

Seattle Public Utility Risk Management

Question from Customer Review Panel member: *What are SPU's risk thresholds for its projects and assets – i.e., what is a small risk? A large risk?*

SPU Response

What is Risk?

Risk is the potential for the occurrence of an adverse event. Its significance is determined jointly by the magnitude of its consequences and the likelihood of its occurrence.

Seattle Public Utilities considers risk in all its business operations and decisions. SPU's approach to risk management is to consider it as an actuarial liability, or risk cost. SPU strives to optimally balance the beneficial value of risk reduction against the cost of risk reduction in order to achieve overall utility cost minimization.

Projects & Proposals

- Risk assessments are done as a part of the Business Case when evaluating project or program options
- The process estimates risk costs and the costs of implementing control measures
- The assessment compares the costs, including risk cost among options
- Project construction risk costs are estimated to help set appropriate contingency amounts for project cost estimates and budgets

When data is available on likelihood and consequences, risk cost is estimated as an expected value. Usually, it is the product of a simple estimate of likelihood and consequence. Occasionally, when multiple events and probability distributions are involved, and the magnitude of the decision is significant enough to warrant complex analyses, risk cost is estimated using Monte Carlo simulation.

Risk cost estimates are incorporated in Business Cases when the likelihood or consequences of adverse events are significant. Risk costs typically arise due to infrastructure or operational failures, as a result of internal or external, natural or human root causes.

Examples of Risk Assessment on Projects

Examples of projects where risk cost reduction was the primary project objective include:

- Hardening of Cedar River Pipelines at Ginger Creek (70% of water supply transmission flows) to withstand expected extreme seismic events

- Construction of an emergency pumping facility at Chester Morse Lake to access storage below the natural lake outlet in the event of severe drought conditions
- Cathodic protection of steel reinforced concrete water transmission pipelines to prevent sudden catastrophic failure due to hidden corrosion
- Construction of slope stabilization bulkheads and structures to prevent landslides that would damage property or injure people
- Determining rehabilitation and replacement timing of aging water and sewer pipelines based upon likelihood and consequence of failure
- Replacement of chlorine gas with liquid sodium hypochlorite for disinfectant of drinking water
- Installation of security measures and procedures at critical SPU facilities

Objectively incorporating project or program risk cost in our expenditure decisions helps SPU deliver the greatest net benefit to the community.