City Council Agenda Item
Staff Report

CITY OF SAN BRUNO

DATE: September 13, 2022

TO: Honorable Mayor and Members of the City Council

FROM: Jovan D. Grogan, City Manager

PREPARED BY: Matthew Lee, Director

SUBJECT: Receive Report on the Crystal Springs Road and Oak Avenue/City Park Way Intersection Control Study

BACKGROUND: Based on the Final Environmental Impact Report (FEIR) prepared for the proposed San Bruno Recreation and Aquatic Center (SBRAC), a Mitigation Monitoring and Reporting Program (MMRP) was formulated. The MMRP for the Transportation and Circulation section states that, “The proposed project would add more than 10 trips to the critical movement of the all-way stop controlled intersection of Crystal Springs Road and Oak Avenue/City Park Way during peak hour and meets the peak hour traffic signal warrant for this intersection during “Existing Plus Project” and “Cumulative Plus Project” conditions.

The Mitigation Measure of the MMRP states that “The San Bruno Walk ’n Bike Plan recommends a mini-roundabout at the Crystal Springs Road and Oak Avenue/City Park Way intersection to simplify the intersection control and calm traffic. However, the plan also noted that this improvement should be further studied to determine the feasibility of a mini-roundabout at this location given the relatively large number of school children activity. Therefore, to reduce the level of service impact at this intersection, either a mini-roundabout (if determined to be feasible) or a traffic signal shall be installed at the Crystal Springs Road and Oak Avenue/City Park Way intersection.”

In June 2022, DKS Associates prepared an Intersection Control Evaluation Technical Memorandum (Study) to select the most cost effective intersection control strategy, based on delay, safety, and cost. The Study is based on guidelines set forth in the State of California Department of Transportation (Caltrans) Intersection Control Evaluation (ICE) Process Informational Guide.

The Study concludes that installing a traffic signal at this intersection is the better option. A copy of the Study is attached as Attachment 1.

Staff presented this item to the TSPC on August 3, 2022 and the TSPC agreed with the conclusion of the Study.

DISCUSSION: In accordance with the San Bruno Municipal Code Section 7.12.010 "Designated Authority", the city engineer of the city shall function as the city traffic engineer. The city traffic engineer shall cause official traffic control devices or signals to be placed or maintained wherever he or she is required or authorized by law to do so.

The existing intersection of Crystal Springs and Oak Avenue/City Park Way is a four-legged intersection and is all-way stop controlled. There are marked high visibility crosswalks on all four legs of the intersection.

The Study included analyzing the existing conditions, level of service (LOS) and crash data. An engineering analysis was performed to assess the changes in level of service and crashes that would result from the intersection control change, and a safety benefit-cost ratio (BCR) was calculated. Also, an engineering review was completed, taking into account factors such as feasibility/constructability, footprint, surrounding context, vulnerable road users and cost, to determine the more effective control for the intersection.

The intersection controls evaluated included the following:
1. All-way Stop (existing)
2. Traffic Signal
3. Mini Roundabout

The Study finds that under the Existing Year traffic conditions, the intersection operates unacceptably at LOS E or worse. With a traffic signal or a roundabout, the intersection is expected to operate at an acceptable LOS B during both AM and PM peak periods under the Existing Year traffic conditions. Under the Horizon Year (2042) traffic conditions, the intersection is expected to continue to operate unacceptably at LOS F. Installing a traffic signal is expected to operate the intersection at an acceptable LOS D or better while a mini roundabout is expected to operate at an unacceptable LOS F.

With a traffic signal, the available storage for queueing in the eastbound approach is exceeded during the AM Peak under Existing (2022) and during both AM and PM peak periods under Horizon year (2042) traffic conditions. Under the Horizon year traffic conditions, the available storage is also expected to exceed for the westbound left-turn movement (during the AM peak) and the westbound through movements (during both AM and PM peaks).

With a roundabout, the available storage is expected to be exceeded during both AM and PM peak periods under the Horizon year (2042) traffic conditions. The queueing length far exceeds the available storage in a roundabout option than a traffic signal option.

The Study finds that the benefit/cost ratio is slightly higher for a traffic signal as compared to a mini-roundabout for the study intersection. This is the result of the initial high cost of a roundabout.

It is also worth mentioning that a mini-roundabout would not accommodate emergency vehicle turn templates due to the restricted radius. Emergency vehicles and trucks taking this intersection would need to drive over the central circle of the mini-roundabout.

Based on the Level of Service (LOS) analysis, queuing analysis, and benefit cost ratio, it is found that installing a traffic signal at this intersection is a better and preferred option.

The Study concludes that taking all of the measure of performance into consideration (delay, operations and maintenance, safety, and initial capital cost), a traffic signal is a preferred option for traffic control at this intersection. Staff is in agreement with the conclusion of the Study.

FISCAL IMPACT: There is no fiscal impact to the City's budget from providing this report. The design and construction of a traffic signal at this intersection is already included in the Oak and Crystal Springs Intersection Improvements project budget.

ENVIRONMENTAL IMPACT: The City Council certified the Environmental Impact Report and Adopted CEQA Findings, Facts, Statement of Overriding Considerations and a Mitigation Monitoring and Reporting for the San Bruno Recreation and Aquatics Center project. Recommended Council action associated with intersection improvements at Oak Avenue and Crystal Springs Road addresses Mitigation Measure TRA-1.

RECOMMENDATION: Receive report on the Crystal Springs/Oak Avenue/City Park Way Intersection Study.

ALTERNATIVES: None.

ATTACHMENTS: 1. Intersection Control Evaluation Technical Memorandum (Study)