

The I-279 HOV:
A Solution In Search
of a Problem

by

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EXECUTIVE SUMMARY

Governments across the United States, including Pennsylvania's, have touted high-occupancy vehicle (HOV) lanes as a fiscally prudent transportation policy that would reduce traffic congestion, decrease pollution and energy consumption, and promote economic development. Pennsylvania's first (and to date, only) effort at establishing an HOV lane just happened to be located in Allegheny County, and its experience has been decidedly mixed. A new Allegheny Institute analysis finds that the HOV lane has failed to meet several federal effectiveness guidelines, and its recent safety record has been inadequate.

- PennDOT claimed that the HOV lanes on I-279 North were a long-range transportation enhancement that would take several years to show an effect. These effects have yet to be realized. Commuters have protested the HOV since shortly after the road's opening. The original three-person-per-car occupancy requirement and differing work schedules made it difficult for drivers to form carpools large enough to take advantage of the new lanes.
- Allegheny County Commissioner Larry Dunn led a successful effort to change the HOV vehicle occupancy requirement from three passengers to two. A Texas Department of Transportation study later found that at the time the occupancy requirement was changed, the I-279 North corridor was the only highway in the study moving more people per lane on its mainline lanes than on its HOV lanes.
- HOV effectiveness is measured in part by whether or not these lanes increase the capability of a congested highway corridor to move more people by increasing the number of persons per vehicle carried. Overall, the average vehicle occupancy rate for the complete I-279 corridor has increased only 4.7 % since it opened-- less than half the suggested federal standard of 10 %.
- Moreover, despite an initial upsurge in passenger volume immediately following the reduction in the occupancy requirement in 1992, the number of passengers carried by the HOV at the same time has declined by 16 %, while the total carried on the mainline lanes at rush hour has increased by 29 %.
- Another criterion for a successful HOV facility is whether or not increases in traffic volume on the HOV lanes are greater than concurrent increases on the mainline lanes. The HOV lane opened in 1989; by 1991, traffic volume on the lane had peaked, and in 1992 began to decline. After the occupancy requirement was lowered to two, there was an initial upsurge in volume on the HOV lane, but from the end of 1992 to 1995, traffic volume on the HOV lanes *fell* by 14 %. During the same period, morning peak hour traffic volume on the mainline lanes increased by another 26.5 %;
- A deadly crash in August 1995, the first in a series of highly publicized incidents of wrong-way traffic on the HOV lanes, has forced PennDOT to re-evaluate the safety and operation of the lanes. These incidents have raised serious questions about whether or not any benefits of the HOV are worth the possible consequences.

Introduction

In October 1989, after about 30 years of planning and haggling and an estimated cost of \$550 million, Interstate 279 finally opened to Allegheny County commuters. I-279, a 13.5 mile highway which connects Pittsburgh's northern suburbs with downtown Pittsburgh and the city's North Side, contains three traditional express lanes for traffic, each with a capacity of 2000 vehicles per hour, as well as a two-lane, 4.1 mile high-occupancy vehicle (HOV) facility running down the center of the highway with a similar capacity.¹

The HOV lanes, which cost approximately \$30 million to build, were to be opened only to buses, vanpools, and other vehicles carrying three or more passengers.² The HOV concept was one of several strategies that the Pennsylvania Department of Transportation (PennDOT) believed would help alleviate traffic congestion in Pittsburgh (and in the future, other Pennsylvania cities) by moving more people while using fewer vehicles to do so. The strategy also included more traditional policies, such as providing more incentives to ride public transit, building more "park-and-ride" lots, and promoting "ramp metering", which spaces traffic from access ramps to main roadways.

HOV Performance in Pittsburgh

The HOV concept was billed by PennDOT as a long-range project whose effectiveness would not be truly shown for many years. Residents of the North Hills, however, did not share the government's optimism about the benefits of the HOV lanes. Almost immediately after I-279's opening, suburban commuters found themselves stuck in traffic at busy intersections. Many of these drivers could not form carpools large enough to take advantage of the new lanes, due to differing work schedules, travel patterns, and the three-person-per-car HOV requirement.³ Of course, another contributing factor may have been that individual commuters simply valued the freedom and mobility provided by single-car driving more than any benefits they could have possibly derived from carpooling.

Still, PennDOT refused to change its policy. Then-Pennsylvania Secretary of Transportation Howard Yerusolim continued to hold to his original plan, reasoning that given time, North Hills residents would come to see the wisdom of the government planners and abandon their cars. The Secretary then went a step further; he stated that more HOV lanes were planned for the Pittsburgh area and that Allegheny County residents had better get used to them.⁴ As governments have so often done in the past century, the Commonwealth of Pennsylvania was, in effect, telling its citizens that it could manage their transportation choices more effectively than they could by themselves. Give the public time to be "enlightened," went the conventional wisdom, and the HOV concept will live up to all of its promises. The Pittsburgh Press summed up the attitude of the government quite well in an October 1990 editorial:

It would be hard to fault the PennDOT secretary's long range view. While the I-279 HOV lanes may not have attracted a heavy volume of traffic yet, and while other drivers might cast envious and frustrated looks at those open spaces, it's still too early in the game to give up on them. As time passes, increased usage of the HOV lanes seems certain; more motorists are likely to be persuaded to make

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carpool arrangements that can only benefit themselves, as well as those in the non-HOV lanes.⁵

Two's Company, Three's a Crowd

Leading the fight to ease the HOV-induced burden to North Hills commuters was Allegheny County Commissioner Larry Dunn. Commissioner Dunn argued that the three-passenger requirement was unfair to North Hills residents, and in November 1990 he called upon affected commuters to start a "Free the HOV" movement aimed at getting PennDOT to lower the requirement to two riders.⁶ He contended that the three-person requirement effectively restricted use of the HOV lanes to buses, van pools, and large car pools. The commissioner also cited a ridership survey conducted by his staff, which found that for each passenger using the HOV lanes, eight used the regular I-279 lanes. For its part, PennDOT replied that the figure was actually double the commissioner's estimate. Dunn's survey also found that while overall traffic flow on the Parkway North had increased since it opened, usage of the HOV lane had remained static.⁷

PennDOT officials claimed that it would be of little help to open the HOV lanes to cars with as few as two occupants; they cited their own surveys which showed that 93 % of all cars in I-279's regular lanes only carry one passenger. They also noted other surveys which showed that *these drivers would continue to commute alone, regardless of whether or not the HOV occupancy requirement was lowered.*⁸ PennDOT also claimed that at its busiest point, I-279 carried an average of 4600 vehicles per hour, and the HOV lane served an average of 1600 passengers per hour. The Dunn survey, by contrast, asserted that 5400 vehicles per hour used the Parkway North at rush hour, while only 118 vehicles used the HOV lanes at the same time.⁹ According to a 1990 report critiquing the HOV facility by Parsons Brinckerhoff, a major consultant on various transportation initiatives across the country, at least 450 vehicles would have to use the lanes each hour in order to bring about a sufficient level of utilization.¹⁰

Despite all of the criticism, PennDOT's leadership refused to modify their original "vision" for the HOV lanes. Secretary Yerusolim and his supporters were convinced that by turning a deaf ear to the wishes of the public, eventually the HOV concept would be accepted because there would be no other alternative presented. Commissioner Dunn, on the other hand, argued that PennDOT's dreams for the I-279 HOV lanes had little chance of becoming reality, and that the Commonwealth's transportation policies should be tailored to commuter behavior, and not the other way around.

The evidence on commuter patterns for I-279 North seems to bear out Commissioner Dunn's position. Researchers who have examined HOV performance elsewhere in the United States have noted that the longer the commute faced by travelers, the more time and effort they are likely to put into forming a carpool. The relatively short (4.1 mile) span of the I-279 HOV lanes was a major factor in convincing North Hills commuters that the costs of finding two other people to share a ride with were greater than any benefit they might receive from a reduced travel time via the HOV.

For the first three years that the HOV lanes were in operation, PennDOT stayed with the three-occupant rule, despite the protests. Finally, in August of 1992, the occupancy

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requirement was reduced to two passengers when a \$4 million project to widen entrance ramps to the lanes was started.¹¹ PennDOT claimed that the change was only because of the construction and not because of any pressure from HOV users and elected officials. Still, the change was not out of line with HOV practice in the rest of the United States; 31 of the 41 such lanes operating at the time had a two-passenger minimum occupancy requirement.¹²

Also, a Texas Department of Transportation study of seven United States HOV facilities showed that the I-279 HOV was the only one of the seven which was carrying fewer passengers per lane than its mainline counterpart during the morning peak hour.¹³ This finding is contrary to the HOV advocates' claim that ridesharing lanes can and do move more people than conventional highways. Transportation officials in HOV-dependent cities such as Houston agreed that occupancy-requirement flexibility on the part of the government was a key to maximizing HOV usage.¹⁴

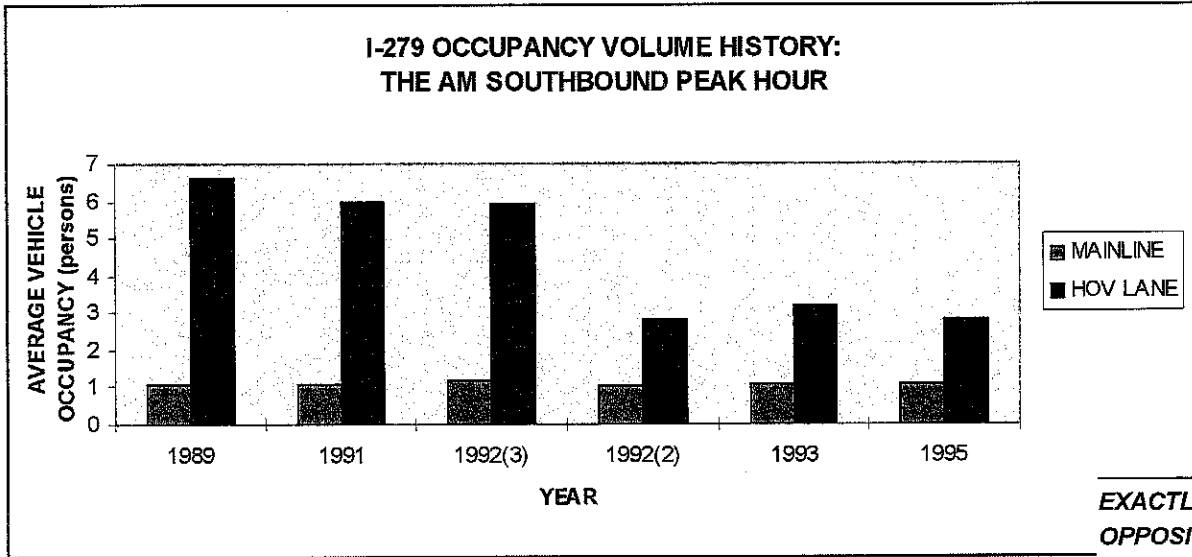
Everybody Out of the (Car)Pool

One traditional measure of HOV effectiveness is whether or not these lanes increase the capability of a congested highway corridor to move more people by increasing the number of persons per vehicle carried. Specifically, any increase in average vehicle occupancy should result from the creation of new carpools and/or the attraction of new bus riders, not from shifts of existing ridesharers to HOV. If this is happening, it would therefore be expected that average vehicle occupancy for the mainline lanes would fall, in both actual and percentage terms, while that of the HOV lanes would rise.¹⁵ According to researchers at the Texas Transportation Institute, who developed a set of HOV evaluation guidelines for the United States Department of Transportation, a successful HOV facility should increase peak-hour, peak-direction average vehicle occupancy for a total freeway facility by at least 10 %.¹⁶ A look at the experience of I-279 shows that this standard has not been met. Overall, the average vehicle occupancy rate for the complete I-279 corridor increased only 4.7 % since it opened-- less than half of the suggested federal standard.

The following graph shows usage of I-279, both in the HOV and mainline lanes, prior to and after the occupancy level change. If an HOV lane is to achieve the goal of carrying more people with fewer vehicles, the only way that can be accomplished is to have more people in each vehicle. An examination of the data shows that this has not occurred. During the time period of the three-passenger-per-vehicle occupancy requirement (October of 1989 to August of 1992), the average occupant-to-vehicle ratio for the HOV lanes dropped from 6.6 to 5.9 passengers per car, a *decrease* of approximately 11 percent. At the same time, however, the average occupancy level for cars using the I-279 mainline lanes actually went from 1.1 to 1.2 riders per car, an *increase* of 9 %.

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FIGURE 1

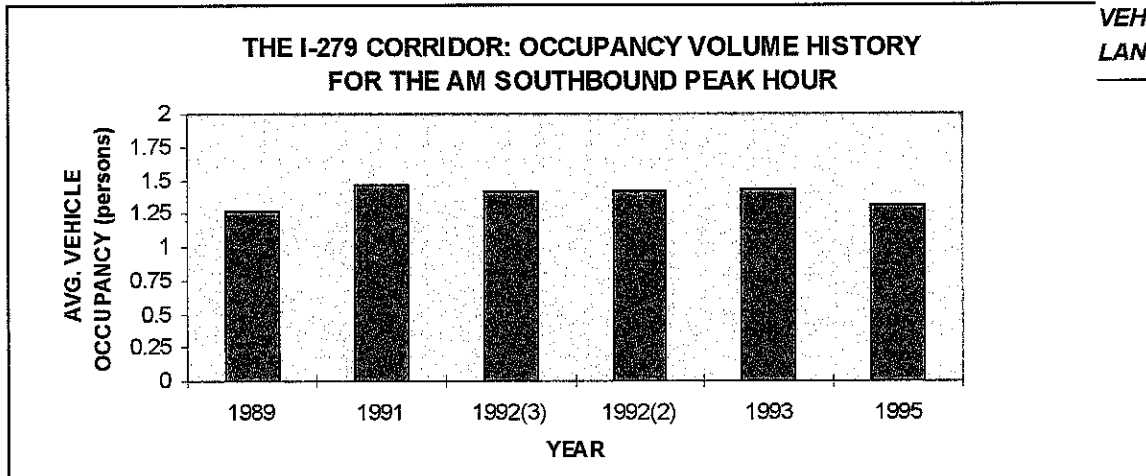


Source: Pennsylvania Department of Transportation, Engineering District 11

The same phenomenon continued even after the occupancy requirement was lowered from three to two passengers (which also naturally decreased the average vehicle occupancy observed for those lanes). From mid-1992 until 1995, the passenger-to-car ratio for the HOV moved from 2.8 (1992) to 3.2 (1993), but by 1995 the ratio had fallen back to 2.8, resulting in no net change in vehicle occupancy. During the same period, average vehicle occupancy for cars using the mainline lanes of I-279 rose from 1.0 to 1.1 passengers per car, a 10 % *increase* in the occupancy rate. Exactly the opposite result of that intended by the transportation planners has come about: More people per car have been using vehicles in the mainline lanes, while fewer people per car have used vehicles in the HOV lane.

EXACTLY THE OPPOSITE RESULT OF THAT INTENDED BY THE TRANSPORTATION PLANNERS HAS COME ABOUT: MORE PEOPLE PER CAR HAVE BEEN USING VEHICLES IN THE MAINLINE LANES, WHILE FEWER PEOPLE PER CAR HAVE USED VEHICLES IN THE HOV LANE.

FIGURE 2



Source: Pennsylvania Department of Transportation, Engineering District 11

It does not appear that even a lowering of the vehicle occupancy requirement for car-poolers has induced a significant number of I-279 users to share rides. In fact, the percentage of drivers on the I-279 mainline lanes who commute alone rose from 89 % to

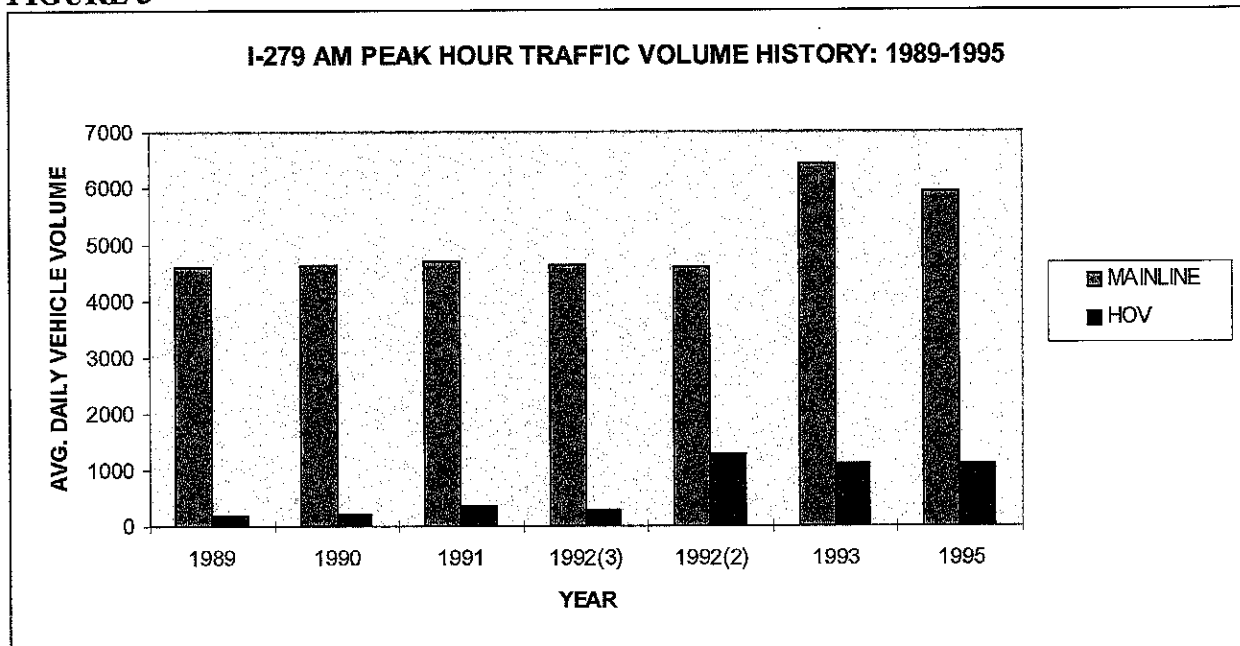
98 % after the HOV occupancy standard went from three to two riders, and that figure remained steady in the years following the change, suggesting that the net effect of the change was to simply shift existing car-poolers from the mainline lanes to the HOV, which was, once again, not the result intended by HOV proponents. It does not appear that the I-279 HOV lanes have met one of the most important performance measures set by the very people who have called for expanding their role as a transportation alternative.

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Pump Up the Volume?

Another criterion for successful HOV facilities is whether or not any increase in traffic volume occurring on the HOV lanes is greater than concurrent increases that may take place on the mainline lanes.¹⁷ Once again, reviews on this aspect of I-279's performance are mixed.

FIGURE 3



Source: Pennsylvania Department of Transportation, Engineering District 11

This graph describes the average daily traffic volume flow on I-279 for both the mainline and HOV lanes. According to the standards developed for the federal government by the Texas Transportation Institute, a well-functioning HOV facility should see a percentage increase in the number of vehicles on the HOV lanes that is greater than similar increases in the volume carried by the traditional express lanes.¹⁸ Again, it is important to recall that the entire I-279 corridor, both the mainline and the HOV lanes, was opened at the same time, so comparisons of the traffic “before” and “after” the HOV was opened are not possible. Also, note the extremely large difference in total vehicles handled by the HOV and the mainline lanes. Since the HOV lanes started with a much smaller total volume, relatively small nominal increases in vehicles carried from year to year can represent relatively large percentage increases in traffic handled.

Another criterion for a successful HOV facility is whether or not increases in traffic volume on the HOV lanes are greater than concurrent increases on the mainline lanes. The HOV lane opened in 1989; by 1991, traffic volume on the lane had peaked, and in 1992 began to decline. After the occupancy requirement was lowered to two, there was an initial upsurge in volume on the HOV lane, but from the end of 1992 to 1995, traffic volume on the HOV lanes *fell* by 14 %. During the same period, morning peak hour traffic volume on the mainline lanes increased by another 26.5 %.

Of course, HOV advocates argue that moving more cars is not their goal-- moving more people is. Still, after the occupancy requirement was dropped from three to two passengers, the total numbers of buses and other types of vehicles carrying two, three, or four or more riders all declined, as did the grand total of passengers carried in the HOV lanes. Moreover, despite an initial upsurge in passenger volume immediately following the reduction in the occupancy requirement in 1992, the number of passengers carried by the HOV at the same time has declined by 16 %, while the total carried on the mainline lanes at rush hour has increased by 29 %. Once again, it is questionable as to whether or not the I-279 HOV lanes have succeeded at one of the most important functions they are purported to perform.

Asleep at the Switch?

For most of their history, the I-279 HOV lanes had had a good safety record. From I-279's October 1989 opening until August of 1995, the lanes had in fact been accident-free.¹⁹ Since the lanes are reversible, it is necessary that PennDOT employees monitor the points of entry and exit closely in order to ensure that the lanes open on time and that the gates designed to prevent motorists from entering the lanes in the wrong direction are opened and shut at the appropriate times. This system had its occasional glitches, such as the March 1991 incident when the worker assigned to open the HOV lanes for the morning rush hour slept in and had to open them three hours late, but overall, state and local transportation officials were pleased with the operating and safety performance of the facility.²⁰ On August 11, 1995, PennDOT District Engineer Henry Nutbrown announced that "...we've concluded that the ride-sharing program, as it now operates, is a success and that the HOV lanes are running smoothly."²¹

Two weeks later, six people were killed and two more injured when a northbound auto collided head-on with a southbound pickup truck in the HOV lane at a time when only southbound traffic was to be on the road. As noted earlier, gates at most of the entry and exit points to the HOV lanes were supposed to prevent such accidents. But at the time of the accident, while all such points in the North Hills had gates in operation, only *one* of the three entry/exit locations in the city of Pittsburgh was so equipped. Instead, appropriate signage warning drivers not to enter the HOV lanes had been posted.²²

According to PennDOT policy at the time, by mid-day workers are to close the southbound gates and ramps, while opening those that allow vehicles to travel north. However, it appeared that on the day of the accident, the gates allowing traffic to flow northbound were opened too early, thus making it possible for traffic to move in both directions at once. Within a week of the accident, a PennDOT maintenance worker, William Snyder, was fired for failing to follow proper procedure in closing the gates which guarded the

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HOV access ramp near Three Rivers Stadium.²³ Snyder was charged with involuntary manslaughter and, after several delays for psychiatric evaluation, declared fit to stand trial. He pled guilty to all of the charges against him in August 1996.

For its part, PennDOT has acted to attempt to enhance the effectiveness of the HOV monitoring system. Plans have included the installation of \$1 million worth of safety improvements at the access points to the facility, including provisions that would provide for remote control of all ramps, signals and gates by television cameras. In the meantime, two workers, instead of one as in previous practice, were to check the HOV lanes and reverse their direction at the appointed times each day.²⁴

In the wake of this incident, as well as subsequent reports of other motorists traveling the wrong way in the HOV lanes, many local officials and citizens called for their closing. Those calls grew louder in early January 1996, when both a Pittsburgh policeman and an employee of a company responsible for maintaining the signals on the HOV found the same northbound entry gate that was mistakenly opened prior to the August 1995 crash open again at an improper time.²⁵ PennDOT duty logs and computerized phone records showed that the workers assigned to close the gate early that morning did so properly. Soon thereafter, a PennDOT supervisor found footprints in the snow near the control cabinet that operates the gate. There was no sign of forced entry to the cabinet, and PennDOT officials suspected that the gate malfunction may have been the work of a saboteur.²⁶

But Who's Guarding the Guards?

On January 12, 1996, after meeting with several of his advisors, Pennsylvania Secretary of Transportation Bradley L. Mallory closed the HOV lanes for a minimum of two weeks. Mallory cited the series of dangerous incidents which, in his words, "has undermined public confidence in the operation and safety of the facility."²⁷ He also confessed that he was "...bewildered by what has happened in recent months on the HOV, given the number of safeguards we have in place."²⁸ The secretary then instructed local PennDOT officials to develop short- and long-term alternatives to improve HOV safety and performance while the proposed automated monitoring system was developed and installed. Mallory's plan was lauded by many local leaders, including Commissioners Larry Dunn and Bob Cranmer, Pennsylvania State Senator Jack Wagner, and Pittsburgh Mayor Tom Murphy.²⁹

Not all of the reaction to the HOV closing was positive, however. The editorial page of the Pittsburgh *Post-Gazette* responded several days after Secretary Mallory's announcement, accusing Allegheny County leaders of an "intellectual breakdown" and arguing vehemently that there was no need to close the lanes because just as many people seemed to be using the HOV as before the string of questionable incidents began. The editorial went on to deny that the series of safety lapses on the HOV constituted a "crisis" worthy of a government response and then went on to accuse Commissioner Dunn of using the situation to try to do away with the HOV lanes once and for all.³⁰ The *Post-Gazette* then went a step further:

Now, as chairman of the Board of Commissioners, Mr. Dunn heads an administration that runs an international airport where 132 people died in

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September 1994 while their jet was making its approach. The cause of the crash has yet to be found. Then, last year, air traffic controllers were bedeviled by radar screens that shut down, suddenly and inexplicably, several times over the course of a month. Fortunately, backup systems came on and no threat was posed to overhead traffic.³¹

and then another:

Let's talk danger, Commissioner Dunn. Let's talk about guaranteeing public safety. The truth is there are no guarantees. Built as an incentive to prudent commuting, the HOV lanes on Interstate 279 should remain open reversibly for inbound and outbound traffic. If the public, while PennDOT continues to upgrade the HOV system, thinks travel there is a risky business, it will stay away.³²

A closer examination of this quote is in order. First of all, if a sophisticated backup system monitoring HOV lane usage similar to that backing up the radar at the airport (which, incidentally, was built and opened under the majority commissionership of Tom Foerster and Pete Flaherty) had been in use in August of 1995, the horrible tragedy that ultimately took place might have been averted. Second, is it entirely rational to expect that if local elected officials had taken no action after the disturbing series of errors on the HOV lanes, that the *Post-Gazette* would not have taken them to task for neglecting public safety?

Finally, the tone of the piece suggests that the editorial's author(s) were so terrified that the public might step back and take a hard look at whether or not the HOV lanes were a worthwhile use of their tax dollars (and not simply blindly follow the social planner's mantra advanced by the *Post-Gazette*) that they felt the need to minimize the potential for calamity that drivers could face. Ignore the facts, don't think for yourselves, listen to us, the HOV is really still a great idea...how dangerous can those oncoming cars really be? These accidents and the legitimate safety questions that they raised might have been easier to justify if the HOV lanes were performing up to expectations. Since they have not met the criteria set by their own boosters, the HOV lanes have not provided benefits that might offset the risks posed by the monitoring breakdowns. Lives were endangered and ultimately lost on the HOV for little, if any, gain to commuters in the larger transportation system.

In late January 1996, Secretary Mallory announced that the HOV lanes were to re-open on a modified basis. The lanes would be in use for rush-hour traffic in the morning and evening, as well as northbound on weekends with no minimum vehicle occupancy requirement. Security guards were also to be stationed at all of the Pittsburgh-area entry/exit ramps. PennDOT believed that by positioning security personnel at the points where people would be most likely to make an error in judgment, it could avert future problems.³³

Three days after the HOV lanes re-opened, a driver passing one of the entry/exit ramps on the North Side noticed the guard who was supposed to be watching the ramp sleeping on the job. The guard's firm immediately fired the offender...and then posted a second guard to make sure that the first guard wasn't asleep.³⁴ On this issue, however, the *Post-Gazette's* editorial page was strangely silent.

SINCE THEY HAVE NOT MET THE CRITERIA SET BY THEIR OWN BOOSTERS, THE HOV LANES HAVE NOT PROVIDED BENEFITS THAT MIGHT OFFSET THE RISKS POSED BY THE MONITORING BREAKDOWNS. LIVES WERE ENDANGERED AND ULTIMATELY LOST ON THE HOV FOR LITTLE, IF ANY, GAIN TO COMMUTERS IN THE LARGER TRANSPORTATION SYSTEM.

High-Occupancy Motorcycles?

In Pittsburgh and around the United States, HOV lanes have been promoted as an answer to “traffic congestion.” However, the phrase “traffic congestion” means different things to different people. To some, congestion simply means that there is a high volume of traffic on the road, no matter how fast that traffic is moving. Most often, congestion occurs when a car (or cars) slows down for some reason, such as when they exit the highway, or to allow merging traffic to enter the highway, and traffic then slows down behind them, causing a chain reaction which can clog the flow of an entire expressway. It is possible for a highway that is carrying its maximum volume of traffic to be relatively uncongested if that traffic continues to move at a constant rate of speed. Theoretically, cars on a highway could be bumper-to-bumper but still flow freely at a high speed, as long as there are no impediments requiring that they change their speed.

To get some understanding of whether or not there is a “congestion” problem on I-279, members of the Allegheny Institute staff recently conducted an informal survey of traffic volume and speed on its mainline and HOV lanes. The researchers attempted to determine whether or not traffic speed on the three inbound mainline lanes was compromised due to the volume of traffic it had to carry, as well as whether or not usage of the HOV lanes seemed to have much of an effect on traffic patterns seen in the adjacent lanes. The survey showed that at the morning peak hour, the mainline lanes of I-279 carry approximately 7000 vehicles, while the HOV lanes carry nearly 1000 vehicles at the same time. The only times at which traffic speed appeared to be compromised occurred when motorists exited the mainlines of the freeway; otherwise, no congestion was observed.

As for the HOV lane, the most interesting finding of the morning was the appearance of a single-occupant motorcycle in the facility’s passing lane (too bad it wasn’t a high-occupancy motorcycle, huh?). It also does not appear that the addition of the HOV traffic into the mainline lanes would cause a significant traffic flow problem. At least according to this highly unscientific survey, there doesn’t seem to be a problem for the HOV lanes to solve on I-279 North. The real problem occurs when traffic gets to downtown Pittsburgh, where the exit ramps feed directly into congested areas. This, and not the volume or speed of traffic on the I-279 corridor, is likely the bottleneck that slows many commuters, and there is very little that an HOV lane can do about that.

“Dirty Harry’s” Law of the HOV Lane

Whether or not one decides to use an HOV lane depends on a number of factors, many of which have been detailed earlier in this analysis. In certain areas of this region, well-engineered and designed HOV facilities might bring about substantial improvements in the volume and speed of traffic that commuters can expect. The evidence available on the existing HOV lane in Allegheny County, both formal and informal, suggests that I-279 North is not a traffic corridor that has been significantly impacted by the HOV. So in light of those findings, especially their recent checkered safety record, Allegheny County commuters considering using the I-279 HOV lanes must ask themselves one question, in the words of “Dirty Harry” Callahan: “Do you feel lucky?”

IT IS POSSIBLE FOR A HIGHWAY THAT IS CARRYING ITS MAXIMUM VOLUME OF TRAFFIC TO BE RELATIVELY UNCONGESTED IF THAT TRAFFIC CONTINUES TO MOVE AT A CONSTANT RATE OF SPEED.

ALLEGHENY COUNTY COMMUTERS CONSIDERING USING THE I-279 HOV LANES MUST ASK THEMSELVES ONE QUESTION, IN THE WORDS OF “DIRTY HARRY” CALLAHAN: “DO YOU FEEL LUCKY?”

APPENDIX

TABLE 1

**I-279
THE MAINLINE AND HOV LANE
OCCUPANCY VOLUME HISTORY FOR THE AM SOUTHBOUND PEAK HOUR**

MAINLINE

YEAR	OCC. REQ.	NUMBER OF VEHICLES					TOTAL VEHICLES	TOTAL OCC.	OCC. PER VEHICLE	% OF 1 OCC. VEHICLES
		BUS	4+	OCC. 3	OCC. 2	OCC. 1				
1989	3	10	0	7	228	4335	4580	4920	1.1	95
1991	3	2	6	11	506	4188	4713	5353	1.1	89
1992	3	2	55	13	449	4116	4635	5363	1.2	89
1992	2	1	6	7	77	4589	4680	4839	1	98
1993	2	14	9	21	172	6267	6483	7340	1.1	98
1995	2	4	9	7	110	5788	5918	6245	1.1	98

HOV LANE

YEAR	OCC. REQ.	NUMBER OF VEHICLES					TOTAL VEHICLES	TOTAL OCC.	OCC. PER VEHICLE	% OF 1 OCC. VEHICLES
		BUS	4+	OCC. 3	OCC. 2	OCC. 1				
1989	3	13	32	100	15	4	164	1087	6.6	2
1991	3	23	63	228	15	16	345	2064	6	5
1992	3	19	55	151	25	19	269	1597	5.9	7
1992	2	21	39	89	1045	81	1275	3589	2.8	6
1993	2	28	32	62	924	45	1091	3467	3.2	4
1995	2	20	20	61	924	72	1097	3026	2.8	6

Source: Pennsylvania Department of Transportation, Engineering District 11

TABLE 2

**I-279
TRAFFIC VOLUME HISTORY**

YEAR	OCC. REQ.	I-279 MAINLINE			HOV LANE			I-279 CORRIDOR TOTAL		
		24 HOUR ADT	AM PEAK HOUR	PM PEAK HOUR	24 HOUR ADT	AM PEAK HOUR	PM PEAK HOUR	24 HOUR ADT	AM PEAK HOUR	PM PEAK HOUR
			SB	NB		SB	NB		SB	NB
1989	3	63,019	4580	4008	525	164	54	63,544	4764	4062
1990	3	77,158	4645	5131	882	232	122	78,040	4877	5253
1991	3	85,891	4713	5322	1406	345	166	87,297	5058	5488
1992	3	88,540	4635	5425	1324	269	153	89,864	4904	5578
1992	2	88,180	4680	5405	4857	1275	579	93,037	5895	5984
1993	2	94,486	6483	5875	4041	1091	626	98,527	7514	6501
1995	2	94,591	5918	5899	4825	1097	770	99,416	7015	6669

Source: Pennsylvania Department of Transportation, Engineering District 11

ENDNOTES

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- ⁸ *Ibid.*
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- ¹¹ "Parkway North HOV Limit Set at 2," *Pittsburgh Press Allegheny Bulletin*, August 12, 1992.
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³² *Ibid.*

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³⁴ Ann Belser, "HOZ-Z-Z-Z: HOV Exit Ramp Guard Spotted Sleeping, Is Fired," February 2, 1996.