MEMO

TO: Claudio Veliz
FROM: Ben Swanson
DATE: June 17, 2015
SUBJECT: Peer Review of Champlain Oil Traffic Impact Study

On behalf of Smart Growth Chester, RSG has conducted a peer review of the Traffic Impact Study dated April 8, 2015 prepared by Trudell Consulting Engineers for the proposed Champlain Oil project on VT 103 and VT 11 in Chester, Vermont.

Based on our review of the April 8, 2015 Traffic Impact Study (TIS), we offer the following comments.

1.0 ANALYSIS TRAFFIC VOLUMES

While the TIS generally follows standard traffic impact study procedures for determining baseline and future traffic volumes, we note several assumptions used in the TIS that depart from standard practice or cases where the less conservative option has been selected when the analyst's discretion is required.

Background Volumes:

Our primary concern in reviewing the background traffic volumes is that the study limits analysis to the weekday afternoon peak hour and applies a design hour volume (DHV) adjustment factor that does not account for the seasonal variation in traffic volumes along VT 103. VTrans classifies VT 103 in Chester as belonging to Poll Group 5 (Summer/Winter Recreational US and VT Routes)[1], due to the heavy seasonal fluctuations in traffic volumes resulting from seasonal skier and tourist traffic flows to the area. The TIS calculates background design hour traffic volumes using a DHV adjustment factor for Poll Group 2 (Rural Non-Interstate), and by so doing projects lower background traffic volumes that do not fully account for the seasonal fluctuations in traffic in the study area. The design hour volume on VT 103 calculated with the Poll Group 5 adjustment factor would be approximately 24% higher than calculated with the Poll Group 2 calculation.

While traffic impact studies in Vermont typically investigate the weekday AM and PM peak hours, these time periods are used in areas where traffic flows are dominated by employment commuter flows. The TIS notes that the weekday PM peak hour is substantially higher than the weekday AM peak hour and that the AM scenario is thus omitted from the study. However, in this case, the Saturday afternoon peak hour of adjacent street traffic is higher than both the weekday AM and PM peak hours. Based on data from two week-long automatic traffic counts conducted by VTrans in

[1]http://vtransplanning.vermont.gov/sites/aot_policy/files/documents/trafficresearch/2014RedbookPrint.pdf

2010[2] at VTrans count station S6Y194 on VT 103 in Chester, the average Saturday peak hour of traffic (759 vph) was higher than both the average weekday AM peak hour of traffic (578 vph) and the average weekday PM peak hour of traffic (738 vph).

We suggest the analysis be revised to include DHV adjustment factors for Poll Group 5 and to include the Saturday afternoon analysis scenario.

Growth Projections

It is standard practice in Vermont to analyze two analysis years – the design year when the project is expected to be complete and a future year 5 years later. The TIS accurately notes that background traffic growth in Vermont has been low in recent years and that minimal growth is projected in the future. The TIS calculates a growth factor of approximately 1% between the 2015 and 2020 analysis years. However, the TIS then states that because this increase is minimal, the analysis is limited to only the 2015 scenario. While we agree with the low background growth projection and understand the author's rationale for limiting the analysis to a single scenario, if only one scenario is considered the more appropriate course of action would be to examine only the 2020 scenario.

Other Developments

We also note that the study does not account for traffic that would be generated by other projects in the area that have been permitted but not constructed. In this case, we are aware of at least one project in the immediate vicinity (Dollar General) that has received local and Act 250 permits but that has not yet been constructed. Traffic from this and any other recently permitted projects should be included in the background traffic volumes to accurately analyze the total project impacts.

Trip Generation

To calculate the volume of traffic that would be generated by the proposed project, the TIS relies on a VTrans report of trip generation rates from 2010 rather than using the more standard Institute of Transportation Engineers (ITE) publication Trip Generation 9th Edition.[3] VTrans has never formally authorized the use of the 2010 report for traffic impact studies and has submitted their local data to ITE for inclusion in the larger document.[4]

The project also breaks out the restaurant component of the proposed 4,980 square foot building separately from the convenience store land-use for calculation of the projected trip generation. In this case, the fast-food restaurant land-use (LU 934) has a lower trip generation rate per 1,000 square feet of development than the convenience store land-use (LU 853). Modern convenience stores regularly include some ancillary restaurant component and this ancillary use could be considered part of the overall convenience store for the trip generation calculation. While it is not technically

[2] April 22nd to April 29th 2010 and September 22nd to September 29th 2010.
[3] Institute of Transportation Engineers, *Trip Generation* 9th Edition (Washington, D.C.: Institute of Transportation Engineers, 2012).
[4] Communication by VTrans staff at the 2015 Spring meeting of Vermont ITE, confirmed the VTrans Traffic Operations position that the 2010 VTrans trip generation study rates should not be used in lieu of ITE data for traffic impact studies.

incorrect to calculate the trip generation separately for this ancillary use, it is the less conservative option in this situation.

The net effect of using the VTrans report for trip generation and breaking out the restaurant use in the trip generation calculations is an overall projection of traffic generation that is approximately 99 fewer vehicle trips during the weekday PM peak hour than what it would be using the standard ITE trip generation calculation for a 4,980 square foot convenience store with gasoline pumps (TIS projection of 155 trips per PM peak hour vs ITE projection of 254 trips per PM peak hour).

Figure 1 presents the total trip generation calculations (primary plus pass-by) for the proposed project using ITE trip generation rates for Land Use 853 during the weekday AM, weekday PM, and Saturday peak hours. As Figure 1 indicates, for this Land Use type more traffic is generated during the Saturday peak hour than during the AM peak hour. This information further suggests the Saturday peak hour should be included in the analysis.

FIGURE 1: TRIP GENERATION CALCULATIONS USING ITE LU 853 RATES (PRIMARY & PASS-BY)

	Enter	Exit	Total
Weekday AM Peak Hour	102	102	204
Weekday PM Peak Hour	127	127	254
Saturday Peak Hour	117	112	229

We recommend the TIS be revised to assess impacts using the ITE trip generation rate for LU 853 for the entire 4,980 square feet building and include the Saturday peak hour.

Trip Distribution

We have concerns with how the study has approached trip distribution and believe this may under-represent the number of vehicles turning at the VT 103/VT 11 intersection. The TIS traffic distribution appears to assume all pass-by traffic from VT 103 and nearly all primary traffic from VT 103 accesses the site by way of the driveway on VT 103 and that no portion of this traffic enters or exits the site by way of the driveway on VT 11. Because the driveway on VT 11 is only 100 feet north of VT 103 and because the gasoline fueling stations are located on the eastern edge of the property, proximate to the VT 11 driveway, the VT 11 driveway will likely be attractive to traffic on VT 103 as well as VT 11. Additionally, while the TIS assumes VT 11 pass-by traffic would enter by way of the VT 11 driveway, it appears to assume no southbound VT 11 pass-by traffic would then exit by way of the VT 11 driveway. Again because this driveway is so close to VT 103 and because the gasoline fueling positions are located proximate to this driveway, some portion of southbound VT 11 pass-by traffic would also likely exit by way of this driveway. In addition, the design of the internal circulation will discourage cut-through and on-site circulation, further encouraging traffic to access the surrounding road network by the closest access point.

We suggest the trip distribution be revised to account for the portion of traffic to/from VT 103 that will access the site by way of the VT 11 driveway.

2.0 SAFETY ANALYSIS

Crash Analysis

The TIS notes that the section of VT 103 from mile marker 2.247 to 2.547 has been classified by VTrans as a High Crash Location (HCL) for the most recent period of formal designation (2008 to 2012). However, the study does not elaborate on any of the crash details or investigate if similar crashes could be prevented in the future with appropriate improvements.

We also note that a second High Crash Location is designated on VT 11 for this same period, extending from the VT 103/VT 11 intersection to the north (from mile marker 5.077 to 5.377), but this second HCL is not documented in the TIS.

We recommend the TIS be revised to include an investigation of crash details within these two designated High Crash Locations and to suggest appropriate mitigation measures as needed.

Sight Distance Observations

The TIS indicates sight distances east and west of the proposed VT 103/Site Access intersection were observed to exceed design standards. No statement is made regarding sight distances to the north and south of the proposed VT 11/Site Access intersection.

We recommend the TIS be revised to include a statement regarding sight distances at the proposed VT 11 access location.

3.0 INTERNAL CIRCULATION

While the design of the site will discourage use of the site for cut-through traffic, we have concerns about conflicts between parking vehicles and vehicles traveling through the western portion of the site from the VT 103 access to the fuel pumps given this design. Further, it is unclear how large fuel delivery vehicles would navigate the site. As such, we suggest performing a vehicle tracking analysis to ensure a delivery vehicle can safely access the site.

4.0 CONCLUSIONS

While the TIS generally follows standard traffic impact study procedures for determining baseline and future traffic volumes, we note several assumptions used in the TIS that depart from standard practice or cases where the less conservative option has been selected when the analyst's discretion is required.

We offer the following summary of recommendations:

- We suggest the analysis be revised to include DHV adjustment factors for Poll Group 5 and to include the Saturday afternoon analysis scenario.
- We suggest the analysis examine the 2020 scenario in addition to or in lieu of the 2015 scenario.

- Traffic from the recently permitted Dollar General and any other recently permitted projects should be included in the background traffic volumes to accurately assess the total project impacts.
- We recommend the TIS be revised to assess impacts using the ITE trip generation rate for LU 853 for the entire 4,980 square feet building.
- We suggest the trip distribution be revised to account for the portion of traffic to/from VT 103 that will access the site by way of the VT 11 driveway.
- We recommend the TIS be revised to include an investigation of crash details within the two designated High Crash Locations immediately proximate to the site on VT 103 and VT 11.
- We recommend the TIS be revised to include evaluation of sight distances at the proposed VT 11 access location.
- We suggest performing a vehicle tracking analysis to ensure a delivery vehicle will safely traverse the site.

Please feel free to contact us with any questions.