



Design of High Occupancy Vehicle (HOV) and High Efficiency Vehicle (HEV) Standards to Achieve Sustainable Transport Best Practices

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ABSTRACT

The concept of high-occupancy vehicle (HOV) lanes originated in the 1970s, took root in the 1980s, and continues to be embraced. The idea of high-efficiency vehicle (HEV) lanes appeared in the 1990s, and is receiving attention as a complement, supplement, or standalone alternative to the HOV lane approach. In both the HOV and HEV cases, proponents argue that the approaches implemented in most North American metropolitan regions represent sustainable transport best practices. As this presentation demonstrates, however, the majority of such claims grossly exaggerate the contribution of such lanes to sustainability in general, or even to that of the private vehicle mode. This finding is based on a new method of measuring the performance of HOV and HEV lanes that uses the range of sustainable transport practices from worst to best as the basic logic of the new measure. In addition, the new measure takes into account the number of occupants, percentage of actual to potential occupants of a vehicle, and the relative efficiency of vehicles. The derived standards are based on a new and robust measurement system for ensuring that traffic lanes presented as elements of a sustainable transport best practice package do in fact achieve that level of performance. And, as a corollary, the new measurement system exposes claims which are not supported by logic or evidence.

Keywords: Transportation, metropolitan region, sustainability, HOV, HEV, performance measurement system, best practice



TALKING POINTS ON 'HOV' LANES

1. Matching words and numbers = test of logic and honesty.
2. 'HOV' a good idea gone bad?
3. Changing 'HOV' focus from fake inputs to real outputs.
4. 'HOV' could reduce intra- and inter-urban pmv congestion
5. Enforcement needs serious bite



TALKING POINTS ON 'HEV' LANES

1. 'HEV' notion grasping at a straw?
2. A pmv is still a pmv, despite the hype
3. Sustainability is more than just fuel consumption
4. Limits to energy!!!!!!!



HOV/HEV TALK

What were they thinking?

“Oops. State has no law to enforce HOV lanes”,
by Matt Helms. *Detroit Free Press*,
Saturday Feb. 23, 2008, pages 1A and 7A



HOV/HEV TALK

If you set the logic bar low enough ...

“...: in comparison with the many vehicles on our roads that are carrying only one occupant, those with two or more can be considered high-occupancy.”



HOV/HEV TALK

Low logic bars everywhere?

“There are now over 4000 kilometres of HOV lanes operating across North America and using the same 2+ occupancy requirement that we have applied here in Ontario.”



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**Table 1. Matching Levels of Vehicle Occupancy and
Levels of Sustainable Transport Practice**

Vehicle Occupancy Rating	Sustainable Transport Practice Rating
Highest	Best
Higher	Better
High	Good
Low	Bad
Lower	Worse
Lowest	Worst



Table 2. Simple Numeric or Body Count Vehicle Occupancy Rating System

Number of Occupants	Description of Occupants	Vehicle Occupancy Rating
7 or more	Driver + 6 or more passengers	Highest
6	Driver + 5 passengers	Higher
5	Driver + 4 passengers	High
4	Driver + 3 passengers	Low
3	Driver + 2 passengers	Lower
2 or less	Driver with or without passenger	Lowest



**Table 3. Percentage of Seats Occupied
Vehicle Occupancy Rating System**

# of Seats	# of Seats Occupied	% of Seats Occupied	Level of Occupancy
7	7	100	Highest
	6	86	Higher
	5	72	High
	4	57	Low
	3	43	Lower
	2	29	Lowest
6	6	100	Higher
	5	83	High
	4	67	Medium
	3	50	Low
	2	33	Lower
5	5	100	Higher
	4	80	High
	3	60	Low
	2	40	Lower
4	4	100	High
	3	75	Medium
	2	50	Low
3	3	100	High
	2	67	Low
2	2	100	Highest



Table 4. Specifying the Number of Occupants in a High-Occupancy Vehicle (HOV)

# of Seats	# of Seats Occupied	% of Seats Occupied	Level of Occupancy
7	5	72	High
6	5	83	High
5	4	80	High
4	4	100	High
3	3	100	High



Source Information

Source materials for these remarks include two papers by B. Wellar, *Getting to the Truth About “High-Occupancy” Vehicle (HOV) Standards*, and *Sustainable Transport by Design or by Default? Either Way, the Wasteful Ride Is Over*. The papers can be viewed at transport2000.ca. The correspondence is from the Ontario Ministry of Transportation.