

### Effective April 4, 2016

The Roadside Safety Analysis Program (RSAP) utilizes variable factors that directly influence the outcomes of the analysis. The following sections provide requirements for RSAP submittals to WSDOT, including changes to certain values, settings and acceptable manner of submittals. These requirements are broken out according to the different sections or tabs within RSAPv3. Unless otherwise specified below, the default factors in the RSAPv3 should be used.

### Project

Design Life should be listed as the life of the franchise under which the facility is located – usually 25 years. If the facility is not located under a WSDOT franchise, consult with the Region Utilities Office on the appropriate design life.

### Traffic

Traffic Growth Rate varies from location to location based on the character of the area. Consult with the Region Utilities Office on the appropriate traffic growth rate for the area.

% Trucks – If unknown, consult with the Region Utilities Office.

### Highway

RSAP allows users to define the length of highway segment to be evaluated. For WSDOT submittals, the length of highway segment for each analysis should be defined according to the following parameters:

- The total segment to be evaluated under an individual RSAP analysis must only contain **10 or less** above-ground utility objects<sup>1</sup>; Multiple analysis may be submitted within a single submittal if more than 10 objects are to be evaluated using RSAP.
- The segment should begin 200 feet before the first object and end 200 feet after the last object.
- Multiple sub-segments should be defined for an individual analysis if any highway characteristics, such as slope, curves, number of lanes, etc. are different within the above-described parameters.

### Alternatives

RSAP is capable of assessing up to 5 alternative actions per analysis. Appropriate alternatives selected for the analysis should be determined by the utility, but verified with the Region Utilities Office **before** the analysis is performed. This is intended to eliminate instances of re-submittal if all appropriate alternatives may not have been considered, and/or inform WSDOT in advance on why certain alternatives are not practicable and therefore should not be evaluated.

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<sup>1</sup> Only above-ground utility objects that are not compliant with control zone requirements need to be included. For example, objects less than 4 inches high from the ground, property shielded by guard rail with the appropriate offset distance or certified as break-away would not need to be included in the analysis.

Individual hazards within the highway segment should be limited to the utility objects only. Other hazards that may be located within the 200 feet before and after areas, as described in the “Highway” section, above, should not be listed for the purpose of the analysis. Those objects may be addressed through a separate analysis for the adjoining highway segment.

When filling in data about the nature of the hazard being considered, RSAP automatically assigns a value of 12 inches as the diameter for utility poles when they are selected from the drop down menu. This value should be changed as follows: Unless actual field measurements will be entered, a standard dimension of 14 inches may be entered for Distribution poles and a standard dimension of 20 inches may be entered for Transmission poles. In cases where larger poles or alternative pole structures occur in a run of poles or at significant locations, such as a pivot points or when oversize poles have been placed to eliminate guy lines, those poles should be field measured and actual dimensions entered into RSAP.

Costs associated with each alternative should be estimated according to the utility’s standard methodology for estimating projects or alterations. Because these cost estimating methodologies are outside of WSDOT’s control and vary widely, the utility must certify that the scope and costs are accurate, as further specified in the “Applicant Endorsement” section, below.

## X-Section

An accurate cross-section must be plotted for the highway segment. If the segment contains varying slope characteristics, multiple cross sections should be plotted accordingly per sub-segments.

## Hazards

This section establishes costs for repair and maintenance associated with different types of infrastructure, including utility poles and guardrail. The default value for utility pole repair after a crash is \$5,000. The utility may alter this amount to reflect more accurate costs for its infrastructure, if known.

Similarly, if guardrail is included as an alternative measure, costs associated with a particular type of guardrail design should be updated to reflect WSDOT’s typical maintenance and repair costs. The type of guardrail that will primarily be used for the purposes of utility RSAP submittals is identified by RSAPv3 as “TL3WbeamGR”. **The “Typical Repair Cost/Crash” for this type of guardrail should be changed to \$2,250.**

For other types of guardrail, WSDOT will provide these updates after jointly determining the type of guardrail that should be used as described above in the “Alternatives” section.

Note: Altering data in this section of RSAP is done by pressing Control-Shift-H; making changes; and pressing Control-Shift-E to activate the changes. **If any information apart from the specified guardrail repair costs are altered, the changes and explanation for the changes must be clearly stated within the written summary accompanying the RSAP submittal.**

## Analyze

The default within the “Analyze” settings for the Maximum Trajectories for each Encroachment Location is 200. This value may be reduced to as low as 50 at the discretion of the utility. Reducing this value will sometimes allow the analysis to run more quickly.

**The “Risk Analysis” option within the settings must be checked.** as risk associated with the preferred alternative will be considered as part of WSDOT’s review.

## Results

Once the analysis is complete, B/C results will be shown in the B/C results tab. RSAPv3 has a default of 2 as the “Decision Point Benefit Cost Ratio”. This value must be changed to 1, after which the B/C ratio will automatically be recalculated.

The Risk results will be shown in the “Risk” tab under Results. RSAP’s default risk analysis bases results on the probability of fatal or incapacitating crashes (represented in RSAP as “A+K” crashes). WSDOT is interested in knowing the probability of any injury-causing crashes associated with each alternative, which requires the following modifications to the default risk values:

In the “Crash Severity” cell at the top of the page, the default selection is “A+K”. From the drop-down menu in the Crash Severity cell, select “Injury.” After this is completed, the Maximum Acceptable Risk value should be changed from the default 0.01 to .0075.

## Method and content of submittals

The preferred method of RSAP submittals will be via USB flash drive accompanied by a written summary of the analysis. Other forms of comparable electronic submittal, including the use of FTP sites, may be acceptable as long as WSDOT utilities staff can easily access the files. E-mail submittals are not feasible given the large size of the RSAP files. The electronic submittal must contain the full RSAP analysis in the form available through RoadSafe LLC. The written summary should list the alternatives considered, an itemized estimate supporting the costs associated with each alternative, an overview of the results – both Benefit/Cost and Risk, and an explanation of any unique aspects of the analysis as necessary.

## Applicant Endorsement

All RSAP submittals must include the attached form signed by a duly authorized representative of the utility in order to be considered. Documentation may be requested by WSDOT that verifies the signature authorization is appropriately delegated.

**Applicant Endorsement  
Scope and Cost of Alternatives within the Roadside Safety Analysis Program**

**Applicant:** \_\_\_\_\_

**Utility Franchise/Permit No:** \_\_\_\_\_

I hereby affirm that the scope of work and costs associated with each alternative strategy assessed as part of the attached analysis is a true and correct representation of the design and scope necessary to implement each alternative according to the utility's own minimum design standards, jurisdictional requirements, local conditions, and applicable industry standards; none of the alternatives were designed to include betterments, system upgrades, superfluous design elements, or other factors that would tend to inflate the associated cost of each alternative beyond minimum design and construction requirements necessary to accomplish the intended alternative.

**By:** \_\_\_\_\_

\_\_\_\_\_  
**Print Name**

**Title:** \_\_\_\_\_

**Date:** \_\_\_\_\_