

**From:** [Dale Pfau](#)  
**To:** [Adrienne Smith](#)  
**Subject:** Public Comment for ASCC, Planning Commission, Town Council  
**Date:** Monday, April 8, 2024 8:35:05 AM  
**Attachments:** [Evacuation Study Update March 2024 .pdf](#)

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The attached report was approved by the Emergency Preparedness Committee at its April 4 meeting and is intended to provide information to the ASCC, Planning Commission and Town Council.

Please include with public comment and insure that all members have the report.

thank you,

Dale Pfau

**Portola Valley  
Emergency Preparedness Committee**

**To:** Emergency Preparedness Committee  
**From:** Evacuation Subcommittee  
**Date:** April 4, 2024  
**Re:** Updated Evacuation Studies

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## Summary

In 2022, Fehr & Peers produced an Evacuation Traffic Capacity Study for Portola Valley. The study provided model-based evacuation times under three different scenarios: all roads open, Portola Road blocked, and Alpine/Arastradero blocked. The base assumptions included the evacuation starting at 6 am, and approximately 2 cars per household. The study highlighted that it could take longer than **3 hours** to evacuate if roads were blocked. The study did not include any impact from additional housing required by the recently passed Housing Element.

Subsequent to the Fehr & Peers study, WFPD and members of the EPC were introduced to Ladriss, a small company that had developed a flexible cloud-based evacuation modelling platform. WFPD and Portola Valley have since purchased access to the Ladriss system. After considerable efforts, we believe the Ladriss model is now positioned to provide reasonably accurate statistical modelling of evacuation scenarios for Portola Valley and surrounding areas. We have spent the time to model the additional cars that would be anticipated from the recent Housing Element and have run simulations of the resulting evacuation times that are presented in this report. Please read the rest of this memo for a more detailed discussion.

The results (in the following table) make sense; when all roads are open, there is a slight increase in evacuation times due to the new housing. However, evacuation times increase substantially when roadways are blocked. In particular, when Alpine/Arastradero roads are blocked the average evacuation times increase by almost 30 minutes, and the maximum evacuation time increases by almost an hour to an alarming **5 hours!** This increase also makes sense, since much of the new housing is concentrated along Alpine Road. We have always advised that the maximum evacuation times are the most relevant for emergency personnel and public officials. **The Fehr & Peers report offers several suggestions to begin to mitigate evacuation times and we strongly recommend that efforts should be made to improve evacuation before new housing is completed.**

Scenario		Fehr & Peers*	Ladris - Baseline	Ladris - Add HE cars
<b>All Roads Open</b>	Mean	23-40 minues	41 minutes	54 minutes
	Median		42 minutes	58 minutes
	Maximum	75-90 minutes	99 minutes	106 minutes
	Std Dev		+/- 21 minutes	+/- 23 minutes
<b>Portola Road Blocked</b>	Mean	60-84 minutes	62 minutes	84 minutes
	Median		67 minutes	85 minutes
	Maximum	120-165 minutes	160 minutes	178 minutes
	Std Dev		+/- 36 minutes	+/- 41 minutes
<b>Alpine/Arastradero Blocked</b>	Mean	76-114 minutes	168 minutes	195 minutes
	Median		192 minutes	209 minutes
	Maximum	165-225 minutes	237 minutes	301 minutes
	Std Dev		+/-60 minutes	+/- 77 minutes

\*F&P mean is taken 30 minutes after evac starts; F&P max is at 90% population evacuated

## Fehr & Peers Wildfire Evacuation Traffic Capacity Study

The final report can be found here: [Evacuation Traffic Capacity Study 2022](#). We recommend that readers take another look at this study. It was the result of three public meetings to discuss the methodology and scenarios, followed by three presentations of the final report. During the process, members of the EPC met weekly with the consultants and provided significant amounts of local data to produce the best possible report.

As with any study, significant assumptions were made on many variables during the process. The Fehr & Peers evacuation model is a proprietary model; thus a model from another source could have different results. As with any statistical model, we should expect different results under different boundary conditions, and actual situations are difficult to anticipate.

The most important result from the study is a verification that **Portola Valley has a serious problem evacuating its residents in an emergency, particularly if one of the two major exit routes is blocked**. The model is also unable to assess any incidents (car accidents, fallen power poles, etc.) that would further disrupt evacuation traffic. Reports from the Paradise Fire and others are quite alarming regarding suddenly blocked exit routes.

The Fehr & Peers Study offered several suggestions for improving evacuation times, such as widening Alpine Road and investigating emergency road clearance crews (see Section 4.2, page 33 and section 5 page 41). All efforts should be made to move forward on these suggestions and others to improve our roadways and reduce evacuation times. It is imperative that these mitigation projects are completed before significant additional housing is built in Portola Valley.

## Ladris Evacuation Simulation Tool

In late 2022, members of the EPC were introduced to Ladris ([Ladris | AI for Climate](#)) by WFPD. Over the next two years, members of the EPC and other volunteers spent many days with Ladris to address software bugs, user interface deficiencies, core data discrepancies, and a myriad of other issues. Portola Valley, WFPF, and Woodside all purchased licenses with Ladris in 2023 and continued for 2024. Members of the EPC, primarily Rob Younge, continued to spend time with Ladris and by early 2024, we were comfortable that the platform was reasonably accurate for evacuations in Portola Valley.

The first test of Ladris was to make sure that its simulation results were comparable to those of Fehr & Peers in the same scenarios (“Ladris – Baseline” column). Again, it took a fair amount of time to adjust all the various parameters to align the scenarios. Also, it should be noted that the Ladris output is not exactly in the same format as Fehr & Peers, but they are reasonably close. Next, we loaded the additional cars that could be expected from the additional housing from the recently passed Housing Element. Those results are shown in the “Ladris – add HE cars” column. The results are interesting and somewhat intuitive. Average and Max evacuation times with all roads open increase only modestly – this makes sense, as much of the new housing will be built on the Alpine Road corridor (however, please note that it will take almost an hour for someone evacuating to actually get out of town). The most significant changes are noticeable as roads are blocked. For example, the maximum evacuation time if Alpine/Arastradero are blocked balloons to 5 hours. This is clearly alarming and demonstrates the danger facing an evacuation in Portola Valley during a wildfire.

Now that we have worked with Ladris, it is possible to fairly rapidly run new scenarios with different road blockages, number of cars, alternative exit routes, etc. As we move forward, we believe this will become a useful tool for first responders and the town.