

Level of Service Results: HOV & Express Lanes

4

Considering the importance of HOV and express lanes in improving the overall performance of a corridor, Alameda CTC started monitoring these facilities in 2014. These facilities are also called managed lanes. Out of the total 83.7 miles of managed lanes, 72.5 miles are HOV lanes along many major freeways and 11.2 miles are express lane along I-680 (southbound). Results are presented in **Appendix B, Tables B-10 and B-11.**

4.1 | Congested Segments

Travel time data for HOV and express lanes from 2014 revealed that six segments were congested in the afternoon peak (**Table 4-1**) and three in the morning peak (**Table 4-2**). These occurred mostly on major regional and interregional corridors such as I-80, I-880, I-580, and the San Mateo Bridge (State Route 92).

With the exception of State Route 92, all of the corresponding general purpose lanes in the freeway segments were also congested.

Table 4-1: Congested Segments on HOV Lanes - PM

CMP Route	Segment Limits	Jurisdiction
I-80 - EB	Begin of HOV to I-80/I-580 (Merge)	Oakland
I-80 - EB	I-80/I-580 (Merge) to Powell	Emeryville, Berkeley
I-80 - EB	Powell to Ashby	Emeryville, Berkeley
I-580 - EB*	1st St to Greenville	Livermore, Unincorporated
I-880 - NB	SCL County Line to SR 262/Mission	Fremont
I-880 - NB	Alvarado-Niles Blvd. to Tennyson	Union City, Hayward

* Construction

Table 4-2: Congested Segments on HOV Lanes - AM

CMP Route	Segment Limits	Jurisdiction
I-80 - WB	Central (County line) to Jct. I-580	Berkeley, Albany
I-80 - WB	Jct. I-580 to University	Berkeley, Albany
SR 92 - WB	Begin of HOV (Hesperian Blvd.) to Clawiter	Hayward

Express lanes differ from HOV lanes in that they are considered congested if they are assigned LOS D, E, or F. Review of 2014 results revealed no congested segments on express lanes in either peak period.



Table 4-3: 2014 Average Speed of Managed Lanes (mph)

	HOV	Express Lane
PM	49.3	67.4
AM	56.3	64.9

4.2 | Average Speeds

Appendix A contains the maps showing the HOV and express lanes' performance. Since this is the first monitoring effort to collect this data, comparisons in future years are possible based on the current results. For a baseline reference, the average speed of the managed lanes is presented in **Table 4-3**.

4.3 | Comparison to Freeway Performance

Through the implementation of these managed lanes, Alameda CTC and associated agencies are not only encouraging commuters to carpool (HOV lanes), but are also maximizing efficiency by facilitating the access of managed lanes to single rider vehicles through a toll (express lanes). By meeting these occupancy or payment requirements, HOV/express lane users gain access to managed lanes that are unavailable to general purpose lane users. This section reviews the effect of these managed lanes by comparing freeway general purpose lane performance to managed lane performance. **Appendix B** presents detailed data of managed lane performance.



The results indicate that speeds along HOV lanes were generally faster than the corresponding freeway general purpose lane segments by an average of 2.6 mph in the afternoon peak period and 10.8 mph in the morning peak period⁴. These values were weighted by distance consistent with methods used in freeway monitoring from previous cycles. While HOV performance is generally faster, these managed lanes still experienced congestion at similar locations and time periods as the general purpose lanes. For example, it was not common to observe free flowing HOV lanes when the adjacent general purpose lanes were notably slower.

On the other hand, the performance along express lanes was comparable across all freeway general purpose lanes during the afternoon peak period. During the morning peak period, express lanes exhibited faster speeds in some freeway sections by up to 20 mph.

The plots shown in **Figure 4-1** provide a comparison of the speed along the freeway (all lanes) and their adjacent managed lanes for afternoon and morning peak periods. Each graph contains a diagonal line which represents parity between the average speeds along freeways and HOV/express lanes. Data points above the line indicate that average speeds on the managed lanes were faster than the freeway speeds. This was the case with the majority of the data points during both

⁴ Comparison of managed lanes to freeways should consider that freeway surveys include all lanes of the freeway (including general purpose and managed lanes) due to the current inability of commercial speed data to separately report speeds lane by lane. However, freeway speeds will be more representative of general purpose lanes as there are more of these lanes than managed lanes.

the peak periods, indicating that managed lanes were less congested than the general purpose lanes, as expected. However, a minority of data points are below the diagonal line, indicating exceptions, likely due to different sampling rates.

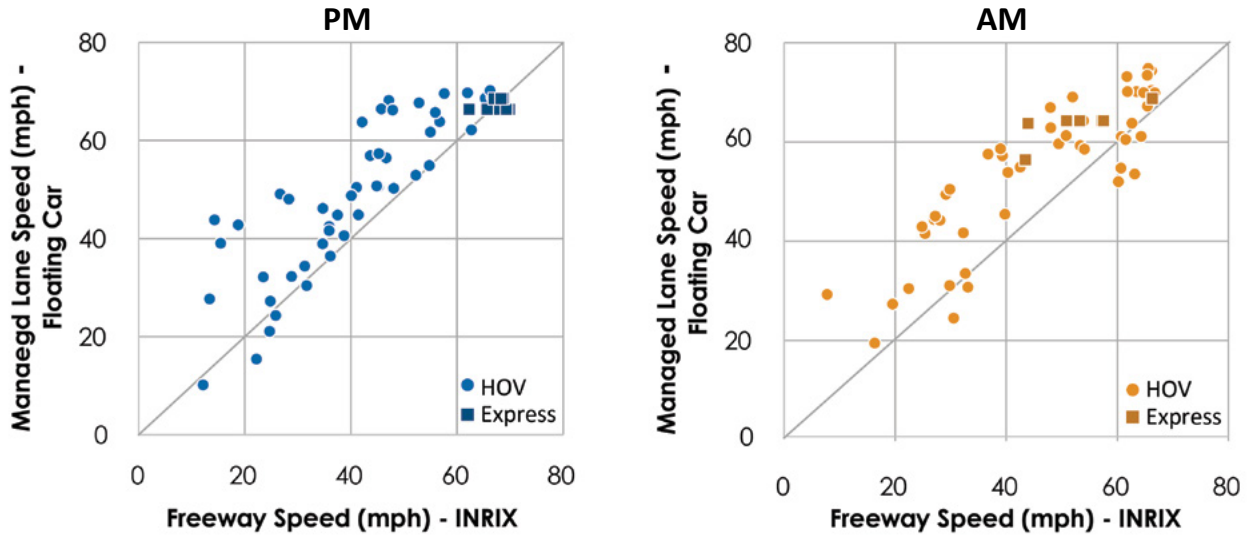


Figure 4-1: Freeway (Tier 1) to HOV Speed Comparison

While these graphs are useful to compare the performance across different types of freeway lanes, it is important to understand that different data collection methodologies were used, i.e. floating car surveys for managed lanes and commercial speed data for general purpose lanes. Hence, the comparison should consider the following:

- Floating car surveys have a limited sample size (six) compared to the commercial data (in thousands). By using an increased sample size, the data obtained is more representative of the average conditions throughout the monitoring period and is less prone to influence from individual events; and
- Commercial data includes data for both general purpose and managed lanes due to the current inability of commercial speed data to report on speeds lane by lane. However, freeway speeds captured by commercial data will be more representative of general purpose lanes as there are more of these lanes than managed lanes. Hence, it is reasonable to expect that the speed along the general purpose lanes is slightly slower than reported under the freeway category and that the benefit of using managed lanes is higher than reported.

Even though, freeways and HOV/express lanes were monitored using different data collection methodologies, they were still comparable, and generally showed the anticipated difference in performance. Also, undertaking this effort for the first time provided Alameda CTC with a quantitative comparison of the performance of managed lanes within congested freeway corridors. In future years, commercial speed data may be available explicitly for managed lanes which would provide a more accurate comparison.