

**AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION**

JURISDICTION:	WASHINGTON	DATE PREPARED:	05/20/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Heather Rosentrater
REQUESTER:	Public Counsel	RESPONDER:	Peggy Blowers
TYPE:	Data Request	DEPT:	Asset Management
REQUEST NO.:	PC - 341	TELEPHONE:	(509) 495-4789
		EMAIL:	Peggy.Blowers@avistacorp.com

REQUEST:

Please refer to Avista's response to Public Counsel Data Request No. 326, in which Avista explains the workings of its economic end-of-life model. Also refer to Avista's response to Public Counsel Data Request No. 307, subpart (b), which explains that Avista uses its economic end-of-life model to determine the appropriate age at which to replace assets of a particular type. Provide a list of independent, professional organizations, such as IEEE; EPRI; ISO (55002 Asset Management; 31000 Risk Management); IEC (31010 Risk Assessment); or any other independent, professional organization which endorses the economic end-of-life approach to asset replacement timing Avista follows.

RESPONSE:

Lifecycle cost analysis, as properly performed by Avista, produces financial results that help an organization determine how to manage their assets in the least costly manner, while meeting a range of business-critical objectives. Whether it's when an asset fails, or it's worn out and fails testing, or it's reached a point in its service life when keeping it in service longer begins to add unnecessary costs, then the asset has reached the "End of Life," or "End of Useful Life," or "Economic Optimum," or "Economic End of Life," or "Lowest Lifecycle Cost." It doesn't matter what name or term you use to describe that point, it's simply the point where you remove the asset from service, because keeping it in service longer is wasting your money or your customers money.¹ The term "Economic End of Life" is used by Avista to help you understand how a cutout that is typically run to fail, with failure being the economic optimum in the default case, can have a different, lower-cost economic optimum if the default conditions, such as replacement cost or risk costs, that led to its initial designation, change. It's the Lifecycle Cost Analysis process that is paramount, not the terminology that an organization uses to describe the point of its lowest lifecycle cost.

Following is a summary of the independent, professional organizations, etc., that endorse various elements of Lifecycle Cost Analysis in the manner performed by Avista.

1. Avista follows the **Institute of Asset Management Subject Specific Guidance** manuals number 16, titled "**Reliability Engineering**," and number 8, "**Lifecycle Value Realisation**" as the primary frameworks and guides for its lifecycle costs analyses, including its determination of economic end of life, and the other analyses we have presented to Public Counsel.
2. These **Subject Specific Guidance** manuals comport with the **International Standards for Asset Management, PAS-55 and ISO 55000**, etc., which international standards the **Institute of Asset Management** was instrumental in leading and supporting in their development and implementation.
3. **Subject Specific Guidance** manual number 8, "**Lifecycle Value Realisation**," lists on page 10, the following statement: The 'end of life' can be determined in several ways, which three approaches are listed and briefly described in the image excerpt from that page, below.

¹ Even when there is remaining service life

“Economic end of life” as defined by the Institute of Asset Management, which practices are congruent with the ISO and PAS international Asset Management Standards, and which has been defined and properly implemented by Avista, is a mainstream application of lifecycle cost analysis, used to determine the replacement strategy that allows us to deliver service to our customers at the reasonably lowest optimized cost.

The ‘end-of-life’ can be determined in several ways, for example:

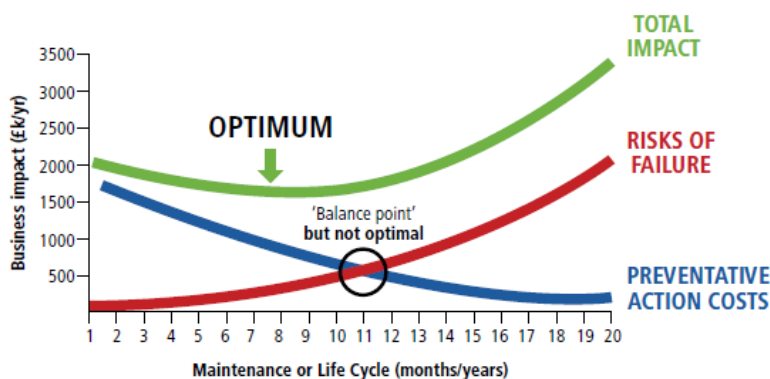
- The technical: where ‘useful’ or functional life refers to the period of asset capability in relation to functional need.
- The economic; where life is derived from an analysis of functional benefits (e.g. revenues) versus the costs and risks of ongoing ownership.
- The book life; where there is often an accountancy or ‘book’ life that is calculated from generic depreciation and taxation treatments of the capital investment and its balance sheet impact.

Institute of Asset Management, Subject Specific Guidance (SSG) Manual number 8, “Lifecycle Value Realisation,” page 10.

4. The **Institute of Asset Management** is widely recognized as the leading professional association advancing the policies, science and practices of asset management. **Avista has been a member** of the Institute of Asset Management since 2006.
5. The **Availability Workbench** application used by Avista is consistent with, and supportive of the IAM documentation for performing Failure Analysis and Comprehensive Lifecycle cost analysis, consistent with Avista’s response to PC-DR-332.
6. Following is a clip from the Institute of Asset Management’s “Reliability Engineering” Subject Specific Guidance Handbook – 16, illustrating Avista’s practice of conducting lifecycle cost analysis, referred to in the manual as Cost Risk Optimization (CRO).

5.9.2 When is it used?

CRO is often used for long term investment planning activities to model the impacts of multiyear factors and look for optimal solutions as to when to repair, refurbish, or replace assets while maintaining an acceptable risk profile and balancing multiple constraints. These techniques can be focused on organisational processes (Bayesian approach) or specific assets, or groups of similar assets modelled together based on specific shared characteristics or individual asset characteristics.



Following, is some additional supporting evidence of the independent, professional organizations, etc., that endorse Lifecycle Cost Analysis in the manner performed by Avista.

“Weibull Analysis Handbook,” - An early reference to the emerging science of Lifecycle Cost Analysis, which is titled “Weibull Analysis Handbook,” and which was relied upon by Avista early in its efforts to develop a home-made Weibull failure distribution tool, as described in our response to PC-dR-332, is provided in PC-DR-341 Attachment A. The publication, from 1983, was a joint effort involving Pratt & Whitney Aircraft, reporting methods that had been used in modeling aircraft engine failures (typically high consequence costs), but which had not been published prior to that time. This technical provides a substantial foundation for understanding the construction, interpretation and use of the failure characteristics of assets as one fundamental elements of lifecycle cost analysis.

Institute of Asset Management - The subject request naturally mentions the ISO standards for Asset Management, which followed development of the first international standard for asset management, PAS 55, which pioneering work was led by the Institute of Asset Management (IAM). The Institute of Asset Management, headquartered in England, also played a key role in the development of the ISO standards, which were inaugurated in London in 2014. The Institute of Asset Management is widely recognized as the leading professional association advancing the policies, science and practice of asset management. Avista has been a member of the Institute of Asset Management since 2006. A clip of the IAM website is provided below, accessible from the link [IAM - About the IAM](#)

IAM “Subject Specific Guidance” - One of the many functions of the Institute of Asset Management has been their collaboration with other organizations to develop consensus on the major subject areas within asset management, which 39 subject areas are intended to describe the complete scope of topics under the discipline. The Institute of Asset Management has focused on the development and distribution of ‘how to’ manuals, referred to as “Subject Specific Guidance” for each of these 39 Areas, to help organizations achieve greater asset management capability and competency. These manuals, like all of the IAM practices flow directly from the International Standards noted above, which IAM was instrumental in leadership and support for implementation.

You can see the individual Subject Specific Guidance posted for sale on the IAM website shown below by ‘clicking’ on the “SHOP” icon on the right of the header bar. Avista has an extensive library of these Subject Specific Guidance, which listing, among other reference documents retained by the Company, is provided in the image that follows the IAM webpage, below.



- About Us**
- Membership
- Qualifications
- Professional Development
- Knowledge
- Chapters
- News
- Events
- Shop
- Directories

About the IAM

- About the IAM
- Vision & Strategy
- Governance
- Collaboration
- Patrons
- Documents & Reports

The Institute of Asset Management (the IAM) is the international professional body for asset management professionals.

The IAM develops asset management knowledge and best practice, and generates awareness of the benefits of the asset management discipline for the individual, organisations and wider society.

Established in 1994, the IAM currently has over 2000 Individual and 300 Corporate Members and a network of over 30,000 people globally.

The Institute of Asset Management (the IAM) is a not-for-profit, professional body. We are owned and controlled by our members and committed to remaining independent from commercial and trade associations.

We exist to advance the discipline of asset management, not only for people and organisations involved in the acquisition, operation and care of physical assets but also for the benefit of the general public.