COMMENTS OF TONY REDINGTON, TRANSPORTATION POLICY ANALYST,

on the

DRAFT ENVIRONMENTAL IMPACT STATEMENT/SECTION 4(F) EVALUATION FHWA-VT-EIS- 07-02-D

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> Energy conservation tops Sarkozy's vision for eco-friendly France
>
> ...President Nicolas Sarkozy laid out Thursday to push France towards the vanguard of the fight against global war
>
> At his side, U.S. Vice President Gore...
>
> <u>Road construction will be drastically slowed</u> while high-speed train service will be extended with another 2,000 kilometers (1,200 miles) of new tracks, he [Sarkozy] said.
>
> Associated Press report
> International Herald Tribune
> October 27, 2007
> (Underline added)

Thank you for the opportunity to comment on the Draft Environmental Impact Statement/Section 4(f) Evaluation FHWA-VT-EIS-07 02-D (Berger Circ EIS).

INTRODUCTION: SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

A general reading of existing conditions and the performance of the proposed alternatives leaves the reader with the impression that all alternatives make marginal improvements in most performance categories at the design year (2030) which if accepted leave decision makers free to pursue whatever alternative is most politically popular, presumably the Circ itself most recently supported by the majority of Chittenden County towns (but not the City of Burlington) as well as recent Vermont leadership in the Executive and Legislative branches.

These comments in this presentation totally reject as misleading bordering on fraudulent the findings of the Berger Circ EIS, based on three major contentions:
1. Traffic throughout Vermont, including the target area, likely declines for the study period 2000-2030 for a number of demographic factors centered on population, and historical vehicle travel trends dating from 1990, almost 20 years ago, trends fed by a number of factors which include: (1) employment and income; (2) cost of motor fuel; and (3) growing initiatives to reduce pollution and global warming gases. Given this information the entire analysis, particularly 5.0 "Traffic and Transportation Affects of the Evaluated Alternatives," lack credible foundation and must be discarded as entirely baseless.
2. The transformational impact of modern roundabout technology which applied to the study area as it must for the huge benefit cost not only places it as a necessary investment, a transportation categorical imperative if you will, but truly undermines and invalidates many of the conclusions regarding Berger CIR EIS performance measures particularly intersection Level of Service, accidents (both segment and intersections), motor fuel use, and land use.

These comments suggest the need to redo the Berger Circ EIS to realistically consider the roundabout alternative for all study area intersections, and absent that study, the default conclusion must be "roundabouts only." The "roundabouts only" policy for new or major investments in older intersections continues with full administrative enforcement by the New York State Department of Transportation (NYSDOT) (McCulloch, 2005). This "roundabouts only" choice remains far more than a "no regrets" choice from all standpoints, including environmental it is really a transportation categorical imperative, the first and necessary investment to improve the existing roadway system meaning conversion of the vast majority of existing metro signalized intersections. It is a sine qua non investment program for next decade or so of roadway investments benefitting all ground transportation modes and accomplishing a quantum leap in pedestrian and car occupant safety. It must be said that a almost a quarter of all highway fatalities, over 9,000, occur at intersections and roundabouts reduce intersection disabling injuries by about 90%. (Note, three study area intersections Taft Corner, US 2/I 89/VT 17, and US 2/Industrial Drive already have VAOT scoping reports showing the roundabout the best performing alternative in the case of US 2/VT 117/I 89, the only feasible alternative.

Fully Flawed Document

First, the entire Berger Circ EIS text, estimates, analysis, etc., must be rejected in their entirety in all substantive aspects of transportation and environmental assessment considerations. Strictly environmental inventory information and mapping elements are presumed to meet reasonable standards and are not addressed in these comments.

The Berger Circ EIS critical failure arises from at least four fundamental elements, three essential to the planning context and one technological, the transformational transportation character of the 41-year-old modern roundabout technology:
(1) In spite of repeated warning comments by some participants early in the technical meetings, the Berger Circ EIS totally misses the composition of projected population growth (it is over 65 population only!) for the County and study area with 20-64 population growth of 2,703, a growth of 3%. More important, in order to feed a model for vehicle travel growth, we are supposed to believe that a 3% growth in the 20-65 age County population translates into a County employment growth of about 50% 2005-2025, an absolute growth of about 60,000! (Think of the octogenarian teachers and senior softball and football leagues!). These interpretations fly in the face of two State level populations studies and those of the U.S. Bureau of the Census covering various periods of 2000-2030, all varying little in statewide or County trends and numbers. A realistic projection of populations skews downward any traffic change analysis, thereby diluting relative need for any build alternative to the no build.
(2) The Berger Circ EIS completely fails to even identify much less address the demographic impact of basically no growth in the main driving age population 16 to 65 during the 2000-2030 period while the over 65 age group in Vermont more than doubles, an age group which yearly drives about 40% less miles than the 16-65 age drivers, according to studies including the latest U.S. DOT "National Personal Transportation Survey." It is ironic the Berger Circ EIS should miss this development since both Governor James Douglas and University of Vermont President Daniel Fogel (who first pointed to this demographic trend) have spoken in great detail and frequently on the impacts and policy needs resulting from this demographic reality.
(3) The Berger Circ EIS bypasses the historic change in Vermonter driving, the collapse of growth and even decline in annual vehicle miles of travel (AVMT) a trend now two decades old, and fails to evaluate the related factors, i.e., increasing motor fuel prices, flat incomes, and shifts in public policy to provide incentives for reduced driving (such as, for example, the EPA commuter choice initiatives).
(4) The Berger Circ EIS displays a complete ignorance of the transformational power of modern roundabout technology, treating the roundabout as another transportation tool, not a revolutionary technology which among other impacts enables and catalyzes denser urban development. I.e., its role as a sprawl buster. Truly, the roundabout is the most important positive development in urban transportation since the advent of the bicycle and streetcar late in the 19th century (on balance the motor vehicle is viewed as

a net negative for the urban environment). If the roundabout were not transformational, it would be difficult to identify why the NYSDOT "roundabouts only" policy would remain largely in place without controversy since put into operation almost three years ago in early 2005.

Further in regard to roundabouts, it is ironic that the Louis Berger Group, producer of the Berger Circ EIS ignored its own history with its first major confrontation with other consultants of the modern roundabout, the Keene Bypass Expansion where after a 2001 court suit in which the decision in great part depended on the finding the failure of the consultants to consider fully roundabout technology. As a result of the suit the NH Department of Transportation abandoned the Bypass Expansion (the bulldozers were ready to roll) and the first of three roundabouts opened four months ago, the three roundabouts costing about a quarter of the original $70 million project and providing far more service and environmental benefit. The first two-lane roundabout at the busiest Bypass intersection handles 58,000 vehicles a day with a peak hour of traffic, about 5,800 vehicles, which experiences queues of no more than three or four vehicles once in a while during the peak hour.

A second City funded downtown roundabout (25,000 vehicles per day) also opened in Keene in September with the roundabout cutting delay from the signal from six minutes to six seconds. Both these roundabouts are fully pedestrianized and testify in real world terms the transformational impact of the roundabout. It is suggested that anyone truly interested in roundabouts today would benefit from a visit to the three Keene roundabouts (its third is at the regional hospital entrance) and the roundabout 20 miles away at Brattleboro, the first eastern interstate interchange roundabout with 600 tractor trailers and about 28,000 vehicles per day (US 5/I 91/VT 9). One can also drive about five miles from Five Corners in Essex Junction and view the transformational impact of the roundabout in the form of the Winooski City Center Roundabout, the transportation keystone to a $100 million downtown renewal effort involving major expansion of housing and commercial developments.

Finally, the Louis Berger Group failed to take note of the source of the inflated traffic growth in the Keene Bypass project studies, one generated by employment and retail space projections turned into households and in turn travel growth suggesting doubling and tripling traffic along the NH 101 affected road segments, segments that even today show little change in traffic when compared to the 1990 base (see NH Department of Transportation funded McFarland Johnson reports of Keene Bypass projected traffic volumes with comparison to actual recent online data).

Direction of These Comments

The comments here will address key aspects of the four fundamental elements comprising the critical failure of the Berger Circ EIS. References will be provided at the end of the comments. The fundamental elements to varying degrees to national trends and studies, Vermont information and the study area. Where possible actual data and analysis will extend to specific intersections and/or highway segments.

General Conclusions and Recommendations

Conclusions

The general conclusion of evaluation of the Berger Circ EIS is that the report is generally fully flawed and provides no basis for making informed decision on the proposed alternatives. However, it is fair to suggest the following conclusions in view of the content of these comments: a. For much of the study area traffic conditions will remain stable or improve for the foreseeable future as the result of the anticipated decline of Vermont AVMT related to slower population growth and all the growth coming in the reduced driving aged group of over 65, higher real costs of driving related to motor fuel costs, and increased incentives for non-driving.

c. For the "shopping stub" highway segment, that is, from Williston Exit to Marshall Avenue/Maple Tree Place, installation of roundabouts will accommodate existing and any anticipated traffic (including the two at the interstate interchange). The "shopping stub" traffic driven by the retail complexes adjacent will experience traffic changes related to the nature and characteristics of the retail sector.

d. The only other intersection experiencing significant traffic growth Taft Corner already has been assessed positively for a roundabout and a one or two lane roundabout will handle existing and potential traffic while facilitating full pedestrian movement, movements that cannot be facilitated by any signal configuration.

e. All the other major intersections of the study area from the Richmond Exit of I 89, VT 117, VT 2A, and VT 15 (including the Maple Avene and Park Avenue entrances to IBM) can be evaluated for roundabout conversions and prioritized for construction.

Recommendations

Regarding the Berger Circ EIS itself, the recommendation here is that it be returned to the State to be completely re-done incorporating the following:

a. realistic projections of populations of the region based on U.S. Census and the three most recent State population studies (Vermont Health Care Administration [VHCA] 1993, Vermont Office of Policy Research and Coordination 1989, and Vermont Department of Disabilities, Aging and Independent Living [DAIL] 2003).

b. realistic evaluation of the age segments of the population growth i.e., the doubling of the over 65 population and plateau of the under 65 population and incorporating the effects in terms of driving on anticipated AVMT statewide and for the County and completely redoing employment, the allocation of, essentially, new over 65 households which comprise the population increase, and finally land use

c. review of anticipated macro trends of AVMT, i.e., the historic trends beginning in 1990, impacts of motor fuel price trends, impacts of global warming and reduced driving initiatives

d. an evaluation of the land use impacts of the roundabout, both short and long term (over and above immediate impacts)
e. assessment of a roundabouts-only build alternative, incorporating the transformational impacts on modal shares, energy use, pollution, corridor accidents, and land use.

Because of the critical failure of the EIS document it is not possible to evaluate any of the alternatives presented in the Berger Circ EIS, including the possibly meritorious Circ Street alternative.

I EIS CRITICAL FAILURE: FOUR FUNDAMENTAL ELEMENTS

Element 1: The Vermont Aging Population Bomb

The overall Berger Circ EIS base population data (see Section 17.0, generally) borders on the absurd when population data is examined in terms of changes in population by age group totally ignored in the report. All three basic population reports and projections (see U.S. Census Bureau, DAIL and VHCA data in Tables 1 and 2) fundamentally agree: there is minimal growth and even decline in the key age groups, 0-65 and 20-65, both in Chittenden County and Vermont as a whole for the selected 2000 to 2025, 2005 to 2025, and 2000 to 2030 periods. The interpolations and extrapolations tend to understate the case as the rate of expansion of the over 65 population increases throughout the base Census and DAIL projections.

One way to view the Vermont growing gray bomb from the baby boomer generation is to view Chittenden County as adding a City the size of Burlington during the 2000-2030 of over 65 population while the under 65 population remains constant. (This figure takes the 2000-2025 DAIL Chittenden County population segments and extrapolates to 2030.) For the State, the projection is the same, based on the US Census projected growth of over 65 population of 96,400 with the under 65 population constant, an over 65 population growth greater than the State's four largest Cities' 2000 population--Burlington, Rutland, Colchester and South. Burlington.

Why is the composition of age in the population projections important? First, no growth (DAIL shows actual Chittenden County decline 2005-2025 in the 0 to 64 age group, Table 2) in the 0-64 age group means there will be no increase in the key age group where most of driving takes place and from which the touchstone of the Berger Circ EIS arises, large projections of employment increases, an increase of 48,515 (p 17-51) for 2000 to 2030, can only be drawn from, using U.S. Census statewide for the same period, those aged 9 and under and the 96,430 over 65 growth segment over and above the current population in that group which is employed. In a word, significant work force growth in Vermont from a demographic standpoint during the 2000-2030 period increasingly becomes an impossibility.

The aging of Vermont is best described by the percentage of Vermonters 65 and older by decade:

Census/Census Projection	Percent 65+ of total population
1980	11.4
1990	11.8
2000	12.7
2010 Projection	14.3
2020 Projection	19.8
2030 Projection	24.4

Source: U.S. Bureau of the Census, Census and 2005 projections

These comments will not address the apparent unwarranted inflation of County population growth by about 10,000 (189,627 found in Table 17-12) over and above that justified by the three base population analysis statewide by state agencies and the U.S. Bureau of the Census. Further, the appears no reason to believe that household size will necessarily decrease as the State population ages over the next two decades, another routine used by a Chamber of Commere approach to fudge larger household growth numbers without providing the basis for this growth. One final note here. An interview with the senior planner at the Chittenden County Regional Planning Commission confirmed that the County level generated population estimates are at the high end and needed revisiting by the Planning Commission, a action being delayed because the update of the population estimation would delay the regional plan update this is perhaps a comment on the relative importance of the Berger Circ EIS in the County. UVM President Daniel Fogel and Governor James Douglas are correct in stressing the importance of the population change under way in Vermont. Unfortunately those preparing the Berger Circ EIS are not listening.

Element 2: Driving and Age Drivers over 65 Drive 44% Less Yearly than "All" Drivers

The important point here is that those over 65 drive more than 40% less miles per year than those in the prime driving ages of 20-64. The best linear data on annual miles driven by age of driver comes from the USDOT "National Personal Transportation Survey 2001,' Vehicle Availability and Utilization, Table 23: Average Annual Miles per Licensed Driver by Age and Gender where data is presented for the six surveys dating from 1969 to 2001. Over 65 drivers in 1969 drove 40% less miles per year, 5,171, than the "all" drivers, 8,685. That gap increased to 44 percent in 2001, 7,684 for the over 65, 13,785 for "all" drivers.

TABLE 1: VERMONT POPULATION PROJECTIONS 2005-2025 BY MAJOR AGE GROUPS

Study/ Age Group	Year 2000	2005	2010	2015	2020	2025	2030
U.S. Bureau of the Census							
0-18	147,523	139,947	132,372	134,106	135,839	137,399	138,959
18-64	383,794	405,250	426,707	422,552	418,398	408,683	398,968
65+	77,510	85,476	93,442	114,946	136,449	155,194	173,940
VT Department of Disabilities, Aging and Independent Living (DAIL)							
0-19	166,257	162,173	151,424	145,258	147,140	149,022	--
20-64	365,060	381,365	394,177	393,043	380,360	367,677	--
65+	77,510	82,397	93,640	113,898	138,541	163,184	--

NOTES: 1. Census estimates and projections by age group available online with 2005, 2015, and 2025 projections an interpolation of the decade projection.. 2. DAIL The 2025 projection derived by extrapolation of 2015-2020 change to 2025. 3. U.S. Census and DAIL estimates consistent with two previous State population studies, "Vermont Population Projections 199-2015" by the Vermont Health Care Authority, and "Vermont Population Projections 1990-2005" by the Vermont Office of Policy Research and Coordination (1989). 4. All projections show little variation (a few percent at most) for any period for either the U.S. statewide and County, or age.

The U.S. Energy Information Agency does separate surveys which show a minimum differential for two-person (no children) households headed by someone 60 or above travel miles by car 35% less than the 35-59 group. Single 60+ household (no children) shows a 33% (see data at EIA website http://www.eia.doe.gov/emeu/rtecs/chapter3.html). Finally, recent differentials are consistent with the TRB Special Report 220 (TRB p 377) with the over 65 person miles by motor vehicle for women 58% below that for women 36-65, and for men a differential of 47% down for the over 65 male person.

TABLE 2: CHITTENDEN COUNTY POPULATION PROJECTION 2005-2025 BY AGE GROUPS

Study/ Age Group	2000	2005	Year 2010	2015	2020	2025	Percent Change 2005-2025
Department of Aging and Independent Living (DAIL)							
0-19	40,553	40,174	38,793	36,953	37,235	37,517	-6.6
20-64	92,238	97,131	101,225	102,688	101,261	99,834	2.8
65+	13,780	15,001	17,451	21,850	27,315	32,780	118.5
TOTAL	146,571	152,846	157,469	161,491	165,811	170,131	11.3

Source:. Vermont Department of Disabilities, Aging and Independent Living (2003).
Note: Year 2000 from US Census. The 2025 projection derived by extrapolation of 2015-2020 change to 2025

The population increase for Chittenden County for the 2000-2025 by all macro estimates is comprised over the over 65 age population. Even if one assumed everything in transportation remained constant in Chittenden County for the entire period, 16% (Table 2, DAIL, 2000-2025) population growth comprised of the over 65ers results in an increase of at most about 10% (assuming over 65 drivers AVMT at 60% of all drivers). In fact as we know already this decade and is fully explored in the next section vehicle miles of travel trails population growth for the first time this decade and indications are that this trend will accelerate, i.e., County AVMT will further diverge downward from population growth. From another standpoint, the aging of Vermont and County represents one factor contributing to the current zero growth in AVMT and will contribute in an ever larger way through the 2030 period.

Berger Circ EIS Allocation of Population, Households, and Employment Irrelevant and Empty

Section 17.0, pages 50-64 represents the height of irrelevancy when actual population projections and age composition are considered. This segment of Section 17 deals with population projections, household and employment estimates, and allocations of population and housing among County towns for the study period. As presented, it is fantasy land as, essentially, it is population added composed of the over 65-age group which represents practically all State and Chittenden County population increase for the 2000-2030 period. First, note that the US Census Estimate for Vermont for 2006 is 623,908, an increase of only 15,081 2000-2006, a growth on track for a growth for the State of 25,135 (4%), well short (by about 18,000!) of the decade projection 2000-2010 by the Census of 43,685. Note that statewide population growth and projections 1980-2030 are less each decade with the 2020-2030 statewide projection by the Census of only 21,181. The 21,181 statewide growth of population projected by the US Census dwarfs their estimate of 37,491 growth in that same decade for the over 65ers. Statewide the over 65 proportion of the increased population over 2000 (see the US Census projection) rises by decade: 36% (15,932) of the 2000-2010 total population growth; 72% (58,939) of the 2000-2020 total population growth; and 94% (94,430) of the total population growth 2000-2030 of 103,040. Further, the Berger Circ EIS ends up suggesting the share of State population growth for the County about a quarter of state population--will be 43,000 (Table 17-12), equal to 42 percent of the US Census projection statewide 2000-2030. DAIL and common sense indicates that as the statewide population ages, the trend is toward Chittenden County, a quarter of the State's population, to more in line with statewide rates. That is as we know based on the foregoing a lot oldsters to add to a County which has a quarter of the states population and where projections show changes increasingly in line with its proportion of statewide population.

The magnitude of the concentration of Vermont population growth in the over 65 age group makes the issue of where in Vermont that population lives of somewhat secondary importance in terms of traffic and population for this study. While Chittenden County does serve as a job and education center, its high cost of living and heavy traffic would not make it a magnet for the rapidly increasing 65 and over growth. A more or less even distribution around the state is most likely. As a practical matter, one would expect older population in the state to trend toward larger towns and toward town centers where health, public transport and other services, including assisted housing and retirement communities, are generally located. There is more than a whiff of incompetence in this key portion of Section 17 which forms the foundation for rest of the study. This reason alone basic population data--is reason enough why this entire

EIS needs to be sent back with simple request--totally redo the EIS using credible demographic data.

Element 3: Annual Vehicles Miles of Travel (AVMT) A Sharp Turn in History Now 17 Years Old

The Berger EIS totally evades the historical change in Vermont Annual Vehicle Miles of Travel (AVMT), characteristic of not only Vermont but the other New England States, New York and Upper Midwestern truly all U.S. slow population growth states (Table 3 presents the historic plunge in AVMT growth for the New England States). This historic trend occurs nationwide but the impacts are masked somewhat in rapid growth population states.

In Vermont the short-term (five year) projection of urban traffic in the "Red Book" (VAOT 2005) of factors for growth in various categories of highway has from the turn of the century a remarkable 0.0 (Burlington Metro represents one of seven urban areas this "0" growth factor applies). The Red Book (VAOT 2005) also carries a warning for evaluation of urban traffic trends:

> There is a high degree of variability among the urban stations, from negative growth for some stations to factors over 1.25 for others.

The Red Book provides growth factors to use for both the short term (five year) and long term (20 year) planning periods. The Red Book does in fact reflect the short term factors were added in the late 1990s reflecting the changed and as suggested here sharp and continuing downtrend.

The historic trends speaks for itself (see Table 5): Vermont annual vehicle miles of travel grew 57 percent in the 1980s, 17 percent in the 1990s and from 1999 through September 2007 of 0.1% (2000 through September 2007, 1.7%). The Vermont data for the 1990s was very similar to that recorded by all the New England States New Hampshire led, as expected with its high population growth, and Vermont actually was the second highest among the six states. Again, the Vermont trends are not unique but similar to other U.S. slow growth population states.

Vermont began calculating annual vehicles miles of travel (AVMT) in 1920, and from 1920 until the 1990s only twice were there as many as two consecutive years of under-three-percent-annual-increase in AVMT. Those two incidents of two years of consecutive under 3 percent growth coincided with the two national energy crunches in 1973 and 1979. So far in this decade through 2006, not a single 3 percent or more year of traffic growth has occurred.

While the decade of 2000-2010 with seven and a half years elapsed reaches essentially a plateau, there is plenty of evidence that moderate and continuing declines will follow in the next two decades, conservatively estimated here at 5% per decade with 2030 essentially returning to the 1990 level (Table 5). The basis for this estimate will be further discussed.

AVMT analysis in "A Look Ahead: the Year 2020" (Transportation Research Board p 360) by Arlee Reno considered six factors determining its projections of future car travel: (1) income per capita of driving age population; (2) driving age population (16 and over); (3) saturation of personal vehicle availability; (4) travel speeds achievable; (5) quality, type and level of infrastructure investments; and (6) spatial distribution of population. Note that a base factor in household income the average manufacturing wage has changed little since 1979 with change in median household income mostly tied to the increase of female participation in the workforce for some time now reached its peak. For Vermont neither the prime driving age population nor household income can now be sources for future growth of AVMT.

My own technical estimate for this decade taking population growth and a slight increase in the proportion of the driving age population licensed drive has been 7 percent (Redington 2001). My personal estimate as a knowledgeable statistician and policy maker was a range of change for the decade of -5.0 to 5.0 percent, right now on target. My personal estimate assumed improved public

Already, it appears the price of motor fuels impacts on Vermont's vehicle miles of travel and this impact will increase over time. Consider the price of oil in terms of market price of a barrel of oil changed little in inflation adjusted dollars from 1900 until the 1973 oil crisis with the base price in 2006 dollars ranging mostly from $15 to $30 (see U.S. Energy Information Agency "Oil Prices 1861 2006," at http://en.wikipedia.org/wiki/Image:Oil_Prices_1861_2006.jpg). The 1973 oil crisis sent prices to over $50 a barrel and the 1979 crisis, to over $90 a barrel. From 1986 to 2002, the price though somewhat volatile still remained in the $15 to $35 range. Starting with the Iraq war, prices began a steady climb to $60 dollars a barrel by 2006 with the price last week jumping to $95 (current dollars).

Increasingly the availability and pricing of motor fuels can be expected to impact vehicle miles of travel as it has so far this decade in Vermont, particularly in the last three years. There is evidence of in recent years of curtailment of driving, more ride sharing, and shift to transit and non-motorized travels along with expectation of increased incentives for all three behaviors in the future. As an example it is clear that population of Vermont increased 4% 2000-2006 (US Census estimate) but vehicle miles of travel remaining constant clearly points to decreased driving by households overall.

Already, the price of oil at $90 a barrel roughly doubles "high" projection of $45 made in the Transportation Research Board (TRB) analysis in the Special Report 220, "The Look Ahead Year 2020" (TRB p 209). (This report will be referenced as the "TRB 2020 Report.") The energy analysis of TRB 2020 Report (p 228) anticipated a "transition" through increased efficiency and fuel substitution but concluded:

...[N]either the necessary efficiency improvements nor the transition to alternative energy sources will cause major changes in the way the transportation system operates. "

Clearly the price of motor fuel in part, particularly in the last few years, has affected the way the Vermont transportation system operates, certainly in modes and extent of travel, with the best proof in the collapse of AVMT growth. Even without evaluating the

TABLE 3: New England States: Annual Vehicle Miles of Travel (AVMT) 2000, Percent Growth 1980-1990 and 1990-2000 Decades, Percent Population growth 1990-2000

	2000 AVMT (Millions)	Decade Percent Change AVMT 1980-1990	AVMT 1990-2000	Population 1990-2000
Connecticut	30,756	35.6	16.9	3.6
Maine	14,190	59.0	19.5	3.8
Massachusetts	52,796	30.3	13.2	5.5
New Hampshire	12,021	65.3	21.9	11.4
Rhode Island	8,359	29.5	13.5	4.5
Vermont	6,811	57.1	16.7	8.2
NEW ENGLAND	124,933	38.0	16.3	5.5

SOURCES: AVMT for 1980, 1990, and 2000, "Highway Statistics" [Series], USDOT, FHWA; and Populations for 1990 and 2000, Bureau of the Census.

potential for even further escalation of motor fuel prices, it is fair to conclude that some continued decline in household motor vehicle travel will occur for the foreseeable future as a consumer response to motor fuel pricing outpacing efficiency gains. And this is independent of the age element discussed in detail above.

One area not anticipated in the TRB 2020 Report was global warming and need to curtail carbon emissions with the resulting implications for motor vehicle and air travel.

International policy developed sets national goals for developed nations to attain carbon emissions reductions to the level of 1990 several U.S. towns and cities including Burlington have independently undertaken planning and then implementation of meeting the goal of reduction to the 1990 level. Since half of Vermont petroleum consumption is associated with transportation, various programs and initiatives to reduce driving and promoting efficient travel from rideshare to transit to non-motorized will reduce traditional motor vehicle miles of travel.

Table 4: VERMONT ANNUAL VEHICLE MILES OF TRAVEL CHANGE 1999-MARCH 2006

Year	Vehicle Miles of Travel Number (Millions)	Percent Change from Previous year
1999	6,867	--
2000	6,811	-0.8
2001	6,981	2.5
2002	7,072	1.3
2003	7,001	-1.0
2004	7,071	1.0
2005	6,930	-2.0
2006	6,923	-0.1
2007 (Sept.)	6,923	0.0

Total Change 2001-2007 (6 years 9 months): 1.7%
Extrapolation through 2010 (10 years): 2.2%

SOURCES: 1999 AND 2000, "Highway Statistics" [Series], USDOT, FHWA; 2001 to date, annual average of monthly VAOT "Automatic Traffic Recorder Report"

Explanatory Note: 2001 VAOT submission to FHWA, a one-time upward adjustment increasing AVMT to 9,617 billion (41% above 2000), so changes since 2000 reflect this changed base. FHWA staff affirmed awareness that this figure is most likely vastly inflated (for example, Vermont vehicles would obtain about 30% greater miles per gallon than that recorded by any other state if the numbers submitted to FHWA were to be believed). The yearly change of AVMT, therefore, utilized here is the average of changes of monthly traffic recorder data is used starting with calendar 2001.

In fact the Alliance for Climate Change, located in the regional planning agency, administers the Chittenden County program designed to reach the Burlington plan goals for global warming gas reductions.

TABLE 5: VERMONT ANNUAL VEHICLE MILES OF TRAVEL DECADES CHANGE 1980-2030

1980-1990 AND 1990-2000 FROM FHWA, 2000-2010 AUTOMATIC TRAFFIC RECORDER REPORTS AND EXTRAPOLATION SEPTEMBER 2007-2010, AND 2010-2020 AND 2020-2030 MODERATE CONTINUATION OF THE 1990-2010 TREND LINE

DECADE	PERCENT CHANGE IN ANNUAL VEHICLE MILES OF TRAVEL
1980-1990	57
1990-2000	17
2000-2010	2.5
2010-2010	-5
2020-2030	-5

In conclusion, it is clear that motor fuel pricing, paced by oil prices, already has attained levels that constrains AVMT and further reductions are likely because of this pricing factor, and with the emergence of global warming goals as a major policy concern a number of actions will be taken in the transportation are with a net effect reducing traditional motor vehicle travel.

Since a third of Vermont travel is by out-of-staters any variation of the Vermont household car travel and that of other tourist oriented states will also be affected (see the Legislature's "Cost Allocation Study" [1989] for relevant data). The main point here is the new historical trend of AVMT is one of stagnation and decline applicable statewide and particularly to urban areas. Chittenden County like other Vermont urban areas does feature some areas of traffic increase, mostly interstate segments and certain major retail concentrations while many other major roads reflect decreases. The Northern Connector (VT 127) and Mallet's Bay Road connecting Winooski and Colchester both have traffic numbers which have declined for more than a decade. The traffic numbers at Five Corners are down since after adjustment for VT 289 since 1994.

In view of this discussion, the following assertion in the Berger Circ EIS (p. 17-27) appears bizarre:

> CCMPO estimates that peak hour vehicle miles of travel is likely to increase by 50-60% from 2000 to 2025 or an annual increase of 1.6 to 1.9 percent, exceeding the rate of population growth which is expected to average 1.5 percent during that period.

First, the concept of "peak hour vehicle miles of travel" is an unusual way to describe travel change, but it is assumed to imply that VMT will increase by 50-60%. Second, in terms of annual population growth, the CCMPO statement of 1.5% per year increase more than doubles the DAIL number of 0.64 percent (see Table 3). In view of the evaluation of here in the initial elements of the composition of County population growth (the over 65 aged group entirely), the character of over 65 AVMT (about 40% below the under 65 driving population), and the new historical trend here one can only conclude that the entire foundation of the Berger Circ EIS is fully unsupportable. Second, note that AVMT in Vermont has flat lined this decade while 65+ population grows just 12%, a prelude to 38% growth 2010-2020 where the real AVMT "graying effect" really takes hold. Third with the recent historical period extended to 2010, statewide AVMT amounts to about a 17 percent increase, so are we to believe that in the study area increase will triple the 20 year statewide number in the 2000-2025 25 year period? And the study area will record such an astounding number when the most congested intersection Five Corners--has recorded a decline of 1.4% 1994-2006? Bizarre!

Element 4: The Transportation Transformational Modern Roundabout

> The only good argument against roundabouts
> is there is no good argument.
>
> Barry Crown, U.K. ,Rodel Software Author and design reviewer
> For many US roundabouts (including Keene)

The modern roundabout in its various forms and arrangements represents a historic change technology for urban transportation, the most important strongly positive development since the advent of the bicycle and street car which facilitated moving beyond the boundaries defined by the distance a person could reasonably walk to live, shop, work, and recreate. (The motor vehicle development can be considered a mixed blessing for urban structure.) One can see the transformational impact of the roundabout right now in Chittenden County where the Winooski City Center Roundabout facilitated an unprecedented commercial and residential renewal now two years old in a community which experienced little change in its population or development in more than half a century. Just a few feet away from the Marshall Road intersection on VT 2A, one can observe a rather poorly designed roundabout on Maple Tree Place Road with a volume of roughly 6,000 vehicles entering daily it provides a bypass route around Taft Corner for traffic between the Village of Williston and I 89 Exit 12. And in spite of design issues, the latest crash data from the Williston Police Department is that there has been only one reportable crash, one that was property damage only.

The Winooski roundabout replaced two signal systems, reduced delay for all users, and provides almost unlimited capacity for all modes and no delay for pedestrians. Look to Manchester where the first United States roundaboutization plan, a plan completed in 1995 for roundabouts at all major intersections of Manchester Center. The first roundabout built in 1997 will be joined next year by two more roundabouts, including replacement of Vermont's "malfunction junction" intersection at the junction of VT 30 and VT 7A. Then there is Brattleboro with its policy of redeveloping Putney Road into a series of roundabouts so it can better compete with nearby competing retail centers. The Brattleboro corridor of roundabouts will include streetscaping and pedestrian accommodations. The 1993 corridor of roundabouts may well be the first such plan in the United States. Meanwhile, in nearby Keene, NH a competing retail center to Brattleboro, as mentioned above there are the three roundabouts with Keene being the first urban location (Micro NECTA) to complete (in 2005) a full evaluation of all its major core intersections for conversion to roundabouts. (Missoula, Montana is the first Metro area where a roundabout assessment was completed in 2005 with the majority of signalized intersections identified as good candidates for roundabout conversion.)

Berger Circ EIS and Accident Analysis

The roundabout urban impact comes in the form of radically reducing serious pedestrian and car occupant injury (about 90%) but also by increasing the capacity as well as reducing delay for all users. The roundabout traffic calms and reduces speeds promising increases of over 100% increases in pedestrian trips, for example. Each moderately busy signalized intersection (there are about 300 in Vermont) converted to a roundabout saves about 19,000 gallons of fuel (and pollutants resulting from use) annually. The roundabout symbolizes the post-auto age, an age of multi-modal transportation. The real gain in resource consumption reduction in multiple forms as the result of the roundabout comes in the other side of the coin impacted by roundabouts: land use density.

The Berger Circ EIS accident analysis following traditional crash analysis, a formula approach contained in the VAOT "High Crash Location Report 1998-2002" (2005) for intersections and road segments (VAO, "High Crash Location Report"). The Berger Circ EIS asserts that the Circ option provides the most accident reduction, more than the roundabouts option with widening of VT 2A south of Taft Corner. Why is the Berger Circ EIS accident evaluation simply absurd? First, as in the foregoing elements, there is not basis for assuming the kinds of VMT, population and development posited making the structure of the overall EIS fatally flawed. But the transformatiional character of the roundabout technology assuming the EIS possesses integrity makes the traditional accident analysis invalid. As just mentioned, roundabouts cut disabling injuries to car occupants and pedestrians by 90% (A disabling injury is one results in the victim being carried by emergency vehicle to the nearest hospital.)

The 90% serious injury reduction figure comes from a U.S. study of U.S. roundabouts by the Insurance Institute for Highway Safety (IIHS 2000) for car occupants and for various European studies for pedestrians (there were practically no ped injuries in the sample of roundabouts studied, so no American information is yet available). Second, when multiple roundabouts are placed in a corridor, they drop speeds between roundabouts dramatically up to about a third when closely spaced, such as in the case along Park Street in Essex, Maple Avenue in Essex, and VT 2A from I 89 through to the Mountain View intersection. The first study to show this was done in Golden, Colorado along a corridor of three signals and five lanes converted to four roundabouts (four lanes and mostly medianized) with between intersection speeds dropping from 48 to 33 mph (Sergeant 2002). Through travel times dropped by 40-50 second and 12 to 15 second delay (LOS B) at the intersections.

Moreover it is the reduction of injuries, particularly serious injuries, which are important here. As the VAOT crash report indicates, the value placed on a property damage collision is $6,400, an injury $36,500 and a fatality, $1 million (VAOT "High Crash Location Report" p 4). Since roundabouts sharply reduce injuries on both road segments and intersections, it is the injury comparison which is important, and property damage crashes should be excluded. To build a new Circ highway and ignore the injury crashes at the existing busy VT 2A intersections defies rationality. For example, recent crashes at Burlington area signalized intersections have resulted in fatalities where speed limits are 25 to 30 mph, including a bicycle fatality at the Northern Connector/Manhattan Drive intersection, a 29-year-old driver killed at the intersection of Swift and Main, and a pedestrian at Shelburne Road and Home Avenue.

The Brattleboro Keene-Turn went from 11 injuries per year for five consecutive years (55 total) as a signal (protected left turns) to one (1) injury in the first 4 years 9 months as a roundabout, a rate decrease of 98%. (Note: about 9,000 or over 20 percent of the approximately 42,000 US highway fatalities annually occur at intersections, mostly signalized ones.)

The roundabout is so safe that once you reach critical mass in roundabout numbers in Vermont (about 100 roundabouts–five in place in Vermont today and another half dozen near construction--where Vermont now has about 300 signalized intersections) one can expect 0 pedestrian fatalities and serious injuries for every roundabout built for at least the additional approximately 250 roundabouts. This is the promise of roundabout safety found in the "French pedestrian effect" when roundabouts in France increased from 10,000 in 1993 to 27,000 in 2003, a phenomenon described by French highway official Bernard Guichet at the first U.S. roundabout conference in Vail, Colorado in 2005 (Guichet 2005). Simply a clear example of the transformational impact of roundabout technology. Throughout the 1993-2003 period fatalities and injuries each remained in a very narrow range (Guichet, 2005).

Another important source of the transformational impact of roundabouts on all types of crashes and injuries at intersections is provided in the FHW "Roundabouts: An Informational Guide," section on safety, especially Section 5.3.3, "Pedestrians," pp 117-118. The data and studies carefully compare roundabout types with signals. Again, this Berger Circ EIS section does not address the roundabout impacts of sections along a roundabout corridor. We need to take the roundabout safety benefit seriously as the US has fallen from first to ninth in the world in highway safety, with first place for some time being the U.K. where the roundabout was created in 1966 and where there are thousands of modern roundabouts.

Overall Denial and Incompetence

Why does the Berger Circ EIS fail to comprehend the transformational impact of roundabouts on safety? Probably it is best summed up as a combination of incompetence and malevolence fed by denial. Most "traditional" traffic engineers who find roundabouts challenging too often resort to denial and open hostility. Example, a recent retiree of chief traffic engineer at ConnDOT was reputed to say that a roundabout would be built on the Connecticut state highway system over his dead body (roundabouts have since been constructed). State DOT employees in several states after the roundabout laugh period ended in the early 1990s experienced discipline, career threats and threats to their jobs for their actions advocating for roundabouts. There is a similar reticence and notable exceptions of EPA leadership and staff over the roundabout impacts on conserving motor fuel, reducing pollution, and enabling denser development along with increased rideshare, non-motorized modes, and transit. EPA readers of these comments are best positioned to identify this phenomenon and its causes in their organization.

The Roundabout and "Level of Service" Transformation

Roundabouts transformation impacts are outlined above in regard to a string of key issues and safety in particular. What about "Level of Service" (LOS) which refers to delay and congestion aspects of traffic by traffic engineers. The Berger Circ EIS presents a distorted picture at best of the impact of roundabouts on LOS in Section 5 at the design year (Table 5-10, p 5-15). Generally, roundabouts reduce delay for the average vehicle to a few seconds LOS A and B--at a.m. and p.m. peak hour and less than 5 seconds the rest of the day. This is an absolutely astounding difference between the signal and the roundabout in LOS. The VAOT itself measured the before and after LOS at the Brattleboro Keene Turn Roundabout in 1998 which has 2,800 peak hour vehicles and 600 tractor trailer trucks daily. Before with the signal (protected left hand turns) the a.m. peak was 44 second (LOS D), and with the roundabout, LOS B, 12 seconds (LOS B). This is a decrease of a half minute per entering vehicle. (Note: a roundabout is a non-signalized intersection with a more stringent set of criteria for example, LOS B for a roundabout is 10-15 seconds delay and for a signal 10-20 seconds; this differential increases through LOS F, over 50 seconds for the roundabout and over 80 second for the signal all outlined in Table 5-1.)

The Keene Main Street intersection which opened this September provides an even more dramatic decrease six minutes 52 seconds to 6 seconds with the Winchester Street leg dropping from 360 seconds (six minutes) to 6 seconds (Keene NH). The Keene Bypass Roundabout which opened in July dropped stopped queues waiting from up to three cycles of signal to a few seconds with stopped queues of four or five vehicles unusual as 5,800 peak hour vehicles easily move through the intersection with only a few seconds of average delay. The roundabout composed of two lane approaches for the four legs compares to the average of five lanes approaches for the best performing signal choice with the design year LOS D, 52 seconds delay for the typical vehicle during peak hour compared to 6 seconds for the roundabout, all contained in the Keene NH (2003)
report. The signal choice meant an average of six lanes of approach for each of the four legs, the roundabout as built two approach and two exit lanes for each leg. Obviously at busy intersections there is lot less lane feet and less paving (plus a permeable center island!).

Let's look at VT 2A in Table 5-10, p.m. peak where the highest performance occurs with roundabouts (Alternative How does the Berger Circ EIS come up with a table, then, Table 5-10,which suggests the best the roundabout intersections can do is LOS B at Industrial Drive/Mountain View and Five Corners?

This question is not unreasonable when one assumes that the historical traffic increase pattern and the foregoing analysis suggesting that with the exception of VT 2A from I 89 to Marshall Avenue, there is no reason to expect major increases of traffic and that overall a slow decline is most likely. At Five Corners, this is already the case. Note that the existing VT 289 does perform a valuable role in allowing traffic between the Winooski side of VT 15 and I 89 side at Exit 11 (Richmond) to avoid Five Corners, essentially a bypass function. In addition the existing Circ sections also allow traffic

north of Essex Junction to make the same avoidance of Five Corners. Now the facts:

Vehicles Entering Five Corners Daily:

1990 (Pre-VT 289)	34,600
1994 (Post-VT 289)	29,800
2000 (Post-VT 289)	29,800
2006 (Post-VT 289)	29,300

(Note these are the total of nearest "actual" VAOT traffic recording locations: Site IDs D 177, D 179, D 175, D 178, and D 176.)

The current and likely future slight downtrend suggests that even a single lane roundabout may be sufficient to service Five Corners. Certainly a two-lane roundabout would handle easily the traffic volumes, similar to the initial volumes at Keene Turn Roundabout in Brattleboro (28,000 entering vehicles) with its 12 second (LOS B) and Keene (NH) Main Street roundabout with 25,000 entering vehicles with a 2015 6 second delay and 3,300 peak hour traffic (Keene NH). The suggestion here of six to twelve second delay lies just either side of the upper limit 10 seconds of LOS A. Yes, the Berger Circ EIS does reflect four p.m. LOS B cells the only one in Table 5-10 with ratings as high as B along VT 2A two each for Five Corners and Industrial Driver/Mountain View in the roundabout mode under Alternatives 22 and 23. All other p.m. cells but a single C are D, E, and F LOS.

What is missing here is a discussion that the only marked improvement available in any configuration of any intersection is the roundabout and the roundabout by sizeable margins. Why are not roundabouts in conformance with the NYSDOT policy considered for ALL intersections? Why would the Berger Circ EIS authors expect anything but lawsuits for any intersection change which does not include roundabouts, suits for injuries inherent in the fundamentally unsafe signal technology. Yes, all the intersections in question can be converted to roundabouts as all are in fairly open conditions with no major right-of-way constraints. The single exception to this, the IBM entrance (Park and South Streets) does require the probable taking of two residential buildings to accommodate a roundabout. Why is there no discussion of the breakthrough of performance provided by the roundabout intersections.

Where is the discussion of the improved safety and reduced delay at all the intersections involved for pedestrians and bicyclists who would also benefit from huge LOS improvements and for pedestrians, safety? The silence in the regard to bicycle and pedestrian aspects of signal versus roundabout speaks volumes for the Berger Circ EIS authors.

One final note on Table 5-10 and LOS. If you were to believe the Berger Circ EIS, then the Circ A/B alternatives fail in 23 of 24 cells under a.m. and p.m. for the three selected intersections to meet the minimum standard for an urban intersection Level of Service set under VAOT policy. The "Vermont Agency of Transportation Highway Design 'Level of Service' Policy" states (VAOT1996):

> It is the Agency's policy to design its highways and
> to require others accessing its facilities to effect improvements
> that will maintain Level of Service "C" for the prescribed design period.

None of the four Circ Alternatives result in LOS C for the three VT 2A intersections contained in Table 5-10 with the exception of one alternative for one intersection (South Street/River Street). Again, this notation should be taken in view of the evidence which maintains the entire evaluation of the Berger Circ EIS is fatally flawed so this would end up being a second order flaw.

Pedestrians, Bicycles and Transit

The increased safety and reduced delay for pedestrian arises in great part from the traffic calming impact of the roundabout. Reduced wait times and reduced speeds means an increase in walking and bicycling trips, particularly in the one portion of VT 2A which is primarily residential lower Park Street and at the key Five Corners intersection where the discouraging long time between pedestrian phases stops down practically all pedestrian movement even in the presence of major
retain and services available ranging from food, beverage, and restaurant servces to banking and municipal offices. Two or three roundabouts along Park Street would assure the roundabout corridor effect: movement of traffic with reduced through travel times while decreasing road segment speeds. VAOT turning data at the intersection shows about 30 pedestrians cross the intersection between 6 a.m. and 6 p.m.–a roundabout would certainly increase pedestrian use two to three times current use.

Finally, reduced travel times along a roundabout corridor benefits public transit also by making access easier and safer for users, and reducing transit times for the vehicles. The Berger Circ EIS did not address modal splits as the result of improved intersection performance from roundabouts.

Anti-Business Bias of the Berger Circ EIS

There remains a definite anti-business slant to the Berger Circ EIS, best shown by the lack of use of roundabouts at the Williston Exit 12 interchange and the intersections subsequent to Taft Corner, including Marshall Avenue and the second access signalized intersection just to north. The two shopping center signalized intersections and I 89 interchange (two intersections) represent the "shopping stub" whose future AADT admittedly is volatile. What is not disputable is the ease of placing roundabouts at these four "shopping stub"intersections, thereby reducing delay to a few second and rewarding the businesses which depend on a high level of service to and from the interstate. True, the intersections along Marshall Avenue also require attention, but the bulk of delay now resides on the State system. Why deny the kind of access for Williston businesses which is enjoyed today at the Keene-Turn Roundabout in Brattleboro (soon to be corridorized) with roundabouts) and Winbooski downtown? The Berger Circ EIS handicaps Williston businesses and in turn the area economy, glaring case of anti-business bias.

Energy, Pollution

Roundabouts alone can reduce directly about 1% of Vermont transportation energy use (and associated pollution) if most of the current busy intersections represented by the approximately 300 signalized intersections are converted to roundabouts. Secondarily, that is through short and longer term impacts on land use, an additional 2-3% reduction in motor fuel use appears easily attainable. Again, viewing the potential of energy savings can be observed first hand at Winooski downtown and the three roundabouts in place in Keene (view in Keene the differences in the performances of the roundabouts versus signalized Bypass and commercial district signals, particularly along West Street). Australian software modeled on the cruise/deceleration/stop or slow/acceleration/ return to cruise cycle of cars approaching and moving through either a roundabout or signal provides direct projections of signal versus roundabout motor fuel use and pollutant generation (sulfur dioxide, carbon dioxide, nitrogen oxides) (Akcelik, 2005). This software, aaSIDRA, is the most popular in the U.S. it conforms to U.S. standards and is user friendly.

Varhelyi (2005) in an empirical study provides the base information on daily energy use and pollutants in a before and after signal to roundabout conversion using the car following method (repetitions of a car going through the intersection and measuring the time, fuel use, and pollutants generated). The busy intersection with 23,500 entering vehicles daily, about 4,000 less vehicles than Brattleboro Keene Turn, reduced annual fuel use at the intersection by 19,300 gallons or 53 gallons daily, Comparing before and after fuel consumption in roundabout form, a 28% decrease, Nox 21%, and CO 29%. Vehicle stops dropped from 63% of all vehicles to 26%, a drop of 59%. And travel time, as expected, dropped 11 seconds. These dimensions are similar in differential in typical intersections evaluated using aaSIDRA. Intersections like Taft Corner and Five Corners would be expected to show substantially greater motor fuel and pollution reductions as, generally, the greater the level of traffic at a signal intersection the greater the differential of roundabout performance over the signal.

Note that Burlington is a pioneer in the development of a global warming plan and starting implementation four years ago Chittenden Country Regional Planning Commission the administration site and a partner in the process. The roundabout must be the default choice versus a signal at any study area intersection in order to further the global warming policy of the City and the Region.

Roundabouts and Land Use

Transportation and land use share a share a absolute connection. The Berger Circ EIS totally fails to evaluate the impact of the roundabout on the urban area as well as the study area. Clearly there is a common and correct understanding that new highways and highway expansion can encourage sprawl. Not so often discussed is that dense land use development affects the type of transportation utilized. Bus transit, for example, depends on a minimum residential density to be economical. Urban densities in Canada (a country with no federal transportation program) are half again that of the U.S. and European densities substantially higher both in the central cities and suburban communities. The success of public transportation about half of urban trips in most European communities are non-motorized and transit compared to about 12% in the U.S--in those areas arise in great part on the level of urban residential densities.

The United States, unique in the world, established major subsidies for the automobile while at the same time--and just as important when it comes to residential densities sizeable subsidies to housing for the middle class, primarily in the form of property tax and mortgage interest deductions on federal income taxes. Federal home ownership tax expenditures of over $100 billion yearly are about five times rental subsidies for the poor. Add to this the fact that drivers only pay for about 60 percent of the cost of building and operating the highway system, and one can understand why America is the land of sprawl. Federal highway expenditures amount exceed $40 billion yearly now. Consider Canada where there is no federal transportation program and no tax subsidies for housing.

Citizens with in any income category tend to minimize the lumped costs of housing and transportation. Since housing costs more in urban areas, the consumer will seek out the lowest cost with a commute enabled transportation subsidy, also further subsidized by employers and shopping areas with "free" parking (an urban parking garage space costs upwards of $1,500 annually or $6 per workday).

Certainly there needs to be a serious consideration of reducing federal subsidies to automobile travel in fact federal action probably is the only location where transportation tax policy can be implemented. The reason is all but a handful of states (Vermont is one of these) dedicate all gasoline and motor vehicle taxes to highway transportation. Therefore states depend on the federal government for leadership in taxation and

vehicle subsidy to counter the imbalance of state transportation tax structures weighed almost entirely toward highways and automobiles. Further, weaning the U.S. off housing subsidies over a period of time can be re-enforced by mortgage policies with incentives for higher density and compact area locations (already in place for many elements of low income programs).
Those who oppose roundabouts often cite the fact that they create substantial additional capacity for motor vehicles, therefore spurring growth (the same could be said of any transportation investment). The claim ignores the fact that when you cut time of moving through an intersection by introducing a roundabout say a minute for a roundtrip daily the benefit in terms of lower travel times is generally far greater in percentage times to locations within the urban area itself. Obviously, practically all benefit in transit efficiency and reduced non-motorized travel goes to the urban area.

The roundabout conversion can be viewed as a mini subway stop, providing increased access and reduced travel time to a particular location for all modes from various other nodes in the urban area. Or, conversely, a signal by nature discourages trips to a location by virtue of increase travel time (for all modes) and lack of access to points within the urban area, thereby creating pressure for sprawl, i.e., relocation of all types of development where at least initially, congestion is less.

III ADDITIONAL COMMENTS

What is the Doughboy Afraid of?: Energy Use

When Vermont's Ben and Jerry's Ice Cream were challenged on a trademark issue by General Mills, the Vermonter's won in court and the court of public opinion with the phrase we know today, "What is the Doughboy afraid of?" symbolizing the little guy against the giant. Section 15, Effects of the Evaluated Alternatives on Energy Consumption, though just five short pages finds all the faults of the Berger Circ EIS in a very compact section. The lack of integrity of the Berger Circ EIS can be found in various subcontext elements in the study and energy consumption is an example of the "what the Doughboy afraid of? by the consultants refusal to accept the large amount of data especially from Vermont showing the major benefits of the roundabout in single point installations in energy conservation and reduction, pollution reduction, and land use benefits. The data and studies referred to here in energy consumption at intersections clearly reveals the major benefits. Look at the basis for the calculation of energy use differentials asserted in the Berger Circ EIS found 15.0, pp 15-1-2, where peak a.m. and p.m. traffic numbers are used to determine change in energy use by link in the Metro Model. Yes like EPA itself which whose Mobile Emission Model discriminates against roundabouts since for decades the signal-only condition did not affect pollution generation the energy saving well documented above (even in

Vermont!) of roundabouts--is ignored! Besides the context decline in traffic in the Metro area as well as some of the study area making the base analysis fatally flawed we have the situation where easily calculated roundabout energy saving using aaSIDRA software is also left out.

The Doughboy II Roundabout Corridors

The Berger Circ EIS also faced another problem for if they could not introduce corridors of roundabouts (like the Brattleboro or Manchester approaches) they immediately would run into the phenomena of reduced between intersection speeds, use of the roundabouts are reverse turns, ease of two/four lane divided corridors which reversing enables, and the cumulative importance of fuel/pollution reduction (and as important injury crashes). Another example of a historical example of, perhaps, an unintended consequence by the Berger Group, in effec6, a rearguard action against the transformational roundabout!

Another Energy Fraud Assumption II

The Berger Circ EIS repeats the energy fraud assumption trying to foist a clearly intentional and irrational historical AVMT growth as a basis for the subsequent energy use projection, again in Section 15. To find a way to support "growth" at any cost a growth fallacy carefully debunked in AVMT and population elements above we are now told that the historical AVMT using the "15% bump" early in the decade to feed the energy evaluation graphically outlined in Figure 15.3-3. The jump graphically from about 6.5 billion vehicle miles to 7.8 billion, about 20%. The Automatic Traffic Recorder actual change average for 2000 to 2001 was 2.5, see Table 3, above. If there were penalties for fraudulent planning, the exaggeration of AVMT growth as a factor applied to, essentially, boost energy growth in a secondary analysis, would deserve at least a 3 year professional suspension. As my quantitative analysis chemistry professor at Norwich University would say "figures don't lie but liars can figure."

VT 117 Corridor

The VT 117 corridor which extends in the study area from I 89 in Richmond to Five Corners in Essex Junction reflects in many ways the typical pattern in Burlington Metro of traffic over the past dozen years slight decline along the sections from VT 189 interchange signal through to Five Corners and moderate growth from I 89 to VT 289 interchange (23% per decade, 4,000 in 1994 to 5,100 in 2006). The I 89/VT 189 growth in what is predominantly rural countryside apparently reflects bypass traffic between Winooski/Burlington/Essex via VT 189 to Richmond and I 89. There appear no problems along this corridor now or in the next 20-30 years from traffic volumes. The only needs would be the conversion of intersections on a regional priority basis to roundabouts including: I 89/US 2/VT 117 (already scoped by AOT), I 89/US 2, VT 117/VT 289, IBM entrance/Mansfield Avenue, and Five Corners (surely near the top of any priority list for the region, and highest for the study area).

More on Traffic Volume Trends in Essex

Clearly there are strong increases in VT 2 traffic from the I 89 Williston exit to Marshall Avenue/Maple Tree Place driven by the addition of Maple Tree Place major mixed use mostly commercial/retail development. However, the influence of this development begins to wane at Taft Corner and is not noticeable now as one approaches Essex. Further, the traffic numbers can be expected to moderate and stabilize with the continued attrition of area and regional traffic conforming to the statewide trends already discussed.

Here are some numbers for some key roadway segments approaching Five Corners and along VT 117, average daily traffic (AADT) for the mid-nineties after the completion of VT 289, a number about the turn of the century, and the most recent number. Emphasis is to use “actual” counts at particular sites:

Site ID/Location	Year: AADT			Decade Equivalent Change Percent
D179/VT 15 West of 5 Corners	‘95: 15,500	‘00: 14,000	‘06: 14,400	-5.3
D177/VT 15 North of 5 Corners	‘95: 10,500	‘00: 12,200	‘04 11,700	12.7
D178/VT 2A North of 5 Corners	‘95: 8,400	‘00: 7,600	‘06: 7,700	-7.6
D135/VT 2A Indus. Ave/Essex TL	‘95: 17,700	‘00: 17,800	‘04 18,900	7.5
D176/VT 117 East of 5 Corners	‘94: 9,800	‘00: 8,700	‘06 8,600	-10.2

No clear pattern emerges in these numbers other than there is a certain amount of stability (see total entering traffic numbers to Five Corners discussed previously). Most important, there appears to be no significant increases occurring in the Essex area of the study area.

Tractor Trailer Trucks

Strangely, the Berger Circ EIS did no qualitative or quantitative assessment of medium or heavy trucks (tractor-trailers, mostly). The Berger Circ EIS asserts that truck traffic will be relieved to the at particular existing intersections to the extent that traffic changes with the various build alternatives. For a multi-million dollar study this is a feeble effort at best, considering truck traffic is a concern in the Purpose and Need Statement. Again, the transformational impact of roundabouts both in terms of erasing congestion at intersections and improving corridors along with reducing corridor speeds would seem to be a better initial antidotes to the undesirable impacts of trucks, substantial identifiable benefits compared to the "crystal ball" technique employed in the Berger Circ EIS. The roundabouts regarding trucks assure reduced pollution of all types and reduced noise (trucks are particularly noisy in the rapid stop and acceleration modes). And, roundabout would impact all trucks.

Ending Statement

The Berger Circ EIS differs in form and content from previous assessments and environmental documents in one very important respect: there are no numbers for current and design year for alternatives provided of average annual daily traffic for road segments or turning/entering volumes (including for pedestrians) at all affected intersections along with delay in seconds. This absence of data and information leaves one with the impossibility of determining, for example, roundabout performance in LOS and seconds of delay versus obsolete signal technology–a consideration of no little importance.

Finally, please find below the references cited in these comments.
Thank you for the opportunity to comment on the Draft Environmental Impact Statement/Section 4(f) Evaluation FHWA-VT-EIS-07 02-D (Berger Circ EIS).

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The references below identify materials referred to in the comments above.

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