

Los Angeles Hotel Fire Evacuation — evacuation case-study review report

Hexanta case-study pack la-hotel-evacuation-r3 · prepared 2026-10-25 from preserved evidence (native IES Simulex runs of 2026-10-24) · nothing was re-simulated

Read first. Hypothetical Los Angeles-area hotel evacuation study based on synthetic assumptions; not professionally approved. Hypothetical building. This is a hypothetical 15-cabin cabin-court hotel created for the study; it is not a model of any real building and makes no statement about any real event. Every dimension, occupant number, response time and walking speed is an assumed study input. Not engineer approved; not evidence of code compliance; no life-safety or AHJ approval.

Engineering approval: OUTSTANDING. Checkpoints CP1-CP4 NOT APPROVED. No fire or smoke model, so no ASET and no safety margin. Simulation results are supporting analysis for a qualified fire engineer; they are not a compliance determination.

1. Project

Item	Value
Building	Hotel (hypothetical 15-cabin cabin-court hotel, 29 occupants), single storey, detached light wood-frame cabins around an open courtyard; no sprinklers, manual alarm, guest-room smoke alarms (all hypothetical)
Location	Los Angeles area, California, USA (hypothetical site)
Discipline	Fire engineering — evacuation (egress) modelling
Stage	Concept study (assumed inputs)
Solver	IES Simulex (IESVE 2026, Simulex32.exe 2026.0.0.0), run by Hexanta Windows UI automation, no operator input; 2026-10-24
Runs	15 hotel runs (5 scenarios × 3 independent builds) + 2 office engine-test runs = 17 native runs

2. Inputs (all ASSUMED / development placeholders)

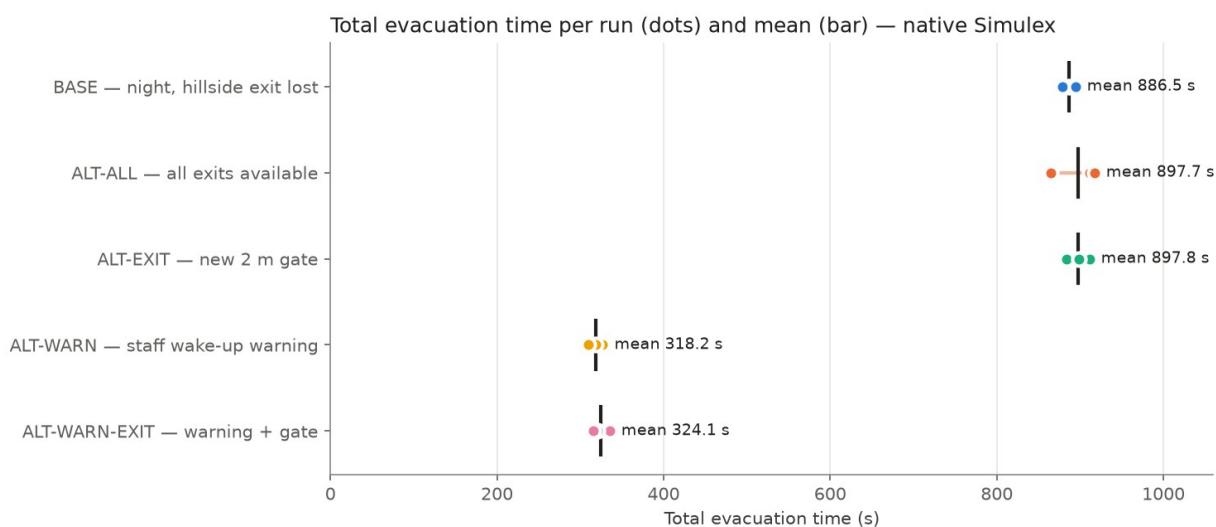
Input	Value	Status
Plan	52 × 36 m site plan; 15 guest cabins of 30 m ² (2 occupants each, one accessible), office 48 m ² , courtyard 960 m ²	ASSUMED (hypothetical design)
Exits	X1 vehicle driveway 6.0 m; X2 creek-side footpath 1.2 m; X3 hillside footpath 1.0 m; X4 office front door 0.86 m; X5 new gate 2.0 m (ALT-EXIT, ALT-WARN-EXIT only)	ASSUMED
Population	29: 27 guests (Simulex occupant type 'Hotel'), 1 guest in the accessible cabin (Simulex type 'All Disabled'), 1 night clerk	ASSUMED
Response, guests asleep	uniform 60–900 s (entered as 480 ± 420 s)	DEVELOPMENT PLACEHOLDER
Response, staff warning	uniform 30–300 s (entered as 165 ± 135 s)	DEVELOPMENT PLACEHOLDER
Response, night clerk	60 s fixed	DEVELOPMENT PLACEHOLDER
Walking speeds	Simulex occupant types replace the scenario speeds (scenario values 1.19	ASSUMED; no wheelchair

	m/s ambulant, 0.6 m/s wheelchair were not used by the solver)	body type in Simulex
Routes	Each cabin door opens to the courtyard; Simulex chooses routes to the site exits from its distance map (no assigned routes)	Solver behaviour

3. Scenarios and results

Total evacuation times per run are **Simulex outputs** (results text). Means, ranges, deltas and the occupant-mean time out (from 5-second bin midpoints) are **Hexanta-derived** from those outputs. The hand estimate is a **Hexanta-only** first-order hydraulic cross-check with ASSUMED coefficients — not a simulation result.

Scenario	Description	Runs	Total range (s) [Simulex]	Mean (s) [derived]	Δ vs BASE (s) [derived]	Occupant-mean time out (s) [derived]	Hand estimate band (s) [Hexanta-only]
BASE	Night; hillside footpath exit X3 assumed lost to the fire front; guests asleep (response 60–900 s)	3	878.5–894.3	886.5	—	417.3	959.0–960.9
ALT-ALL	Sensitivity: all four exits available; response 60–900 s	3	864.4–917.2	897.7	+11.2	445.5	921.8–934.8
ALT-EXIT	Layout alternative: new 2.0 m gate X5 (courtyard to car park); X3 lost; response 60–900 s	3	883.9–911.1	897.8	+11.3	470.7	940.1–946.4
ALT-WARN	Operational alternative: staff wake-up warning (response 30–300 s); X3 lost	3	309.3–327.0	318.2	-568.3	172.6	359.0–360.9
ALT-WARN-EXIT	Sensitivity: staff warning plus gate X5 (response 30–300 s); X3 lost	3	316.0–335.2	324.1	-562.4	182.5	340.1–346.4



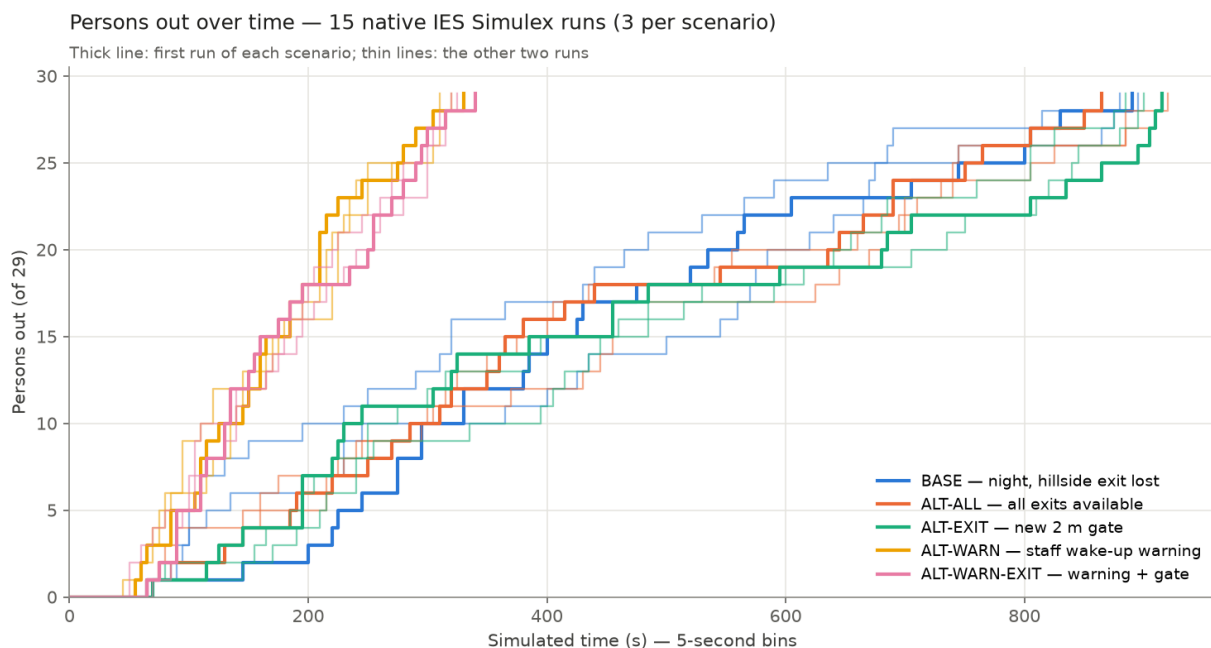
Hypothetical building; assumed inputs; not engineer approved. Values read from the Simulex results text files. Means are Hexanta-derived.

4. Native runs (one row per Simulex results file)

Scenario	Run	Total (s)	Persons per exit	Results text SHA-256

BASE	HXM01-BASE-A4	886.6	X1 14, X2 12, X4 3	8a908398459b914a...
BASE	HXM01-BASE-S2	878.5	X1 14, X2 12, X4 3	af90fd0f8e9adc4a...
BASE	HXM01-BASE-S3	894.3	X1 14, X2 12, X4 3	d145288cf1fdbc75...
ALT-ALL	HXM01-ALT-ALL-A1	864.4	X1 4, X2 10, X3 12, X4 3	13054e0847ac03e3...
ALT-ALL	HXM01-ALT-ALL-S2	911.5	X1 4, X2 10, X3 12, X4 3	c90ea7b5bd65d9f3...
ALT-ALL	HXM01-ALT-ALL-S3	917.2	X1 4, X2 10, X3 12, X4 3	aa6fcd21759e59e8...
ALT-EXIT	HXM01-ALT-EXIT-A2	911.1	X1 4, X2 12, X4 3, X5 10	ec91f98aec11a804...
ALT-EXIT	HXM01-ALT-EXIT-S2	883.9	X1 4, X2 12, X4 3, X5 10	4ab5cb2c180133ff...
ALT-EXIT	HXM01-ALT-EXIT-S3	898.3	X1 4, X2 12, X4 3, X5 10	77f7c28f416c1132...
ALT-WARN	HXM01-ALT-WARN-A1	327.0	X1 14, X2 12, X4 3	4e7c1b3410483ce4...
ALT-WARN	HXM01-ALT-WARN-S2	318.3	X1 14, X2 12, X4 3	4416e1f23662308a...
ALT-WARN	HXM01-ALT-WARN-S3	309.3	X1 14, X2 12, X4 3	354d37830fb6123c...
ALT-WARN-EXIT	HXM01-ALT-WARN-EXIT-A1	335.2	X1 4, X2 12, X4 3, X5 10	7038e58aabb05341...
ALT-WARN-EXIT	HXM01-ALT-WARN-EXIT-S2	321.0	X1 4, X2 12, X4 3, X5 10	f879e9b9f9cade9e...
ALT-WARN-EXIT	HXM01-ALT-WARN-EXIT-S3	316.0	X1 4, X2 12, X4 3, X5 10	ce97862f12c87e11...

Every run was checked by the driver: input plan hash, wall line count, isotropic calibration, exit orientation, occupant placement, exit read-back and flow consistency. SHA-256 values above were recomputed from the preserved results text files on 2026-10-25 and match the study record.

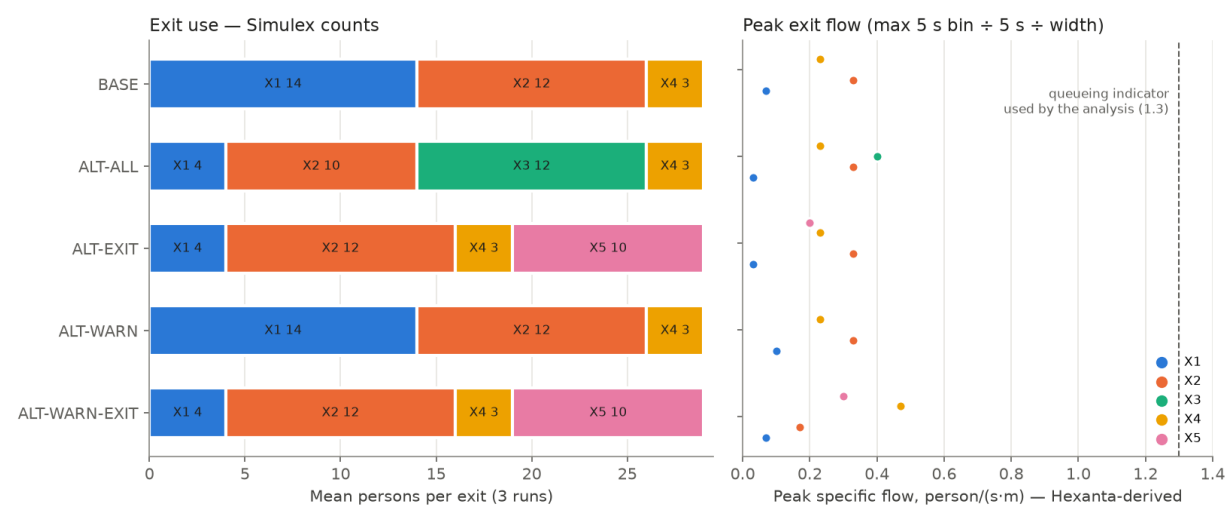


Hypothetical building; assumed inputs; not engineer approved. Values read from the Simulex results text files.

5. Exit use and flow

Persons per exit are Simulex counts. Peak specific flow is Hexanta-derived (largest 5-second count ÷ 5 s ÷ exit width). Congestion, densities and per-occupant times are **not available** from the Simulex results

text.



Hypothetical building; assumed inputs; not engineer approved. Values read from the Simulex results text files. Densities and per-occupant times are not in the Simulex output.

6. Engine test on a second building (office)

Run	Scenario	Total (s) [Simulex]	Persons per exit	SHA-256
HXO01-BASE-A1	BASE (both exits)	103.5	XW 22, XE 20	ce0b5f95c222c4ca...
HXO01-ALT-EBLK-A1	ALT-EBLK (east exit blocked)	105.2	XW 42	10d6fe03748b8062...

Hypothetical 30 × 14 m single-storey corridor office, 42 occupants, two 1.2 m exits. One run per scenario: the 1.7 s difference is not distinguishable from randomness. Evidence folder simulex-HXO01-20261024-r2 (the first generation, simulex-HXO01-20261024, is SUPERSEDED).

7. Prescriptive checks (Hexanta-only; parameters NOT VERIFIED)

Deterministic checks of the hypothetical plan against the 2025 California building code for a Group R-1 rebuild, using parameter values not yet confirmed against the official text. Results: sprinklers would be required for a rebuild and the hypothetical design has none (FAIL on an unverified parameter); door widths and egress capacity PASS on unverified parameters; single-door cabins need an engineer / AHJ reading; travel distance NOT ASSESSED. These are not a compliance determination, and simulation results are not inputs to them.

8. Findings

- Pre-movement (response) time governs in this model: every run's total is close to the upper limit of the assumed response-time range (60–900 s scenarios: totals 864.4–917.2 s; 30–300 s scenarios: totals 309.3–335.2 s). The Simulex results text does not report each occupant's drawn response time, so the walking time after the last response cannot be measured from the output; the study's rule-based note ("movement after the last occupant responds is about 0 s") compares the mean with the range limit, not with the drawn maximum, and is not repeated here as a measurement.
- Earlier warning had the largest measured effect: ALT-WARN mean 318.2 s vs BASE 886.5 s (–568.3 s, –64 %); the run ranges do not overlap. This is a result of the assumed response-time ranges, not a measured human response.
- Layout changes were within run-to-run randomness: ALT-ALL (+11.2 s) and ALT-EXIT (+11.3 s) vs BASE, and ALT-WARN-EXIT vs ALT-WARN (+5.9 s), with overlapping ranges. More exits did not shorten the total because the total is set by the latest responder.
- Exits were far from queueing: the highest Hexanta-derived peak specific flow is about 0.47 person/(s·m) (2 persons in one 5-second bin through the 0.86 m office door X4, ALT-WARN-EXIT; the study report rounds it to 0.46), against the 1.3 queueing indicator used by the analysis.
- Reopening a saved Simulex project and running it again reproduced the result exactly (10 reruns), so the spread comes only from independent builds (new random response draws), three per scenario.
- The same engine and Simulex driver ran a second hypothetical building (corridor office, 42 occupants): 103.5 s with both exits, 105.2 s with the east exit blocked — one run each, difference

not distinguishable from randomness.

Proposals for the fire engineer (not design decisions; CP3 approval required): shorten night-time pre-movement (staff waking, voice alarm in guest units, link to evacuation alerts); keep at least two exits remote from the likely hazard direction.

9. Limitations

- Hypothetical building and assumed inputs: response times and speeds are development placeholders that a fire engineer must set; the population (29) is assumed.
- Simulex's own occupant types replaced the scenario walking speeds (a hotel population mix; a disabled type stands in for a wheelchair user — Simulex has no wheelchair body type).
- Single storey; no stairs; no furniture or obstructions; distances end at the site exits, not at a public way or assembly point; no site roads or vehicles.
- No fire, smoke or wildfire-exposure model: no ASET and no safety margin.
- Exit times are known only to Simulex's 5-second bins; per-occupant times, densities and congestion are not in the Simulex output.
- Three independent builds per hotel scenario and one per office scenario: small samples.
- Code checks and the hand estimate are Hexanta calculations on parameters NOT VERIFIED against the adopted code text; the AHJ is not identified or engaged.
- Engineering checkpoints CP1 (inputs), CP2 (native run), CP3 (alternatives) and CP4 (issue) are all NOT APPROVED.
- No further Simulex runs are possible at present (the solver licence has ended).

10. Not claimed

- Not a real hotel or real building, and not a model or reconstruction of any existing or former building.
- No statement about any real fire, any real evacuation, or the cause of any fire.
- No code compliance, permit readiness, AHJ approval or engineer approval.
- No safety margin, survivability or lives-saved claim (no ASET, fire or smoke model).
- Inputs (population, response times, speeds) are not real or validated data.
- Congestion, density and per-occupant times are not Simulex outputs.
- No claim that the new gate or more exits improves evacuation; the measured differences are within randomness.
- The –64 % applies only to this hypothetical model and its assumed response-time ranges; it is not a general effect of warnings.
- No measurable effect is claimed for the office test (one run per scenario).
- No endorsement by, or partnership with, the solver vendor; no Simulex API integration (Hexanta drives the Simulex user interface).
- No claim that new Simulex runs can be made now (licence ended).
- Not validated against real evacuations; 'verified' refers only to the provenance of solver output files.
- The evacuation engine is not a live product feature; this is a case study from preserved evidence.
- The prescriptive checks are not a compliance determination.

11. Evidence and approvals

Evidence folder	Status	Files	SHA-256 of SHA256SUMS.txt
simulex-HXM01-20261024	current	310	a12bdce2be03680cb7c542fa050745e9c8410a2d5a137494117e17c05ad49e38
simulex-HXO01-20261024-r2	current	146	f3d7fa31ce85292df06ab1ac6abcc5af3a79a78bf80741af6bfa2160f807d8c
simulex-HXO01-20261024	SUPERSEDED by simulex-HXO01-20261024-r2 (SUPERSEDED.txt present; solver files identical, report regenerated)	137	d5aa401874cf377289bc47e598a26eaaed5a06634f3d4ee50d1e030b4ab46ad1

simulex-JOB-20261024	current (raw archive)	1287	6c54d0ffea856639aa30a2298d7cc11420494750145b34a46f9512dfb30396bb
Checkpoint		Status	
CP1 inputs		NOT APPROVED	
CP2 native run		NOT APPROVED	
CP3 alternatives		NOT APPROVED	
CP4 issue		NOT APPROVED	
Comparisons		ENGINEER DECISION REQUIRED	
ASET / safety margin		NOT TESTED (no fire or smoke model)	

Study record: results JSON SHA-256 1abb6f7583681bcb06140cc02a483498460fb6b2231a13198067772bc90a3546; study report SHA-256 251ab04c41943599a027e117eaabf8b72637f97e3ce06d9c99855ea356173f21 (folder simulex-HXM01-20261024). This report contains only values read from that evidence.