016, 17, 29, 32) require street-level modeling
- V/C ratios mask true danger — oversaturation means system failure, not delay
- Residents need time-to-safety modeling, not bottleneck identification
- Peer jurisdictions already use dynamic traffic assignment & scenario-based tools

To protect residents and meet the intent of the Health & Safety Element, Cupertino must move beyond planning-level assumptions and commit to advanced, future-oriented evacuation modeling now.

March 10, 2026

TO: City of Cupertino Planning Staff and Planning Commission
CC: Mayor and City Council Members
FROM: DerChang Kau, Resident of Cupertino
RE: **Feedback to the Health and Safety Element Update (General Plan: 2015–2040 Community Vision)**

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Proposed Action: I urge the City to move beyond high-level assumptions and commit to a **"Total Evacuation to Safety" framework**. This must include street-level dynamic modeling, realistic capacity adjustments for factors like signal outages and poor visibility, and evacuation time estimates that reflect the density of the 2040 General Plan.

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Respectfully,

DerChang Kau, Resident of Cupertino

From: [redacted]
To: Luke Connolly; Emi Sugiyama
Subject: FW: Can you send me the letter from County Fire that was used to exempt the Linda Vista Project from CEQA?
Date: Wednesday, March 4, 2026 7:34:17 AM
Importance: High

Hi Luke,
Per our conversation last night, please email all fire department communications pertaining to the exemption.
Thanks,
Rhoda

From: Rhoda Fry [redacted]
Sent: Monday, March 2, 2026 8:45 AM
To: 'emis@cupertino.gov' <emis@cupertino.gov>
Subject: Can you send me the letter from County Fire that was used to exempt the Linda Vista Project from CEQA?

Hi Emi,

Can you send me the letter from County Fire that was used to exempt the Linda Vista Project from CEQA?

Page 12 of the attached document that was in the Planning Commission packet refers to this letter:
Santa Clara County Fire Department. Fire Prevention Plan Review Comments. January 27, 2026.

I would like to see that letter.

Thanks for your help,

Rhoda Fry