



Who is BIS Consulting

BIS Consulting provides asset management consulting services to electric utilities who need premium analytical support for critical and highly visible decisions.

We emphasize quantitative methods and business cases that resonate with executives, regulators, and other stakeholders.

- How much should I spend, on which assets?
- How can I communicate needs to non-technical decision makers?
- How can I prioritize across assets and business lines?



Our clients value our independent perspective: we specialize in asset management only, so we have no conflict of interest regarding the outcome of our analyses.

Underground Cable Assessment

Aging distribution cable is a problem faced by all electric utilities. The insulation on XLPE insulated cable installed starting in the 1960s has begun failing. This affects reliability and sets the stage for aggressive intervention: injection to refurbish the insulation, replacement with modern cable, or testing.

The case for intervention rests on three arguments: increasing faults are affecting reliability; concentric neutral is corroding, which could create a safety hazard; and cable has reached its service life, so intervention is due.

Teaming with our clients' subject-matter experts and asset managers, we jointly develop economic-life models, helping them optimize their cable programs, balancing the trade-off between the cost due to increasing risk of failure as cables age against the benefit of delaying capital expenditures.

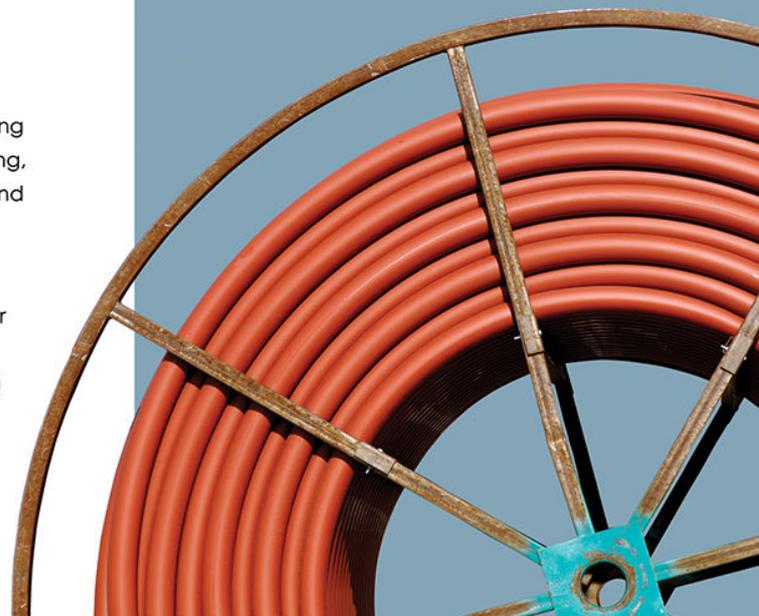
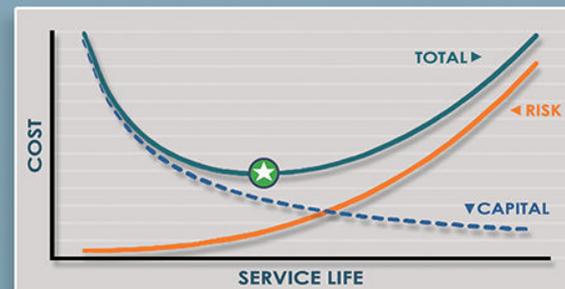
Our clients use these tools to identify the strategy that minimizes total life-cycle cost, including cost to customers. Deliverables may include:

- Business case, suitable for regulators
- Replace/inject decisions.
- Evaluation of repair programs.
- Benefit/cost assessment of testing.

Optimizing the life-cycle cost of an asset

requires balancing the trade-off between the benefit of delaying capital expenditures as long as possible against the increasing risk of failure as the cable ages. The optimal service life minimizes life-cycle cost. It is asset specific, depending on age and type, but also consequence of failure and intervention cost.

Life Cycle Cost • Balance Capital and Risk



Examples of Cable Evaluation Experience:

Portland General

Portland General Electric serves over 800,000 customers in Western Oregon. As part of their Strategic Asset Management Program development in 2013, they developed an economic life model to evaluate cable. Because PGE's field crews have collected detailed failure data going back nearly 40 years, robust and customized correlations between age and insulation type were possible.

PGE's cable model recommended a large program of replacement and injection. This work was approved at the executive level, based on the analysis, and PGE is now in its second year of implementation. They are focusing first on the most critical cables: large feeders and substation getaways.

Toronto Hydro

Toronto Hydro is a large regulated utility serving over 700,000 customers in the greater Toronto area. Their asset management team developed and implemented a cable tool as part of their Feeder Investment Model.

The Feeder Investment Model, including cable analysis, has been used by Toronto Hydro's regulatory group as part of multiple rate cases before the Ontario Energy Board, requesting spending increases for, among other things, cable intervention. The approach was singled out by the OEB for praise in their opinion.

Tacoma Power

Tacoma Power is a municipal utility serving 160,000 customers in the Puget Sound region. They implemented an economic life model for planning cable investments in 2010 and are now using it as the basis for the a large budget for cable replacement and injection.

PowerStream

PowerStream serves nearly 400,000 customers in communities near Toronto. They implemented an underground cable model in 2008, used to provide a long-range cable intervention strategy.

PowerStream was created by consolidating multiple smaller utilities, so finding consistent and reliable data was a challenge. They relied heavily on the experience of subject-matter experts to approximate installation history and customer information.

Idaho Power

Idaho Power is a private, regulated utility serving 400,000 customers in Idaho, Utah, and Oregon. They developed a cable model in 2008, which was the basis for a long-range cable replacement and injection program. Meanwhile, Idaho Power continues to evaluate and improve input assumptions and data.

References from the these companies are available upon request.

