

Variable Number of Left Turn Lanes (VNLTL) treatment

The VNLTL treatment is a method of varying the number of left turn lanes available for a given approach at a signalized intersection – and the associated left turn signal phasing for that approach and/or the opposing approach – by time-of-day.

Under VNLTL for a given approach, all left turns are made from the left-most left turn lane during normal, off-peak operation, which improves sight distance for those turning vehicles. Closing the adjacent, right-most left turn lane also improves sight distance for the opposing left turns. This can enable “permitted” left turns and reduce delay.

Benefits of VNLTL treatment

- Mitigates or eliminates the “peak capacity vs. off-peak delay” tradeoff
 - Eliminates requirement to show the restrictive protected-only phase when such a phase is not needed
 - Lowers off-peak delay, by reducing both the number and duration of required signal phases
 - Potentially reduces peak delay, by mitigating the tradeoff of building a second left turn lane
 - Increases operational flexibility, on a time-of-day, approach-by-approach basis
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Design and operational information

Signs, signals, and markings

- **Static left turn only (R3-5L) signs** are posted above the left-most left turn lane
- **LED lane use control signs** are posted above the right-most left turn lane
- **A single, four section head** is installed above the lane line between the two left turn lanes
- **Left turn lane pavement markings** are consistent with typical dual left turn lane installations

Normal, off-peak operational practice

- Only the left-most left turn lane is available to turn left
- The right-most left turn lane is closed, with a red “X” displayed in the LED lane use control signs
- The signal includes flashing yellow arrow to provide protected-permitted left turn operation

Peak period operational practice

- The right-most left turn lane also becomes available to serve left turns
- A left turn arrow and “ONLY” is displayed in the LED lane use control signs
- The signal suppresses the flashing yellow arrow to provide protected-only left turn operation

Design and operational notes

- The single left turn signal serves and controls both left turn lanes
- One set of left turn lane signs are installed at the signal itself, directly over the center of the lanes
- A companion set of left turn lane signs are installed in advance, serving the entry to the turn lanes
- Left turn phasing can vary by approach as well as by time-of-day, depending on each cross product

See figures on reverse side

