

October 7, 2026 – Utilities Commission Meeting

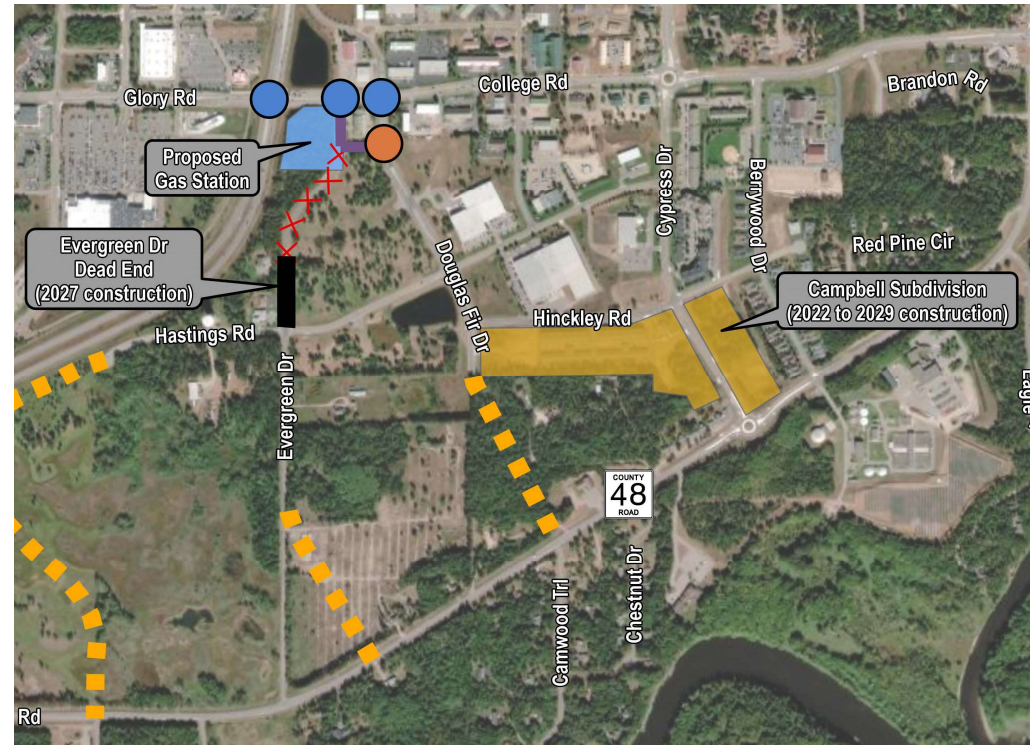
Evergreen Drive/Douglas Fir Drive Traffic Impact Study

Baxter, MN



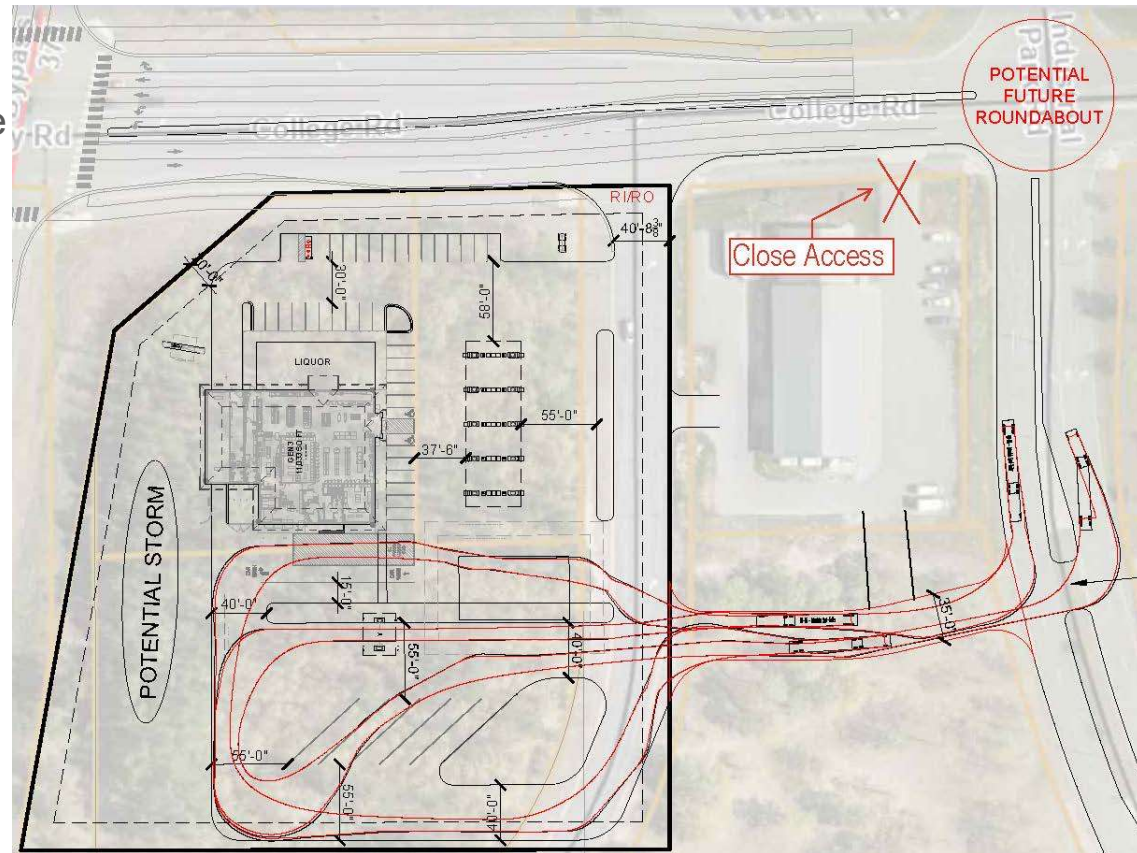
Study Area

- **Four Existing Intersections**
 - TH 371 and College Rd
 - College Rd and Evergreen Dr
 - College Rd and Douglas Fir Dr/Industrial Park Rd
 - Counts from February 2022 from the CSAH 48 Corridor Study were used for this study
- **One Planned Intersection**
 - Douglas Fir Dr and Proposed Gas Station/Liquor Store Access
- **Evergreen Dr Dead End**
 - Planned for construction in 2027
 - Will disconnect Evergreen Dr from College Road
- **Recent Area Projects**
 - Campbell Subdivision – 289 apartments; under construction



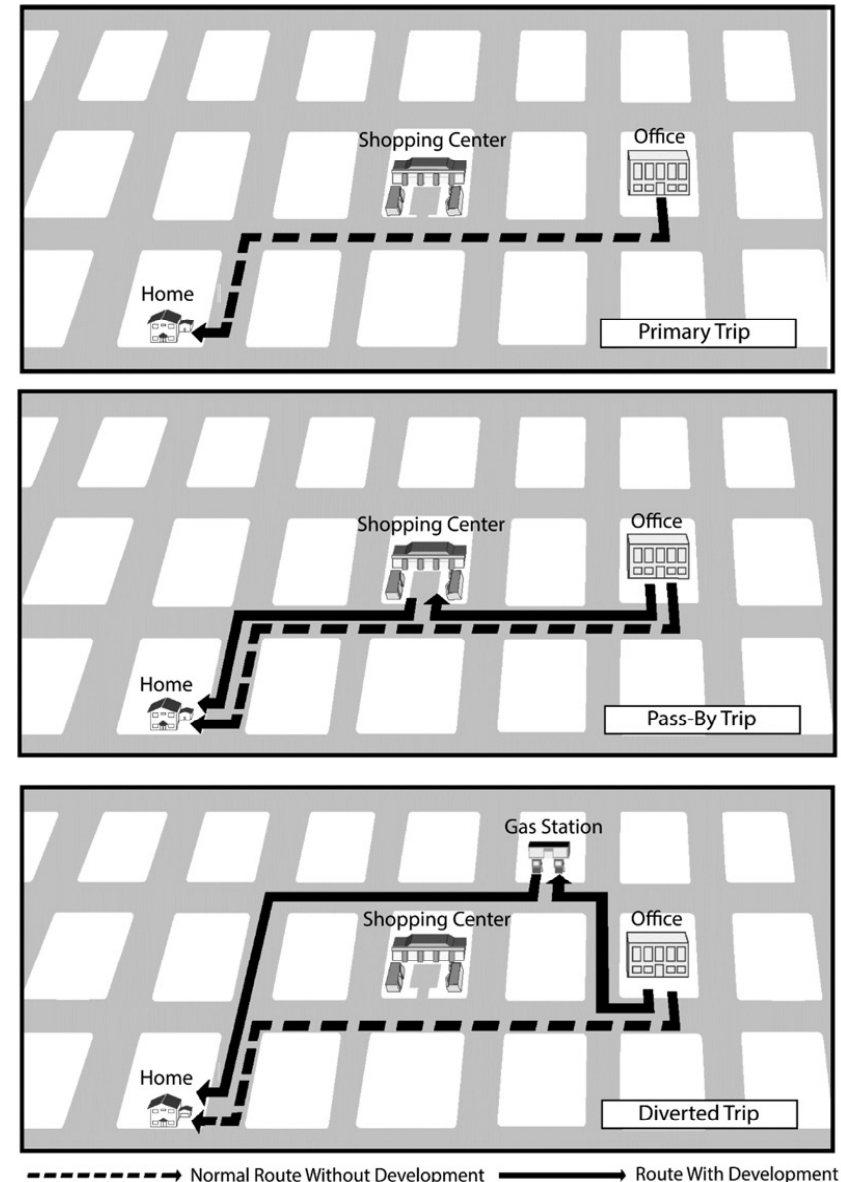
Proposed Development

- **Proposed Gas Station/Liquor Store**
 - 20 fuel pumps
 - 8,100 square foot convenience store
 - 2,900 square foot liquor store
 - Car wash
- **Estimated 3,630 daily trips**
 - 278 in the AM peak hour
 - 230 in the school dismissal peak hour
 - 300 in the PM peak hour
- **Trip generation estimates provided by the developer**
 - Developer conducted their own trip generation study at 86 gas stations of similar sizes in similar areas
 - Typically, the ITE Trip Generation Manual would be used, which only has 10 studies for gas stations with convenience stores



Primary, Pass-by, and Diverted Trips

- **Gas stations generate very few new trips**
 - Approximately 20% based on the ITE Trip Generation handbook
 - The other 80% of trips are pass-by or diverted trips
- **Primary Trips (20%) – 796 daily trips**
 - Trip to gas station is the primary purpose of the trip
- **Pass-by Trips (60%) – 2,388 daily trips**
 - Trip that is already passing the gas station stops at the gas station
 - TH 371 or College Rd for this project
- **Diverted Trips (20%) – 796 daily trips**
 - Trip that is in the area and diverts to the gas station
 - CSAH 48, Cypress Drive or other area roadways for this project



Source: ITE Trip Generation Handbook

Warrant Analysis

- Analyzed all-way stop and traffic signal warrants under 3 scenarios for the College Road and Douglas Fir Dr intersection
 - 2022 Existing
 - 2027 Build Conditions
 - 2047 Build Conditions – includes forecast trips from the 2022 CSAH 48 Corridor Study
- The intersection of College Rd and Douglas Fir Dr is expected to meet Signal Warrant 1 (8 hr) in the year of opening.

Year	All-Way Stop Warrant	Signal Warrant 1 (8-hour)	Signal Warrant 2 (4-hour)	Signal Warrant 1 (Peak Hour)
2024 Existing	Not Met	Not Met	Not Met	Not Met
	0 of 8 hours	0 of 8 hours	0 of 4 hours	0 of 1 hours
2027 Build	Not Met	MET	Not Met	Not Met
	3 of 8 hours	8 of 8 hours	3 of 4 hours	0 of 1 hours
2047 Build	Not Met	MET	MET	MET
	7 of 8 hours	12 of 8 hours	9 of 4 hours	2 of 1 hours

Intersection Operations

- **Analyzed 5 scenarios**
 - 2022 Existing
 - 2027 No Build Conditions
 - 2027 Build Conditions
 - 2032 Build Conditions
 - 2047 Build Conditions – includes forecast trips from the 2022 CSAH 48 Corridor Study
- **College Rd and Douglas Fir Dr/Industrial Park Rd intersection operations**
 - Northbound left turn will have increased traffic demands and delays with the proposed gas station/liquor store
 - 2022 Existing – 11 to 16 seconds per vehicle, LOS B in the AM, school dismissal, and PM
 - 2027 Build – 18 to 32 seconds per vehicle, LOS D in the PM
 - 2032 Build – 21 to 38 seconds per vehicle, LOS E in the PM – traffic control change needed
 - 2047 Build – 29 to 63 seconds per vehicle, LOS F in the PM – traffic control change needed
 - All other movements operate at LOS D or better under all scenarios
 - Based on the high delays for the high number of northbound left turns at the intersection, a traffic signal and roundabout were analyzed at the intersection
- **Under all scenarios, all other intersections and approaches operates at LOS D or better**
 - Some minor movements operated at LOS E at times due to the longer signal cycle at the TH 371/College Rd signal

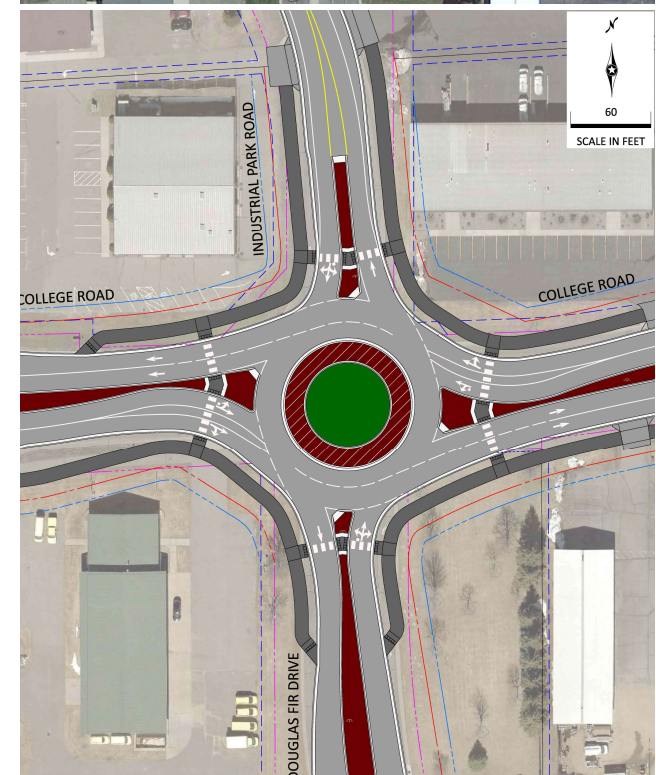
College Rd and Douglas Fir Dr/Industrial Park Rd Improvements

- **Traffic Signal**

- No geometric changes required, just installation of the signal system
- Estimated cost of \$750,000 to \$1 million
- Intersection operates at LOS A through 2047
- Worst movement during each peak hour is LOS C/D
- Would likely be coordinated with the TH 371 signal
- No queuing issues between the two closely spaced signals (650 ft)

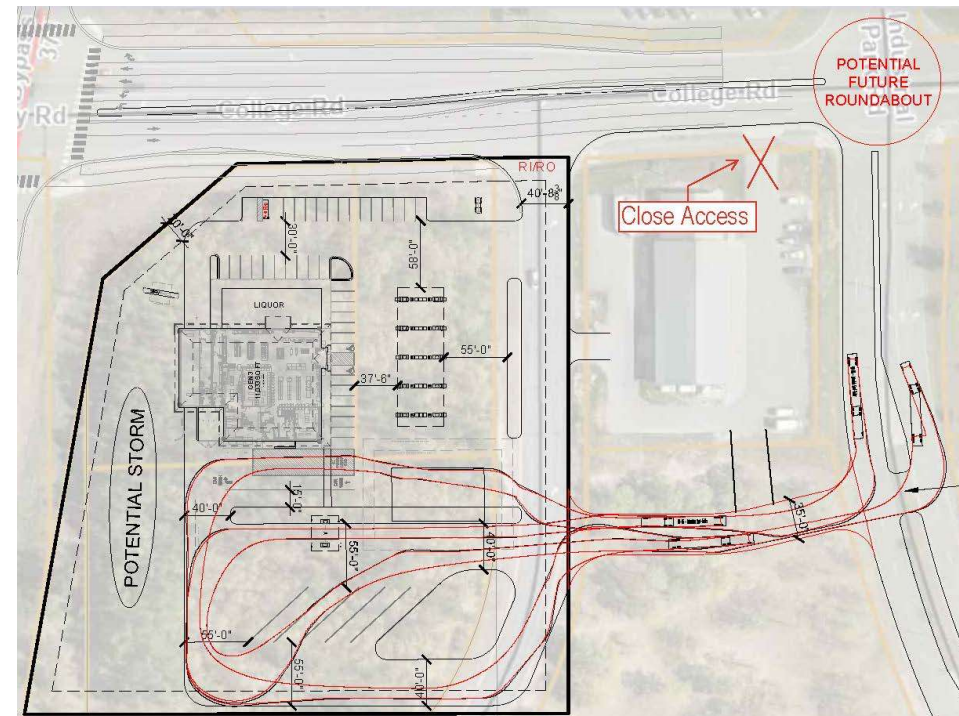
- **Roundabout**

- Would need to be an unbalanced (2x1) roundabout to match the existing College Rd cross section
- Estimated cost of \$2.8 million
- Intersection and each approach operate at LOS A through 2047
- Approximately 3 to 5 seconds of delay less than the signal
- No queuing issues between the two closely spaced intersections (650 ft)



Access Review

- **Two Proposed Accesses**
 - College Rd access – replaces the existing Evergreen Dr right-in/right-out
 - Douglas Fir Dr access – proposed as a full access
- **Proposed access locations acceptable**
 - College Rd right-in/right-out does not technically meet the 1/8 mile spacing required for minor arterials, but right-in/right-out accesses are typically allowed more frequently because they limit disruptions to traffic flow and potential safety concerns
 - Douglas Fir Dr and Evergreen Dr access meet 100-ft spacing guidelines for local roadways
- **Douglas Fir Drive Access**
 - Full access would require a northbound left turn lane on Douglas Fir Dr
 - Driveway could be full access if a roundabout is constructed at College Road
 - Driveway recommended as right-in/right-out only if the College Road intersection is stop-controlled or signal due to the proximity to the College Rd left turn lane



Recommendations

- **Construct a roundabout at the intersection of College Rd and Douglas Fir Dr/Industrial Park Rd**
 - Traffic operations show a traffic control change will be needed within 5 years of the gas station opening
 - Traffic control change warranted in year of opening of the gas station/liquor store
 - The proposed gas station will generate approximately 65% of all of the Douglas Fir approach volumes under 2047 conditions as the area continues to develop
 - Traffic signal will operate at LOS A through 2047 with no queuing issues between the closely spaced TH 371 and Douglas Fir Dr intersections (650 ft)
 - Lower expected fatal and serious injury crashes than the traffic signal because roundabouts slow vehicle speeds and remove crossing conflicts
- **Allow the proposed full access on Douglas Fir Drive**
 - A short northbound left turn lane should be constructed on Douglas Fir Dr

Next Steps

- **Intersection Control Evaluation (ICE) Report for MnDOT Review**
 - The ICE report has been completed and is currently being reviewed by MnDOT
- **Roundabout needs to be constructed in 2027, before the TH 210/TH 371 interchange construction starts in 2028**
 - Design of the roundabout is currently underway

Questions/Comments?