1.0 | Project Summary Information

1.1 Project Name (35 letters max) 1800 North and 100 East Signal

1.2 Project Type Intersection Work

1.3 Limits (descriptions should be identifiable; i.e., intersections, place names, landmarks, 35 characters max) 1800 North and 100 East

1.4 Project Description (summary of project) Install a traffic signal to increase traffic and pedestrian safety and reduce traffic congestions on a regionally significant intersection.

1.5 Sponsor (jurisdiction, agency name) Pleasant Grove City

1.6 Contact Information
   Project Manager Marty Beaumont
   Office Phone 801-785-2941
   Cell Phone 801-319-5723
   Fax 801-785-1276
   Email mbeaumont@pgcity.org

1.7 Cost Estimate
   Total Project Cost (include matches, pledged funds, etc.) $380,000.00
   MPO funding request (include any match) $380,000.00
   PE Cost $19,800.00
   ROW Cost N/A
   Construction Cost $225,000.00
   Soft Match proposed for project None Expected

1.8 Project Rank (rank this project compared to your other submittals)
   1

1.9 Air Quality Benefit (summarize CM/AQ Report, NA for non-CM/AQ eligible projects)
   N/A
2.0 | Project Scope
Always enter “NA” rather than leave an answer blank...

2.1 Describe purpose and need of project.
Utah County is in the process of reconstructing the entire 100 East/Canyon Road corridor. As part of the project, underground electrical is being installed for a future signal at 1800 North. Pleasant Grove City has completed traffic studies to merit the signal. This improvement will increase traffic safety for both 1800 North and 100 East/Canyon Road. This intersection also includes a school crosswalk which will significantly benefit from the signal. The City has continuously replaced school crossing guards at this location due to the hazardous nature of the speed and frequency of traffic.

2.2 Describe existing service/conditions
Existing conditions are as follows: 100 East/Canyon Road is unsignalized, 1800 North is stop-controlled. Traffic running speed on 100 East/Canyon Road is quite higher than the posted 40 MPH. Also, due to low gaps during peak hour traffic on 100 East/Canyon Road, EB 1800 North traffic turning left or right onto 100 East/Canyon Road experiences significant queuing.

2.3 Highway Project Information (for non-highway projects go to 2.4)

2.3.1 State Route # or Federal Aid Route #
2889

2.3.2 Beginning Mile Post
N/A

2.3.3 End Mile Post
N/A

2.3.4 Length of project
N/A

2.3.5 Existing and proposed number of Travel Lanes
N/A

2.3.6 Current and proposed width of facility (detail ROW, lanes, shoulders, ped/planter).
With the 100 East/Canyon Road project the County awarded, the ROW on 100 East will be 68 feet wide, this project will not alter that ROW width. The current and proposed ROW width on 1800 North will remain at 66 feet wide. Current and Proposed Lane configuration—North leg: 10' RT turn, 11' thru, 11' LT turn, 11' thru, 6' shoulder; East leg: 50' asphalt width with no pavement striping; South leg: 5' shoulder, 12' thru, 12' LT turn, 12' thru, 5.7' shoulder; West leg: 50' asphalt width with a double yellow solid line delineating traffic lanes. All directions have curb adjacent sidewalk.

2.3.7 Facility surface type.
2.3.8 Describe how project is consistent with local or agency plans.
The project is shown in the Pleasant Grove Transportation Masterplan.

2.3.9 Describe how project incorporates ITS needs.
N/A

2.3.10 If phased or segmented, describe how the phase has logical termini and what will future phases consist of.
This project would not require phasing.

2.3.11 Is project being coordinated with or constructed with a larger project?
No

2.3.12 Describe how project will alleviate congestion on this or other facilities.
In peak hour traffic, queues for left and right turn traffic on EB 1800 North will dissipate faster due to the signal stopping traffic on 100 East/Canyon Road.

2.3.13 Describe any traffic improvements. (i.e lanes, signal coordination, ITS, turn lanes, bus pullouts, etc.)
A signal will enhance safety and traffic flow by providing traffic on 1800 North the ability to turn north or south on 100 East/Canyon Road by reducing the risk of collisions.

2.3.14 Describe any safety improvements for vehicular and pedestrian traffic. (i.e. raised median, channelization of turn movements, barriers, parkway strips, etc.)
N/A

2.3.15 How are complete streets addressed with this project? (plan for pedestrians, bikes, transit, trails, ITS)
The Utah County project to reconstruct 100 East/Canyon Road will include all improvements associated with complete streets.

2.3.16 Describe traffic control changes at intersections. (include info to warrant changes)
The traffic control will be added in the form of a signal. Additional information will be included in the form of a traffic memo.

2.3.17 What right-of-way is already secured?
All right-of-way is acquired.

2.3.18 What additional right-of-way is needed?
No additional right-of-way is necessary.

2.3.19 Describe utility work to be performed and indicate who will do the work.
Utility work for all underground cables and conduits will be completed by the county
project to reconstruct 100 East/Canyon Road. These improvements will be completed by Fall of 2018.

2.3.20 What type of environmental work will most likely be needed?
Choose an item.

2.4 Non-Highway Projects (Transit / ITS / Active Transportation, Park and Ride, etc.)

2.4.1 Transit Route #
Click here to enter text.

2.4.2 Length of project
Click here to enter text.

2.4.3 What is the expected use of the facility or program?
Click here to enter text.

2.4.4 What services are provided in the operating of this project?
Click here to enter text.

2.4.5 Describe any equipment to be purchased (buses, ITS, etc.).
Click here to enter text.

2.4.6 Describe how project is consistent with local or agency plans.
Click here to enter text.

2.4.7 Describe how project incorporates ITS needs.
Click here to enter text.

2.4.8 If phased or segmented, describe how the phase has logical termini and what will future phases consist of.
Click here to enter text.

2.4.9 Is project being coordinated with or constructed with a larger project?
Click here to enter text.

2.4.10 Describe how project will alleviate congestion on this or other facilities.
Click here to enter text.

2.4.11 Describe any traffic improvements. (i.e. lanes, signal coordination, ITS, turn lanes, bus pullouts, etc.)
Click here to enter text.

2.4.12 Describe any safety improvements for transit and pedestrian traffic. (i.e. raised median, channelization of turn movements, barriers, parkway strips, bridges, etc.)
2.4.13 **How are complete streets addressed with this project?** (plan for pedestrians, bikes, transit, trails, ITS)
Click here to enter text.

2.4.14 **What right-of-way is already secured?**
Click here to enter text.

2.4.15 **What additional right-of-way is needed?**
Click here to enter text.

2.4.16 **Describe utility work to be performed and indicate who will do the work.**
Click here to enter text.

2.4.17 **What type of environmental work will most likely be needed?**
Choose an item.

### 2.5 Facility Design

<table>
<thead>
<tr>
<th></th>
<th>Current Conditions</th>
<th>Design Year Click here to enter</th>
<th>Design Year w/o Improvements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Daily Traffic</td>
<td>Enter Text</td>
<td>Enter Text</td>
<td>Enter Text</td>
</tr>
<tr>
<td>Level of Service</td>
<td>Enter Text</td>
<td>Enter Text</td>
<td>Enter Text</td>
</tr>
<tr>
<td>Functional Class</td>
<td>Enter Text</td>
<td>Enter Text</td>
<td>Enter Text</td>
</tr>
<tr>
<td>Design Speed</td>
<td>Enter Text</td>
<td>Enter Text</td>
<td>Enter Text</td>
</tr>
<tr>
<td>*Accident Rate</td>
<td>Enter Text</td>
<td>Enter Text</td>
<td>Enter Text</td>
</tr>
<tr>
<td>Transit Ridership</td>
<td>Enter Text</td>
<td>Enter Text</td>
<td>Enter Text</td>
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<tr>
<td>Ped/Trail Usage</td>
<td>Enter Text</td>
<td>Enter Text</td>
<td>Enter Text</td>
</tr>
<tr>
<td>Park and Ride Usage</td>
<td>Enter Text</td>
<td>Enter Text</td>
<td>Enter Text</td>
</tr>
</tbody>
</table>
3.0 | Project Ranking
The following categories will be used by MPO staff to score each project. The points associated with each category show what total points MPO staff can give. MPO staff’s recommendations will be made available to the MPO TAC Committee for their use in making final project selection recommendations. MPO staff ranking is a tool to aid the MPO TAC Committee in their final selection. The committee is not required to pick projects solely on MPO staff ranks. Please note, if questions pertinent to the project are not answered, zero points will be given.

3.1 Congestion Relief (25 Points)
Explain if the project...

a) Provides an alternate transportation facility that corrects an identified congested problem?
   The project does not provide an alternate transportation facility

b) Reduces congestion by reducing the number of vehicles.
   The project does not reduce the number of vehicles.

c) Reduces the need for additional highway lanes for peak hour capacity.
   The project does not reduce the need for additional highway lanes.

d) Increases the efficiency of transportation system through traffic management measures.
   The project increases the efficiency of the transportation system by managing the traffic at the intersection. The queues will be reduced significantly, especially at peak hour.

e) Adds turning movements to relieve a congested intersection.
   This project will not add turning movements.

3.2 Mode Choice (25 points)
Explain if the project...

a) Benefits multiple transportation systems (transit and highway, pedestrian and transit). This project benefits pedestrian and bicycle traffic by allowing a safe crossing for those alternative modes at the intersection.

b) Promotes alternative transportation solution to SOV use.
   The project will promote alternative transportation solutions by increasing safety.

c) Creates or improves linkages between transportation modes.
   This project does not create linkage between transportation modes.

d) Reduces physical, psychological, or economic barriers to carpool, bike, walk, or transit use.
   This project will reduce physical and psychological barriers to bicycle and pedestrian traffic. The signal will provide a safer crossing to both uses and will create a psychological awareness that
other modes are allowed to utilize the signals to cross the area. Since this intersection is used as a school crossing, it will also increase safety for the children walking to and from school.

e) Provides incentives to carpool, bike, walk, or transit use. This project allows for a safer crossing for bicycle and pedestrian traffic. This provides incentives to use those modes as alternatives.

3.3 Environmental Quality (15 points)
Explain if the project...

a) Provides cost effective emission reductions (air quality score). This project does not provide emission reduction.

b) Minimizes environmental impacts or reduces existing impacts (e.g. air/water/noise pollution). This project does not minimize environmental impacts

c) Enhances the natural, cultural, or historic environment. This project does not enhance the nearby environment.

d) Mitigates invasive impacts to existing neighborhoods/commercial areas (minimal relocations). This project creates very low impact to existing neighborhoods since it will be located within the existing improvements.

3.4 Safety (20 points)
Explain if the project...

a) Corrects/improves a verified or potential safety or accident problem. This signal provides the safety improvements to significantly reduce potential vehicle collision risks.

b) Improves information/communications for traffic operations and emergency responders. This project will provide coordination with emergency responder vehicles.

c) Reduces severity of crashes. This project will reduce the severity of crashes by reducing the speed of approaching vehicles as well as creating stop conditions to traffic on 100 East/Canyon Road.

d) Enhances safe movement of pedestrian, bicycle traffic. This project creates an enhanced ability for pedestrians and bicycle traffic to cross in coordination with the traffic signal.

e) Provides an intermodal safety improvement (e.g. separation of vehicles-trains, vehicles-pedestrian). N/A
3.5 Other Considerations (15 points)
Explain if the project...

a) Effectively distributes funding throughout the MPO area.
   Historically this area of the MPO has not received funding. The benefit of funding this area is that it provides a safe corridor and promotes enhanced traffic flow.

b) Phases project in a manner that the MPO can use limited funds efficiently.
   N/A

c) Additional funding above required match is pledged toward project (including any soft match).
   None expected

d) Project sponsor ranking of project.
   1

e) Project is numbered project within the current RTP.
   No
4.0 | Air Quality Report
All projects that are eligible for CM/AQ and CM/AQ-PM2.5 funds must complete this report. These funds are eligible for projects and programs countywide. Contact Susan Hardy at Mountainland AOG if you need help completing 4.4 Quantitative Analysis below, 801/229-3842 or shardy@mountainland.org.

4.1 Eligibility
CM/AQ funds can only be used for projects and programs that a direct benefit to air quality can be demonstrated. Highway expansion, such as new single occupancy vehicle lanes, is not eligible. Turn lanes at congested intersections, transit programs, pedestrian and trail projects, signal modernization, ITS, and IM programs are typical eligible CM/AQ projects.

4.2 CM/AQ Program
The purpose of the CM/AQ program is to fund transportation projects or programs that will contribute to attainment or maintenance of the National Ambient Air Quality Standards (NAAQS) in Ozone (O₃), Carbon monoxide (CO), Particulate Matter – 10 microns (PM₁₀), and PM₂.₅ non-attainment and maintenance areas. The city of Provo is a maintenance area for CO and Utah County is a non-attainment area for PM₁₀ and PM₂.₅.

4.3 Completing this Report
All projects eligible for CM/AQ funds must complete this report. Completing this report can be quite technical, Susan Hardy, Air Quality Coordinator at Mountainland, can help with filling out this report. Contact her at 801/229-3842 or shardy@mountainland.org

4.4 Quantitative Analyses
A quantitative assessment of how a proposed project or program is expected to reduce emissions is important to assist in selecting the most effective use of this fund. List below all travel benefits directly related to this project. Air quality benefit calculations must utilize Mobile 6. The air quality analysis should include assessing emission reductions of transit, traffic flow improvements, ITS projects and programs, ridesharing, bicycle and pedestrian improvements. Complete at least one of the sections below. If quantitative analyses cannot be done, do a qualitative assessment in 4.3.

a) Vehicle Miles Traveled
Number of Vehicle Miles Traveled reduced (VMT): N/A
Average distance of trips reduced: N/A
Emission reduction per average weekday: N/A

b) Idling Time
Average idling time per vehicle reduced: N/A
Number of vehicles with reduced idling time: N/A
Emission reduction per average weekday: N/A

C) Vehicle Speed
Average change in vehicle speed (speed before and after): N/A
Number of vehicles affected: N/A
Emission reduction per average workday: N/A
4.5 Qualitative Assessment
Although a quantitative analyses of air quality impacts is required whenever possible, some improvements may not lend themselves to rigorous quantitative analysis, because of the projects characteristics or because practical experience is lacking to adequately analyze the project. In these cases, a qualitative assessment based on a reason and logical examination of how the project or program will decrease emissions and contribute to attainment or maintenance of a NAAQS is appropriate.
N/A
5.0 | Project Cost Estimate
To development a project cost estimate, please supply a detailed cost breakdown of your unit costs, inflation, equipment, right-of-way, contingency, etc. To do so, use the Concept Costs Estimate Excel form provided by UDOT (available on Mountainland.org website). Non-construction projects such as equipment purchases, operations, administration programs, studies, etc. can use other methods to show their estimated costs. All sheets or methods used should be submitted as part of the Supplemental Information accompanying the Concept Report.

5.1 Cost Summary
Summarize the information from the Costs Estimate Excel form or other method. Enter NA for items that do not apply to the project.

- a) Preliminary Engineering $19,800.00
- b) Environmental Work $0
- c) Construction $225,000.00
- d) UDOT Review (project cost <$500k = $5k, >500K = $10k) N/A
- e) Construction Engineering $24,750.00
- f) Subtotal (in today’s dollars) $323,000.00
- g) Inflated Cost Factor (inflate to 2022) $380,000.00
- h) Total 2022 Cost $380,000.00
- i) Non-MPO Funds Available to Project $25,726.00
- j) MPO Funding Request (includes 6.77% local match) $354,274.00

6.0 | Supplemental Information
Please submit any supporting documentation including maps, diagrams, charts, cost estimates, etc. that will allow MPO and UDOT staff and any Technical Advisory Committee to make an informed decision regarding the proposed project. **Keep Supplemental Information submittals to 8 pages total.**

6.1 Concept Report Submittal
In order to facilitate the distribution of the Concept Reports and any supplemental information, **all Concept Reports shall be combined with any supplemental information and saved in PDF format as one document.** Please note that this might create a large data file that might be too large to emailed. Plan accordingly to submit your report in electronic format (CD, DVD, Flash Drive) by the required due date. **Concept Reports are due by March 8, 2018 at 6pm.**

6.2 Contacts, Questions
For help with the Concept Report or questions, please contact:

Bob Allen  
801/229-3813  
rallen@mountainland.org

Shawn Eliot, AICP  
801/229-3841
## Proposed Project Scope:

Installation of traffic signals for all approaches of the intersection

### Construction Items

<table>
<thead>
<tr>
<th>Public Information Services</th>
<th>$0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roadway and Drainage</td>
<td>$0</td>
</tr>
<tr>
<td>Traffic and Safety</td>
<td>$225,000</td>
</tr>
<tr>
<td>Structures</td>
<td>$0</td>
</tr>
<tr>
<td>Environmental Mitigation</td>
<td>$0</td>
</tr>
<tr>
<td>ITS</td>
<td>$0</td>
</tr>
</tbody>
</table>

Subtotal: $225,000

Items not Estimated (10%): $22,500

Construction Subtotal: $247,500

### P.E. Cost

P.E. Subtotal: $19,800 (10%)

### C.E. Cost

C.E. Subtotal: $24,750 (10%)

### Right of Way

Right of Way Subtotal: $0

### Utilities

Utilities Subtotal: $0

### Incentives

Incentives Subtotal: $0

### Miscellaneous

Miscellaneous Subtotal: $0

### Cost Estimate (EPM screen 505)

<table>
<thead>
<tr>
<th></th>
<th>2018</th>
<th>2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>P.E.</td>
<td>$20,000</td>
<td>$23,000</td>
</tr>
<tr>
<td>Right of Way</td>
<td>$5,000</td>
<td>$6,000</td>
</tr>
<tr>
<td>Utilities</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Construction</td>
<td>$248,000</td>
<td>$294,000</td>
</tr>
<tr>
<td>C.E.</td>
<td>$25,000</td>
<td>$28,000</td>
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<tr>
<td>Incentives</td>
<td>$0</td>
<td>$0</td>
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<tr>
<td>Aesthetics</td>
<td>$2,000</td>
<td>$2,000</td>
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<tr>
<td>Change Order Contingency</td>
<td>$23,000</td>
<td>$27,000</td>
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<tr>
<td>UDOT Oversight</td>
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<td>$0</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>$0</td>
<td>$0</td>
</tr>
</tbody>
</table>

TOTAL: $323,000

### PROPOSED COMMISSION REQUEST

TOTAL: $380,000

---

## Project Assumptions/Risks

1. [Blank]  
2. [Blank]  
3. [Blank]  
4. [Blank]  
5. [Blank]  
6. [Blank]  
7. [Blank]  
8. [Blank]  
9. [Blank]  
10. [Blank]  
11. [Blank]  
12. [Blank]  
13. [Blank]  
14. [Blank]
Subject: Canyon Road & 1800 North Traffic Signal Analysis

The purpose of this memorandum is to present the findings of the traffic signal study performed for Pleasant Grove City. The study area is the intersection of Canyon Road and 1800 North as shown in Figure 1. The purpose of the study was to analyze the existing intersection conditions and provide recommendations to improve traffic operations and safety.

Intersection Characteristics

The study location is the intersection of Canyon Road and 1800 North. Canyon Road is a north-south arterial with a single through lane in each direction. The south leg has a center two-way left-turn lane. Both approaches have a dedicated left-turn lane. The posted speed limit on Canyon Road is 40 MPH. 1800 North is an east-west collector with a single through lane in each direction and no TWLTL. The posted speed limit on 1800 North is 25 MPH. There is a marked school zone crossing with a reduced speed school zone across the south leg of the intersection that serves Manilla Elementary School.
Data Collection

A site visit was conducted on Wednesday, February 14th, 2018 to evaluate the sight distance of each approach. There are no sight distance concerns. The intersection is planned to be reconstructed in the future which will include new sidewalk improvements on the northwest corner.

Peak Hour Turning Movements

Per the proposal, peak period turning movement count data were collected for the AM peak period (7:30 AM – 9:00 AM) and the PM peak period (4:45 PM – 6:15 PM). The periods for data collection were determined using UDOT’s Signal Performance Metrics at nearby signalized intersections. A summary of the peak hour volumes is shown in Table 1. Complete peak hour volumes can be found in the appendix of this report.

<table>
<thead>
<tr>
<th>Peak Period</th>
<th>Peak Hour</th>
<th>Canyon Road Northbound</th>
<th>Southbound</th>
<th>1800 North Eastbound</th>
<th>Westbound</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM</td>
<td>7:30 AM to 8:30 AM</td>
<td>74 Left 378 Thru 3 Right 8 517 Thru 7</td>
<td>1 Thru 4 Right 136</td>
<td>4 Thru 9 Thru 19</td>
<td></td>
</tr>
<tr>
<td>PM</td>
<td>5:15 PM to 6:15 PM</td>
<td>74 Left 579 Thru 15 Right 15 448 Thru 13</td>
<td>3 Thru 13 Right 92</td>
<td>11 Thru 10 Thru 11</td>
<td></td>
</tr>
</tbody>
</table>

Crash Data

Crash data for the previous three years were obtained from the UDOT Traffic and Safety Division. A review of crashes reported from January 2015 through December 2017 revealed a total of 8 crashes, 4 of which could be corrected by a traffic signal (angle, head-on, sideswipe opposite direction) as summarized below:

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Crashes</th>
<th>Severe Crashes</th>
<th>Manner of Collision</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Angle Front to Rear Single Vehicle</td>
</tr>
<tr>
<td>2015</td>
<td>3</td>
<td>0</td>
<td>1 1 1</td>
</tr>
<tr>
<td>2016</td>
<td>2</td>
<td>0</td>
<td>1 1 1</td>
</tr>
<tr>
<td>2017</td>
<td>3</td>
<td>0</td>
<td>2 0 1</td>
</tr>
</tbody>
</table>

Analysis

Signal Control

An analysis was performed using the procedure outlined in the Utah MUTCD Chapter 4C to determine if a traffic signal is warranted at the study location. The following assumptions, observations and findings of the signal warrant analysis is summarized below:

- The Utah MUTCD allows for the use of the 70 percent values of the traffic volume criteria in the warrant analysis where speeds are found to be above 40 mph on the major street. Since the posted speed limit on Canyon Road is 40 MPH, the 70 percent threshold may be applied to warrant a signal.
- Since there are not dedicated right-turn lanes, right-turn volumes were included in the analysis.
- A maximum queue of 8 vehicles was observed on 1800 North for the eastbound approach. The queue cleared regularly.
• Since only peak period volumes were collected, Warrant 3 (Peak Hour) was the only volume based warrant analyzed. The existing vehicular volumes meet the warrant threshold for the peak hour warrant using the 70 percent volume criteria.

• Warrant 4 (Pedestrian Volume) requires at least 75 (OR 107 for 100%) pedestrians crossing the major street per hour for any four hours or at least 93 (OR 133 for 100%) pedestrians crossing the major street per hour during a peak hour. Neither criteria was met. Therefore, Warrant 4 (Pedestrian Volume) is not met.

• Warrant 5 (School Crossing) requires that the number of adequate gaps in the traffic stream during the period when schoolchildren are using the crossing is less than the number of minutes in the same period and there are a minimum of 20 schoolchildren during the highest crossing hour. There were 22 pedestrians observed using this crossing during the after school period. The crossing distance of the school crosswalk is approximately 54 feet. Assuming a child walking speed of 3 ft/sec and a perception/reaction time of 5 seconds, the minimum usable gap time required for a child to cross is 23 seconds. Gap data was not collected as part of the proposal but a shortage of gaps was observed across Canyon Road. Therefore, Warrant 5 (School Crossing) is inconclusive but it is anticipated this warrant would also be met.

• Warrant 7 (Crash Experience) requires the following criteria to be met:
  o Adequate trial of alternatives with satisfactory observance and enforcement has failed to reduce the crash frequency; and
  o Five or more reported crashes, of types susceptible to correction by a traffic control signal, have occurred within a 12-month period.
  o The 80 percent volume criteria as outlined in Section 4C.08 of the Utah MUTCD is met for each of any 8 hours of an average day.

• The crash history does not show that five or more crashes correctable by a signal occurred within a 12 month period. Therefore, Warrant 7 (Crash Experience) was not met.

• Warrants 6, 8, and 9 were not examined since they are not relevant to this particular intersection.

Recommendations

Based on the results of the analysis, a traffic signal is warranted at the study location.

With the addition of a traffic signal at this intersection, the Reduced Speed School Zone (20 MPH when flashing signs) should be removed in accordance with the Utah MUTCD Section 7A.03 (paragraphs 18 & 19). The reduced speed limit would no longer be necessary since pedestrians would only enter the crosswalk when the traffic has stopped for the signal.

With the addition of a traffic signal, it is also recommended that left turn-bays be striped on the eastbound and westbound approaches. Doing so will allow the signal to operate more efficiently.

If you have any questions or do not agree with our conclusions, please contact us. Thanks.
### Signal Warrants - Summary

<table>
<thead>
<tr>
<th>Major Street Approaches</th>
<th>Minor Street Approaches</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Northbound:</strong>  Canyon Rd</td>
<td><strong>Eastbound:</strong>  1800 N</td>
</tr>
<tr>
<td>Number of Lanes: 1 85% Speed &gt; 40 MPH.</td>
<td>Number of Lanes: 1 Total Approach Volume: 332</td>
</tr>
<tr>
<td>Total Approach Volume: 1,546</td>
<td></td>
</tr>
<tr>
<td><strong>Southbound:</strong>  Canyon Rd</td>
<td><strong>Westbound:</strong>  1800 N</td>
</tr>
<tr>
<td>Number of Lanes: 1 85% Speed &gt; 40 MPH.</td>
<td>Number of Lanes: 1 Total Approach Volume: 83</td>
</tr>
<tr>
<td>Total Approach Volume: 1,470</td>
<td></td>
</tr>
</tbody>
</table>

### Warrant Summary  
(Rural values apply.)

- **Warrant 1 - Eight Hour Vehicular Volumes**
  - Not Evaluated
  - **Warrant 1A - Minimum Vehicular Volume**
    - Not Evaluated
  - **Warrant 1B - Interruption of Continuous Traffic**
    - Not Evaluated
  - **Warrant 1C - Combination of Warrants**
    - Not Evaluated

- **Warrant 2 - Four Hour Volumes**
  - Not Evaluated

- **Warrant 3 - Peak Hour**
  - Satisfied
  - **Warrant 3A - Peak Hour Delay**
    - Not Satisfied
  - **Warrant 3B - Peak Hour Volumes**
    - Satisfied

- **Warrant 4 - Pedestrian Volumes**
  - Not Satisfied

- **Warrant 5 - School Crossing**
  - Not Evaluated

- **Warrant 6 - Coordinated Signal System**
  - Not Evaluated

- **Warrant 7 - Crash Experience**
  - Not Satisfied

- **Warrant 8 - Roadway Network**
  - Not Evaluated

- **Warrant 9 - Intersection Near a Grade Crossing**
  - Not Evaluated
Signal Warrants - Summary

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Warrant Curves
- Peak Hour Warrant
- Four Hour Warrant
(Rural, 1 major lane and 1 minor lane curves used)

Analysis of 8-Hour Volume Warrants:
- War 1A-Minimum Volume
- War 1B-Interruption of Traffic
- War 1C-Combination of Warrants