TRIPLE BOTTOM LINE AND STRUCTURED DECISION-MAKING

A CASE STUDY OF BC HYDRO

INTRODUCTION

Public sector, private sector and non-governmental organizations are increasingly adopting sustainability or triple bottom line (TBL) policies, and working to embed them into everything they do, including organizational decision-making.

For more than a decade, BC Hydro has been developing a more structured approach to decision-making, which was recently formalized as Structured Decision-Making (SDM). The goal is to help staff and the organization overall make better choices by generating options based on multiple (and sometimes competing) objectives and by clarifying tradeoffs, while remaining focused on the triple bottom line.

"When we reflect on what "For Generations" means to us as a company, we **must** consider the environmental, social and financial impacts of decisions we make today, so that we can ensure that we've made the right choices for tomorrow and for future generations."

– Bob Elton, President and Chief Executive Officer on BC Hydro's business and the triple bottom line, 2008

In this case study, we review the evolution of structured decision-making at BC Hydro and describe how BC Hydro is embedding TBL considerations into business decisions using SDM. The results presented in this case study will demonstrate that there is a practical way to translate high level, TBL objectives into business decisions. As well, this case study will show that doing so often leads to outcomes that are better on all three bottom lines.

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"Structured Decision-Making ensures that we have a consistent, logical framework by which to make key business decisions in alignment with our Purpose. This approach, when used at the appropriate level of detail, should be part of all of our business decision making."

– Charles Reid, Chief Financial Officer and SDM Executive Sponsor, 2009

TBL AT BC HYDRO

BC Hydro is the third largest electric utility in Canada, serving 95% of the population of British Columbia. It is a provincial crown corporation, accountable to the BC government through the Minister of Energy, Mines and Petroleum Resources, and has been in operation as the BC Hydro and Power Authority since 1961. Regulated by the BC Utilities Commission, it currently operates 31 hydroelectric facilities and three natural gas-fueled thermal power plants, and has over 5,800 employees across the province. Its primary business is the generation and distribution of electricity and its overarching purpose is to provide "reliable power, at low cost, for generations". (Appendix B provides an overview of BC Hydro's Purpose, Priorities and Guiding Principles).

BC Hydro has been refining and formalizing a triple bottom line approach for many years. The three bottom lines are currently defined as:

1. "Our environmental bottom line looks at how we manage impacts from our operations, weigh environmental values with economic ones and plan for a future with more green energy in our system.
2. Our social bottom line includes how we ensure the safety and well-being of people—our employees, customers and the general public—and the health of the communities in which we live and work.
3. Our economic bottom line means making it possible to stay in business forever, by being an efficient, productive and profitable company, and by providing value to our customers and the province."

BC Hydro has been monitoring and reporting on the achievement of its sustainability goals since 1992 when it published its first Report on the Environment. In 1999, BC Hydro introduced Triple Bottom Line reporting, and since 2005 has combined reporting on its sustainability performance with its Annual Report, following Global Reporting Initiative (GRI; www.globalreporting.org) sustainability reporting guidelines, to better reflect its integrated approach.

BC Hydro believes that better business decisions result by looking at the three bottom lines together and understanding that what happens in one area has effects on the others. However, like other organizations, BC Hydro faces a number of challenges in its efforts to embed the triple bottom line into its decision-making processes. These challenges include:

- multiple objectives
- multiple stakeholders with different values and priorities
- overlapping regulatory oversight
- complexity
- risks/uncertainty of impacts

In the mid-1990s, BC Hydro introduced a more structured approach to decision-making as a way to better address these challenges, especially the multiple objective and multiple stakeholder challenges of water management at its dams. This was the beginning of the emergence of SDM at BC Hydro. The following case study, and the three "SDM in action" profiles, tell the story of how BC Hydro's quest for TBL decision-making methodology resulted in the adoption of an SDM approach in business case development, project design and day-to-day decisions at the power utility.

THE EMERGENCE OF SDM AT BC HYDRO

For decades, BC Hydro incorporated both financial and non-financial factors in its operations and business plans. But in the mid-1990s, BC Hydro introduced a more structured approach to integrating financial and non-financial impacts into its decision-making processes with the start of the Water Use Planning (WUP) program.

New and often competing interests emerged around the issue of how to balance the use of water at BC Hydro's hydroelectric facilities (e.g., protecting fish habitat, providing flood control, and improving recreation experiences). Rather than follow ad hoc decision-making to try to balance these competing pressures, BC Hydro, in collaboration with its provincial and federal government regulators, developed the Water Use Planning Guidelines.

The Water Use Planning (WUP) Guidelines, finalized in 1998, follow a step-by-step, structured decision-making approach based on the multi-attribute decision theory models developed and tested by pioneering academics and advisors in decision analysis and decision-making theory. BC Hydro embraced this more structured approach to decision-making in the WUP program as a way to address multiple objectives and multiple stakeholders associated with water management at its dams.

BC Hydro and its regulators and stakeholders and First Nations, followed the steps in the WUP Guidelines to find a better balance among competing interests at each of the roughly thirty facilities. The first meetings were held in the late 1990s and the last engagement meeting was held in the summer of 2004. All but one of the processes ended in consensus among the participants and many of the outcomes represented joint improvements from an environmental, social, and a financial point of view.

Stotan Falls, Puntledge River, B.C.

SDM IN ACTION

WATER USE PLANNING ON THE PUNTLEDGE RIVER— HOW SPENDING TIME USING THE SDM APPROACH TO UNDERSTANDING OBJECTIVES LEADS TO BETTER ALTERNATIVES

The Puntledge River hydroelectric facilities on Vancouver Island, BC, are built on an eastward flowing river that starts in the glacial fields in the middle of the island and flow down across dramatic shelf-like rock formations towards the town of Courtenay/Comox at sea level.

The area has been growing in popularity due to its mild climate, beautiful scenery and abundant recreational opportunities. In particular, the unique rock formations have made the Puntledge River a magnet for river kayakers—the dramatic rock shelves have the perfect hydraulics to create standing waves, allowing kayakers to point their boats upstream and surf in one place for hours on end.

The growing popularity of the Puntledge River for recreational purposes, on the face of it, is at odds with BC Hydro's desire to divert river flows from the river and through its hydroelectric generating facilities. And this conflict was one of several key aspects to the Puntledge River Water Use Plan.

Following the structured approach to decision-making laid out in the Water Use Planning Guidelines (**www.env.gov.bc.ca/wsd/plan_protect_sustain/water_use_planning/cabinet/wup.pdf**), discussions around competing solutions (more water left in the river for kayaking vs. more water diverted for hydroelectric generation) were postponed while interest-based discussions at a multi-stakeholder table were used to generate a better understanding of the fundamental objectives of the participating parties.

OBJECTIVES OF RECREATIONAL KAYAKERS—The stakeholder representing kayaking interests initially insisted that he was interested in getting more water in the river for kayakers. However, further discussion revealed the obvious points that recreational activities are most highly valued a) during daylight hours, and b) from Friday to Sunday. Moreover, a detailed flow experiment using a wide range of kayakers (coordinated with BC Hydro and the local kayaking club) revealed a wide range of flows produced "good" kayaking conditions; higher flows created additional play features in some areas but washed others out, and higher flows increased the experience for some paddlers (the advanced ones) but diminished them for others (novice and intermediate paddlers). Finally, discussions with kayakers revealed that the predictability of these flows, as much as the size of them, was important as it allowed the scheduling of a kayaking day in advance.

This in-depth exploration of "what matters" for kayakers on the Puntledge allowed a refinement of the original position. "More water for kayakers" was transformed to "a certain, limited amount of water, during daylight hours, Friday to Sunday with enough advanced notice to plan ahead".

OBJECTIVES OF BC HYDRO—The representatives for BC Hydro were equally adamant that their main interest was power generation, and so saving the water in the reservoir and diverting it through their turbines was their driving objective. However, further exploration of BC Hydro's interests revealed an additional and conflicting objective: flood control. During the winter and spring when heavy storms were expected in the area, BC Hydro would often perform a controlled spill, evacuating water out of the reservoir with bank-full flows down the river so that the incoming rainstorm could be captured in the reservoir to prevent flooding in the town below.

FINDING A "WIN-WIN" SOLUTION—With a better understanding of the kayakers' and BC Hydro's objectives, the original (and conflicting) positions were abandoned when a win-win solution was created. BC Hydro would continue to maximize its electricity generation by diverting water from the river into its turbines. However, when incoming storms were predicted, it would a) publicize its impending higher flows in the river on its web-site (usually giving a day or two of advanced notice), and b) it would shape as much of these higher flows as possible into the daylight, weekend hours. Moreover, once a year in the late spring, BC Hydro committed to having a "high flow event" on a day predetermined weeks in advance. This allowed the local white-water kayaking society to organize a kayaking event (**www.surfkayak.org/index.php?p=1_3_Puntledge-Festival**).

RESULTS—Considering that the original positions suggested a win-lose outcome, the solution found for power generation and river kayaking on the Puntledge by following the structured approach to decision-making of the WUP Guidelines has been an extraordinary success. BC Hydro has managed to schedule its planned release flows in a way that has not cost any money in lost electricity generation. The popularity of kayaking on the Puntledge has grown substantially, with almost 200 boats taking part in the latest annual Puntledge Kayaking festival. And the media coverage of BC Hydro in the region has been very positive.

In 2004, near the end of the very successful WUP process, and after years of Triple Bottom Line reporting, the need for a more formalized TBL decision-making framework was recognized. After some preliminary work, it was realized that adequately addressing BC Hydro's three bottom lines was essentially a decision-making problem with multiple objectives akin to the problem facing BC Hydro at the start of the WUP process.

The expertise developed within BC Hydro from the WUP project had taken root in a variety of places within Hydro, including Integrated Electricity Planning (IEP), a long-term (20-year) planning process that addresses electricity generation, transmission facilities and demand-side resources to meet forecasted provincial requirements for electricity. So a TBL decision-making framework was created drawing on the expertise (and the experts) BC Hydro had developed through the WUP and IEP processes. Developed by a cross-functional team, the TBL framework was first piloted with a small group of key people already engaged in bringing sustainability into their own business decisions.

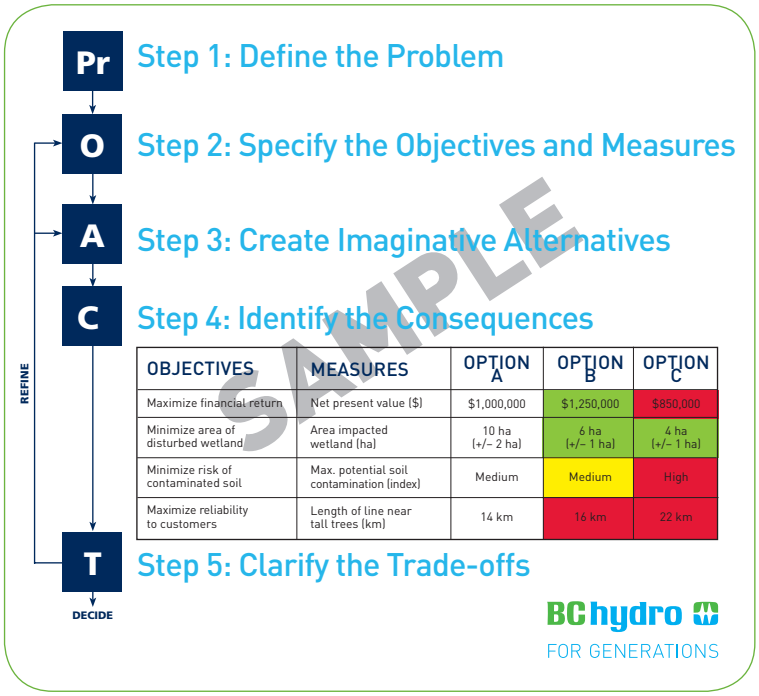
Throughout this period there was an ongoing discussion about what to call the more structured approach to decision-making emerging at BC Hydro. "TBL decision-making" seemed an obvious name but for some it was "too green". For example, some project teams would structure their agendas first to talk about financials, and then to talk about "TBL issues", missing the point that finance is one of the three bottom lines by assuming TBL was short-hand for environmental sustainability. As well, the name did not seem to apply to issues where BC Hydro was dealing with multiple objectives that did not fit neatly into the three areas of social, environmental and economic impacts (e.g., a project facing tradeoffs among cost, cost risk, reliability and regulatory success, none of which have a focused social or environmental dimension). In the end, the broader, more generic application of structured decision-making was emphasized, leading to the adoption of Structured Decision-Making (SDM) in 2008.

THE SDM MODEL AT BC HYDRO

SDM is a method for creating a clear and concise summary of a problem and the possible solutions to it so that one can clearly see the consequences of each choice and guide a decision process towards better outcomes. Popularized through books such as *Smart Choices: A Practical Guide to Making Better Life Decisions* (Hammond, Keeney and Raiffa, 1999), SDM is based on the axiomatic structure of multi-attribute utility theory and the applied techniques of decision analysis (Keeney and Raiffa, 1976; Keeney 1996). The framework helps to define the problem under consideration, determine who needs to be involved in the process of developing alternatives (which also helps create a shared understanding of how people with different interests and perspectives view different options), and compare the trade-offs created by each alternative solution to the problem.

In the diagram below, the main steps to this process can be summarized as: describing the **Pr**oblem, stating the **O**bjectives and how they are measured, creating **A**lternatives, their **C**onsequences and analyzing the **T**radeoffs. This framework generates the acronym PrOACT, a handy reminder to be "proactive" about following these steps in decision-making.

The diagram below lays out the five steps BC Hydro follows when implementing a structured decision-making process. (More detail on this approach can be found in the book, *Smart Choices* listed in the reference section.)



OBJECTIVES	MEASURES	OPTION A	OPTION B	OPTION C
Maximize financial return	Net present value ($)	$1,000,000	$1,250,000	$850,000
Minimize area of disturbed wetland	Area impacted wetland (ha)	10 ha (+/– 2 ha)	6 ha (+/– 1 ha)	4 ha (+/– 1 ha)
Minimize risk of contaminated soil	Max. potential soil contamination (index)	Medium	Medium	High
Maximize reliability to customers	Length of line near tall trees (km)	14 km	16 km	22 km

BC Hydro has developed a two-page handout that describes Structured Decision-Making and provides a checklist for decision makers to consult when reviewing a decision recommendation developed using the SDM framework (see Appendix A). The checklist includes:

- Is the decision context well defined? Are we solving the right problem (e.g., buying a car vs. buying a vehicle, vs. finding the best transportation option)? Why does it need to be addressed? Who needs to be involved?
- Do the objectives and measures define what really matters and help decide among alternatives?

- Do the alternatives offer truly different mixes of desired outcomes and ensure that we have not limited our options in the future?
- Is there a table that lays out the above information and the impacts of the alternatives on the objectives (i.e., a consequence table)?
- Are the trade-offs and their relative upsides and downsides stated clearly enough to make an informed choice among options?

BC Hydro has adopted this framework to help operationalize its TBL ethic throughout the organization.

EMBEDDING TBL INTO BUSINESS DECISIONS USING SDM

To realize BC Hydro's objective of embedding TBL into its business decisions, the focus is now on simultaneously building "supply" (i.e., by providing SDM training to staff so that they can use structured decision-making consistently and well for their business cases and other business decisions) and "demand" (i.e., by raising awareness among the executive and business case reviewers so that they know what to look for and what to demand from a more structured approach).

The first workshops on how to apply a structured approach to decision-making were held at BC Hydro in 2007. As of August 31st, 2009, introductory workshops had been delivered to over 300 staff from across the organization and one-quarter had received advanced training. Staff training has been supplemented by awareness-raising with financial and senior staff at the Finance Forum (2007) and Leadership Forums (2006 and 2009) and through the creation of a Community of Practice, a group of advanced practitioners of SDM which meets regularly to share what they have learned and advance best practices. In addition to the application of SDM in a variety of projects by early adopters of the methodology, over the past 18 months there have been about a dozen diverse instances where SDM has been successfully applied post-training, in situations where people had been struggling with tradeoffs between social, environmental and financial considerations.

The most significant step to embedding TBL into business decisions was the melding of a structured approach to decision-making and BC Hydro's Business Case Requirements. At the same time that a more structured approach to decision-making was being formalized, BC Hydro was also reviewing and consolidating its Business Case Requirements, moving from a patchwork of guidelines that varied across business groups to a single, consistent, corporate-wide approach.

Recognizing that business cases are a valuable tool for both guiding and documenting the decision process, the Business Case Requirements were reworked to mirror the decision-making steps of the SDM approach and to mandate that business cases demonstrate TBL considerations for projects and initiatives valued at $1M and over, and which have a significant impact on business operations, create a material risk and/or where there are credible alternatives to a recommended course of action. The Business Case Requirements point to the SDM approach as the means by which the TBL considerations can be considered.

In addition to making it easier to embed TBL into the decision-making process, the adoption of SDM has generated other benefits at BC Hydro, including:

- The timeframe of the decision process, including the amount of time spent revisiting decisions, has been reduced in many cases.
- There is less positioning in the decision-making process, with participants speaking to their "interests", or objectives, rather than their "positions", and more insights that support creative alternatives through iterative project design.
- Public meetings are more efficient because SDM can narrow the many options down quickly and reduce controversy.
- There is more buy-in, and more enduring buy-in, from staff, First Nations and stakeholders to final decisions.
- The SDM-informed ranking and weighting system that has been adopted by the procurement department has resulted in decreased costs.

NEXT STEPS TO FURTHER IMPLEMENTATION

BC Hydro's objective in further rolling out SDM across the organization is to continue to build greater awareness, knowledge and skills in applying SDM, the result being that employees who make decisions of importance to BC Hydro think about the broad range of impacts their project could have and, in so doing, make better decisions.

Conditions of success that BC Hydro believes foster improved uptake include:

- Executive and Board support
- Shifting accountability for SDM from the Sustainability group to Corporate Finance
- Project managers and sponsors willing to champion a different approach to decision-making
- Freeing up time for champions to coach project teams in the application of SDM

- Training in the theory and approach of SDM for those working with the model
- The ability to talk about successes and how it has been applied in other contexts

Specific next steps are to sustain the momentum built over the past few years with the following initiatives:

1. **Raise Management Awareness:** Continue to hold briefing sessions with management across the company
2. **Training:** Offer training to senior management and people working on high profile projects and continue introductory training offered on a quarterly basis. Offer advanced training to build the network of skilled users
3. **Support:** Create "go-to" resource people across the company who can support SDM-based decision-making and business case development in each business area, with Finance providing expertise on high profile projects; provide online resources for "super-users", a community of practice at BC Hydro
4. **Consistency/Integration:** Provide customized templates and tools for business groups to foster integration of SDM with other decision frameworks, such as risk assessment and business case requirements
5. **Knowledge Transfer:** Provide materials and resources to organizations seeking information on BC Hydro's approach

CONCLUSION

This case study reviews the evolution of structured decision-making at BC Hydro and describes how Hydro is using SDM to embed social, environmental and economic factors into business decisions across the organization. From its early days, when the work of Hammond, Keeney and Raiffa was adapted to inform the development of the Water Use Planning Guidelines, to today when it follows this approach in its purchasing, business case deveopment and project design and reports on its triple bottom line performance, BC Hydro has been focused on operationalizing its sustainability commitments in ways that are simple, effective, transparent and accountable.

BC Hydro staff use SDM in their decision-making to generate options based on multiple (and sometimes competing) objectives and to clarify tradeoffs, while remaining focused on the triple bottom line. The results at BC Hydro show that SDM is a practical way to translate high level, sustainability objectives into business decisions and that doing so often leads to outcomes that are better on all three bottom lines.

RESOURCES

Hammond, John S., Keeney, Ralph L., Raiffa, Howard. *Smart Choices: A Practical Guide to Making Better Life Decisions.* 1999.

Keeney, Ralph L. *Value-Focused Thinking: A Path to Creative Decisionmaking*. 1996.

Keeney, Ralph L., Raiffa, Howard. *Decisions with Multiple Objectives: Preferences and Value Tradeoffs*. 1976.

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APPENDIX A

Structured Decision-Making (SDM) in a page/Key Questions for Decision-Makers

APPENDIX B

BC Hydro's Purpose, Priorities, and Guiding Principles

APPENDIX C

Case study: Utility Poles

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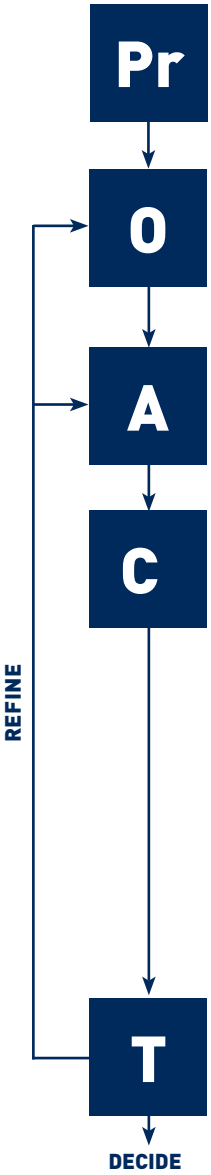
APPENDIX A
STRUCTURED DECISION-MAKING (SDM) IN A PAGE

Many of the decisions we face at BC Hydro are complex: the problems we work on can be approached from many different angles; the things we wish to achieve with our decisions can conflict; and the trade-offs we face can be difficult to reconcile.

The PrOACT (Problem, Objectives and Measures, Alternatives, Consequences, and Trade-offs) Structured Decision-Making framework* is a method for creating a clear and concise summary of a problem and the possible solutions to it so that you—or a senior decision-maker—can clearly see the consequences of each choice. The framework helps you define the problem under consideration, determine who needs to be involved in the process of developing alternatives (which also helps create a shared understanding of how people with different interests and perspectives view different options), and compare the trade-offs created by each alternative solution to the problem.



Step 1: Define the Problem

The first step in good decision-making is to define exactly what the problem or opportunity is that requires a decision and who needs to be involved in developing solutions to it—this is the "decision context." Ask yourself such questions as: What is the problem? How big is the problem (what is its scope)? Why does this problem need to be addressed? What kind of decision does this problem require? What are the key assumptions and constraints? Who needs to be involved and how?

Step 2: Specify the Objectives and Measures

Specifying objectives and measures helps you (1) focus and prioritize information and (2) make the risk and uncertainty of each alternative both explicit and comparable. "Objectives" define what really matters in this decision; they are the foundation of your search for creative alternatives. "Measures" describe the degree to which each alternative meets your objectives.

Step 3: Create Imaginative Alternatives

Good decisions are not possible without good alternatives. Develop your alternatives to address what really matters, as defined by your objectives and measures. Your alternatives should reflect substantially different approaches to the problem, and present decision-makers with realistic options.

Step 4: Identify the Consequences

Every alternative creates its own set of consequences. A colour-coded consequence table is a useful way to summarize the essential elements of the decision problem, including levels of uncertainty about predicted future impacts. The table makes it easier to compare options and narrow your objectives to those where critical trade-offs lie and, once you have received general agreement from everyone involved, it can also be used as a succinct snapshot or reference document to help you (or the decision maker) make an informed decision.

Objectives	Measures	Option A	Option B	Option C
Maximize financial return	Net present value ($)	$1,000,000	$1,250,000	$850,000
Minimize area of disturbed wetland	Area impacted wetland (ha)	10 ha (+/– 2 ha)	6 ha (+/– 1 ha)	4 ha (+/– 1 ha)
Minimize risk of contaminated soil	Max. potential soil contamination (index)	Medium	Medium	High
Maximize reliability to customers	Length of line near tall trees (km)	14 km	16 km	22 km

Note: In this example, we are comparing Options B and C to Option A. The colours highlight the trade-offs.

Step 5: Clarify the Trade-offs

Trade-offs are difficult but may be unavoidable. Structured decision-making requires the person responsible for making the decision to make explicit choices about which alternative is best. The decision-maker therefore must be able to consider each trade-off carefully and compare what will be gained or lost by each option. Once you have clearly defined each trade-off and its relative benefits, you—or whoever is responsible for the decision—should be ready to make a decision and move on. If you or the decision maker are not ready to decide, return to the previous steps to further refine your objectives, measures or alternatives.

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* Hammond, Keeney and Raiffa (Smart Choices: A Practical Guide to Making Better Decisions, 1998)

APPENDIX A
KEY QUESTIONS FOR DECISION MAKERS

Structured decision-making helps to ensure that BC Hydro's decisions are well-informed and consistent and that they all:

- align to our purpose, values, guiding principles and short-term priorities
- integrate financial, environmental and social objectives
- consider short- and long-term implications
- address risk and uncertainty
- clarify trade-offs, and
- are documented in a succinct and accessible way.

Good decisions are made possible by sound reasoning based on an understanding of multiple objectives and the trade-offs inherent in choosing one option over the others. The following questions have been designed as a mental checklist for decision makers to consult when they are reviewing a summary developed using the PrOACT (**P**roblem, **O**bjectives and **M**easures, **A**lternatives, **C**onsequences and **T**rade-offs) Structured Decision-Making framework.

1. Is the decision context well defined?

- Is the problem clearly stated in a form broad enough to challenge assumptions, get at the root of the issue, break down perceived constraints, identify and avoid unintended consequences and generate long-lasting solutions?
- Were the appropriate people (e.g., subject matter experts, people who could influence the outcome of the project) involved in the process?

2. Do the objectives and measures define what really matters and help me decide among alternatives?

- Do they take into account BC Hydro's purpose, values, guiding principles and short-term priorities?
- Do they address other issues as required, such as TBL (financial, environmental and social considerations), or safety and energy efficiency/conservation through the project and asset life cycle?
- Would all relevant parties within/outside BC Hydro see some objectives that reflect what matters to them when comparing alternatives?
- Do the measures help to determine how the alternatives perform against the objectives—i.e., do they measure the right things in the right way, over the right time frame (which may include upstream, in-use and disposal impacts)?
- Are the measures unambiguous and understandable, and explicit about uncertainty so that they expose differences in the range of possible outcomes (differences in risk associated with different alternatives)?

3. Do the alternatives offer truly different mixes of desired outcomes and ensure that we have not limited our options in the future?

- Are the proposed options realistic?
- Have they been designed to address the objectives identified?
- Do they include creative solutions, challenging perceived constraints and combining elements in thoughtful ways?

4. Is there a consequence table?

- Does the decision analysis summarize how each of the final (best) alternatives performs against the stated objectives relative to each other through a consequence table?
- Am I comfortable with the quality of the information and level of analysis captured in the consequence table?

5. Are the trade-offs and their relative upsides and downsides clearly enough stated that I can make an informed choice among options?

- If the trade-offs are setting precedent, is it a good precedent for BC Hydro?
- Is there enough information on which to base a decision, or is it necessary to go back and revisit the objectives and measures?
- Do the trade-offs suggest a new alternative?

APPENDIX B
BC HYDRO'S PURPOSE, PRIORITIES, AND GUIDING PRINCIPLES

Our Purpose

BC Hydro's purpose is to provide "Reliable Power, at Low Cost, for Generations." This purpose provides the context for our business decisions.

Guiding Principles and Short-term Priorities

BC Hydro has 15 Guiding Principles developed and adopted by the Board in 2004. These Guiding Principles provide an enduring framework for how we manage our business. For the short term, several of these principles have been selected as priorities to focus on. Work, however, is ongoing to ensure all of our Guiding Principles are met.

Our current Short-Term Priorities are:

- Safety: Provide the safest work environment compared with the best performers in any industry, where not one of our employees experiences a serious work-related injury.
- Reliability (Customer): Provide best-in-class reliability by customer segment.
- Energy Security (Supply): Meet all domestic needs.
- Climate Change and Environmental Impact: Have no net incremental environmental impact by 2024 when compared with 2004.
- Energy Conservation and Efficiency: Develop and foster an energy conservation and efficiency culture in B.C. that leads to customers choosing to make a dramatic and permanent reduction in the use of electricity.
- Financial Targets: Maintain low costs for electricity customers in B.C. over the long term, while consistently delivering 100 per cent of forecast net income.
- Customer Satisfaction: Lead by offering extraordinary value and service.
- People: Be a top employer for generations.

The remaining Principles, which we will continue to work on over the long-term, are:

- Remote Community Electrification: Provide appropriate electric service to all remote communities on an equitable basis.
- Innovation and Technology: Be an industry leader in the innovative use of technology.
- Western Opportunities: Profitably increase Western market share based on access to assets in B.C. and the Western system and increased trading activity.
- Suppliers: Ensure 100 per cent of suppliers have demonstrated values congruent with those of BC Hydro.
- Stakeholder Engagement: Be the most respected company in B.C.
- First Nations: Improve relationships built on mutual respect and that appropriately reflect the interests of First Nations.
- Teamwork: Use exceptional teamwork to engage all employees in the achievement of BC Hydro's purpose and guiding principles.
- Workplace: Be a top employer for generations.

APPENDIX C
SDM IN ACTION—PINE POLES

BC Hydro's oldest utility pole—and the oldest utility pole in the world—is made of cedar and can be found in Creston, BC. It was built in 1898 and is still in service. Initially all utility poles were made of cedar, but in 1965 BC Hydro began to use pine poles due to a cedar shortage. In 2008 BC Hydro began a strategic review of its pole procurement. There were a variety of financial, social and environmental issues impacting the procurement initiative and BC Hydro sought to ensure the process was conducted in a systematic, rigorous, structured and transparent manner. The Strategic Sourcing department, which had already been moving to incorporate more triple bottom line considerations into its purchasing processes, brought in an SDM advisor to help them.

When developing the RFP, SDM assisted the team in thinking through TBL considerations and identifying objectives important to BC Hydro, which were translated into the evaluation criteria. After the initial evaluation was complete, during the negotiation process, the team was able to circle back to the original objectives.

The RFP requirements had been issued to reflect the current pine/cedar mix of product. Based on the RFP responses received, and the evaluation against the objectives identified earlier in the process, especially reliability of supply, quality, and safety, it became clear that cedar provided the optimum choice for BC Hydro.

Through the SDM process, it was determined that historically, pine was cheaper to purchase, and formed a considerable portion of the supply of several of the (then) current vendors.

Despite the lower cost, pine is more susceptible to rot and requires more extensive chemical treatment to prolong its life. Even after treatment, the service life of pine poles is 30 to 35 years, significantly less than that of cedar which can be as much as 60 to 80 years.

Moreover, the onset of BC's pine beetle infestation threatens the long term supply of this wood and makes testing for pole quality before purchase less reliable. Finally, at the end of their useful life, the treated wood poles need proper disposal—the chemicals used to preserve the pine wood require more extensive end-of-life management, and leave less wood behind to be recycled.

BC Hydro had a decision to make: go with the low upfront cost option, with higher lifetime costs and quality performance issues; or go with the higher upfront cost option, with lower lifetime costs, improved quality performance and increased recycling ability. Through a rigorous, structured approach that considered the financial, social and environmental implications of the purchase decision, BC Hydro elected to shift its purchasing towards achieving a supply of only cedar poles.

It is estimated that BC Hydro's switch to cedar will save an estimated $110 million over the next 60 years. BC Hydro is moving to reduce remaining pine inventories to enable future projects to use only Western Red Cedar.

APPENDIX C
SDM IN ACTION—PINE POLES

ANALYSIS

Procurement processes at BC Hydro already use a "ranking and weighting" approach when comparing purchase options. Typically, a project team would draw up a list of criteria and their measures, and score the alternative vendors using a weighted sum. However, the additional effort to fully integrate BC Hydro's triple bottom line approach via the SDM process, and the Strategic Sourcing approach in general generated significant insights and benefits.

Firstly, the focus on more than just a single, financial bottom line, where the traditional tendering process awards to low bid meeting specifications, encouraged a long-term view of all relevant impacts. This brought into the analysis the issues around dealing with chemical preservatives and the additional benefits of having recyclable wood at the end of a pole's life. Secondly, the focus on long term measures ensured that the longer lifespan of the cedar poles was incorporated in the analysis, partially offsetting the higher upfront costs.

Finally, the SDM tools explicitly highlighted value tradeoffs. The traditional "ranking and weighting" process asked team members to assign a decision weight to each measure. The group's facilitator would then average these out to arrive at the group's assigned weight for that measure. SDM's value tradeoff's tool provided two important benefits:

- It revealed the divergent values of the group's members. As it turned out, significantly different values around the importance of "wood pole quality" existed—mostly because team members had differing interpretations of what a high vs. a low score really meant. Highlighting these different value scores allowed this to be uncovered, and gave better buy-in to the weights used to evaluate the RFP.
- It highlighted the tradeoffs implicit in the team's assigned weights. Previously this information had not been made available and so BC Hydro had not been sure (as an example) whether the extra benefits it was looking for from suppliers were worth the extra expenses incurred in pursuing these. This time around, the project team was able to look at the implied tradeoffs prior to the release of the RFP, as an additional consistency check to their assigned weights.

In summary, SDM, as a key part of the Strategic Sourcing Pilot, contributed to achieving the following benefits:

- Results across all three bottom lines were optimized; in particular, environmental impacts will be reduced and cost-savings of an estimated $110 million over the next 60 years will be generated.
- The process resulted in an outcome that internal and external stakeholders could support.