ONE SIZE CONDUCTS ALL?
PM POLICIES FOR AN ELECTRIC UTILITY

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Introduction

In the province of British Columbia, the electricity market is dominated by B.C. Hydro, a government-owned utility, which generates about 80% of the electricity and owns most of the transmission and distribution system.

B.C. Hydro operates a predominantly hydroelectric system with nameplate capacity of about 10,300 MW (1000 MW thermal) connected to 1.4 million customers by over 70,000 kilometers of transmission and distribution lines. The utility spends about $450 million annually on capital projects to upgrade, reinforce and extend the existing electrical system. As the utility has evolved over the past decade from a construction company to a service company, projects have evolved from the more traditional design and construction of additional generation, substations and transmission/ distribution lines, to a variety of non-traditional projects such as public consultation for energy conservation, warehouse renovations, environmental cleanup, aboriginal initiatives, information technology and the last corporate reorganization. Recent projects range in cost (up to $180 million), in complexity and risk as well as in the degree of success achieved. In addition, there has been a shift to a larger number of smaller projects managed by individuals with varying levels of PM skill and knowledge. Not surprisingly, this has resulted in varying levels of project success which has generated such disenchantment with project management as:

- "PM just adds to the cost' (Senior VP)
- 'PM isn't necessary, just give us the money and we'll deliver' (functional department manager)

These off key comments struck a chord that something had to be done to raise the pitch of project success.

A number of initiatives were undertaken including the formation of a project management department in 1985 with professional and technically exper-ienced project managers as the key staff (mostly PMP's since 1989). In addition, several attempts were made to produce standards or policies to orchestrate project management within B.C. Hydro.

History and Background

The policies we are now trumpeting began their evolution in 1988 and the roles that various PMI members have played is significant.

Our first composition was based on the Project Management Policy concept developed by Jim Cumberpatch of Decision Technology Corporation. We reproduced (with permission) the Project Management Body of Knowledge (PMBOK) as an appendix to this manual and about 200 copies were distributed. As these policies and procedures were being introduced, we were also successful in obtaining senior management approval of a 2 page Corporate Policy Statement on project management which referred to the Policies and Procedures Manual and endorsed management by projects at B.C. Hydro.

By 1994, project management was an established and accepted measure in most of B.C. Hydro but the Policies and Procedures Manual was only serving virtuoso project managers, not the novices.

In order to produce better project management policies, a quartet of experienced project managers with varied backgrounds was selected. Included was a consultant to bring experience external to B.C. Hydro and a more private sector business accom-paniment to our composition.

The first variation of this group was centered around producing policies and procedures which included

specific details on how to conform to the policy ie: procedural. This approach would have produced a three volume score. After producing a few such policies as an overtone, they were reviewed by members of the Project Management Division. The recital was loud and clear:

- too long
- too detailed
- too inflexible
- too onerous

in other words, we were still off key!

The project managers may not have known exactly what they wanted but they certainly knew what they didn't want - a big manual of procedures. Since the preconceived idea of project management manuals is several thick binders, a new tune was obviously required.

The Policy Project

It was obvious that we had sounded a wrong note so we regrouped and decided to start from scratch. We started as if we had a new project. First, the customer was identified as anyone with a project. Then objectives were brainstormed and the following 'user requirements' or criteria were developed and accepted by the project managers:

- Policies only - not procedures.
- Consistent throughout company.
- Concise (target of 20 pages).
- User friendly.
- Guide to other resources.
- Sufficiently general to cover corporate management by projects.
- Educational - both assist novices and challenge the virtuosos.
- Auditable - demonstrate to others that proper processes are in place.

In hindsight, it was the breakthrough idea of developing the policies as a project that provided the beat to find an appropriate model for developing our policies.

We started with our two most available resources. The existing B.C. Hydro Project Management Policies and Procedures were considered too oriented to design and construction to be a good corporate model. PMI's Project Management Body Of Knowledge provided a functional model but it did not seem to meet our criteria. Outlines of all the manuals reviewed are shown in Table A.

A search of the PMI literature produced two papers (see references) that supported our intent to produce concise, general PM policies but did not provide models that met our needs.

In September 1993, we expanded our range by tuning into our network of contacts in the electric utilities - including those contacts made through attendance at PMI conferences. We contacted nine organizations that we believed were likely to be active in the field of project management standards. We asked if they had a set of project management standards, if they were applied company wide and if they were detailed or general. Note that at this stage, we were using the term PM Standards; later we changed to PM policies. We doubt that asking for policies rather than standards would have influenced responses. We received seven responses and we acknowledge their assistance.

Saskpower, another Canadian utility owned by the Province of Saskatchewan, replied that they did not have a set of corporate Project Management Stan-dards but provided the table of contents of the 5 volume Procedures, Standards and Information Manual used by the Major Projects and Facility Enhancement Department. This appeared too detailed for our purposes.

Con Edison of New York provided a sample policy on Project Management Interface Responsibilities rather than an outline of the manual.

Societe d'energies de la Baie James, a major hydro-electric project in the Canadian province of Quebec, provided a copy of their 9-month schedule for developing a set of Project Management Standards. They were adopting a high-level "what to do" approach rather than a "how to do" approach.

One response was significant but we did not recognize it at the time. This came from Ontario Hydro, another provincially-owned Canadian utility, who responded that they did not have a set of Project Management Standards that were used across the corporation. They had just been reorganized into "line of business" units and could not predict if a need for a standard approach to Project Management would emerge.

Pacific Gas and Electric Company (PG&E) of San Francisco responded with the tables of contents for both their Project Management Policies and Procedures Manual and their Project Manager's Manual for Substations. They advised that their Policies and Procedures manual was available on a company-wide basis but not enforced and that the Policies provided a general guideline, not detailed procedures. Consistent with the stated corporate policy, the PG&E substation group appears to have selected those policies which were relevant to their needs and developed their specific manual of procedures.

Public Service Electric and Gas Company (PSE&G) of Newark, New Jersey advised that each of their business units (distribution, transmission, fossil and nuclear) have their own PM departments and standards. (If we had been surveying corporate organization structures in utilities, we might have learned something relevant to our own future restructuring). PSE&G advised that standards across each business unit were similar in outline but varied in specific detail to meet the needs of the business unit. The contents of the manual for the distribution business unit is included in Table A.

The most substantial response we got from our contacts was from Philadelphia Electric Company (PECO) who provided their complete manual; the Table of Contents is provided in Table A. The PECO manuscript was of particular interest as it focused on the project management process rather than the project management functions.

Barry Smythe, PMP, of E.B. Smythe & Associates Ltd., a consultant who does project management training for B.C. Hydro, provided a model based on work he had done for several non-utility organizations. This model was different in that it was a sequential outline of the PM process rather than a breakdown by PM function. The Project Management policies were presented in the order that one would encounter on a project. The training benefits of using the phased approach identified with the project life cycle were apparent and we selected this model as the starting point for our Project Management Policies. We now had the score upon which we would attempt to write the notes in a way that facilitated rapid learning and broad use of the project management concept throughout the corporation.

Breakthrough Approach

Our policies are based on the Project Life Cycle broken into three distinct sequential movements (phases): Project Identification, Project Definition and Project Implementation as shown on Figure 1 and in Table A.

For the content, our approach was that each policy statement would set out the minimum requirement for any project throughout B.C. Hydro. For example, the policy statement could simply state that every project must have an appropriate schedule. This could range from a list of start and finish dates to a PERT network zthat involves probabilities of durations.

Since our space limitation precluded even short descriptions of all the tools available to those using management by projects, we adopted the approach of Standard Key Elements (SKE). This is a list of items from the PMBOK (and other references) that the project manager should review and decide which are applicable to the specific project. This list is intended to be hierarchical with the lead items in the list being those most commonly applied (e.g. milestone dates) while those further down the list only applying to more complex projects (e.g. PERT).

So that novice project managers would know which of the key standard elements is appropriate, we provided a section ahead of the SKE's called description to provide sufficient information on the subject to guide in selecting the appropriate instruments.

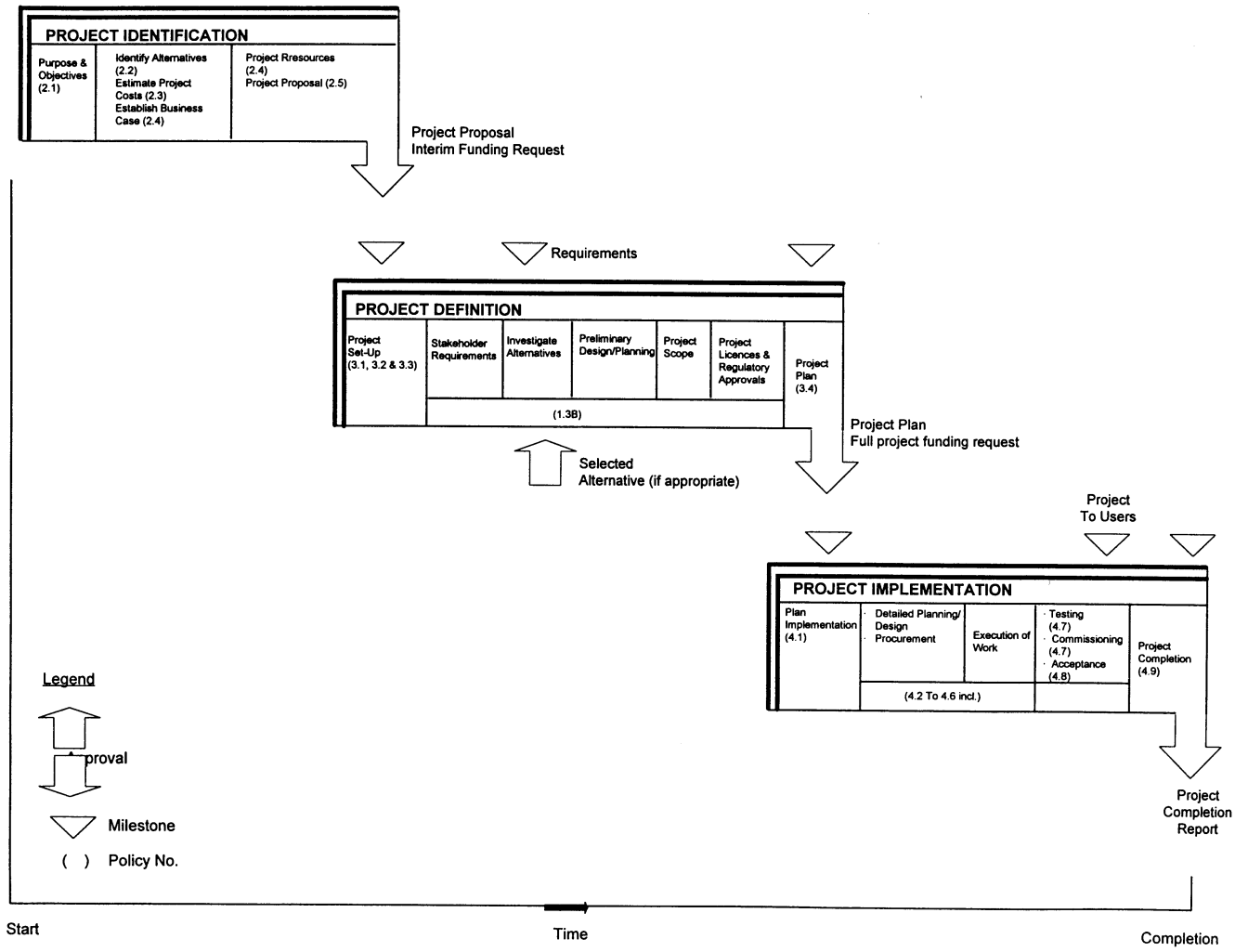

FIGURE 1. PROJECT LIFE SYCLE DIAGRAM
SHOWING PHASES, STAGES AND KEY DELIVERABLES

We drafted a set of policies to meet the above criteria, and tested the concept with a novice project manager who confirmed it was meaningful. After seemingly endless rounds of comments from the professionals in the Project Management Division, our Project Management Policies were published in May 1994.

The letter size pages and soft cover format made the policies inexpensive to produce. Introduction and distribution has been done through a variety of channels including:

- incorporation into our project management training courses
- review at project kickoff and team meetings
- distribution to all senior managers
- overview by invitation or at our instigation with functional managers

The official version is via E-Mail. Hard copies are not registered or tracked. The printed version will only be updated when required; generally antici-pated to be about every 2 years. As only one party can be responsible for policy, the latest corporate reorganization gave this role to our Transmission & Distribution group.

B.C. HYDRO
P.M. POLICIES & PROCEDURES MANUAL (1989)

- Introduction
- Project Management
- Project Participants
- Project Responsibility
- Project Plan
- Tasks
- Appendices (including PMBOK)

PROJECT MANAGEMENT INSTITUTE PMBOK

- Framework
- Scope Management
- Quality Management
- Time Management
- Cost Management
- Risk Management
- Human Resource Management
- Contract/Procurement Management
- Communications Management

PACIFIC GAS & ELECTRIC
P.M. POLICIES & PROCEDURES

- Policy Statement and Implementing Requirements
- Project Identification and Organization Arrangements
- Selection and Appointment of Project Managers
- P.M. Training and Development
- Selection and Application of P.M. Tools and Techniques
- Application Including
  Project Planning and Control
  Cost Planning and Control
  Project Status Reports
  Contingency Funds
  Project Closing
- Consulting Services and Support
- Monitoring and Auditing
- Reviews and Critiques
- Glossary

PACIFIC GAS & ELECTRICAL
P.M. MANUAL FOR SUB-STATION

- Project Managers
- Training and Development
- Tools and Techniques
- Project Reporting
- Application
- Monitoring and Auditing
- Reviews and Critiques
- Glossary

PUBLIC SERVICE ELECTRIC & GAS

- Management of Projects
- Project Responsibilities, Authorities and Interfaces
- Project Scope Definition
- Project Estimates
- Project Investment Request
- Project Procurement
- Project Schedules
- Project Cost Systems
- Project Change Request
- Project Correspondence
- Project Close Out
- Post Project Review

PHILADELPHIA ELECTRIC CO.

- Purpose
- Goals
- Philosophy
- The PEC PM Process
- Unique Projects
- Repetitive Projects
- Blanket Projects

B. SMYTHE MODEL

- Introduction: PM Principles
- Organization: Resp.and Accountability
- Communications
- Project Life Cycle - Phasing of Projects
- Project Definition - Req. Document
- Project Definition - Scope Control
- Project Definition - Scheduling
- Cost Management
- Implementation
- Project Manager Selection

B.C. HYDRO PM POLICIES (1995)

- Purpose, Application and Project Life Cycle
- Statement of Objectives
- The Business Case
- Estimated Project Costs
- Project Resources
- Project Proposal
- Project Participants - Qualifications and Responsibilities
- Project Team Organization
- Project Communications
- Project Plan
- Project Plan Implementation
- Scope Management
- Schedule Management
- Cost Control and Reporting
- Risk Management
- Quality Control
- Commissioning
- Acceptance by User Representative
- Project Completion

TABLE A. OUTLINE OF VARIOUS PROJECT MANAGEMENT POLICY MANUALS

Following are four sample policy statements and Figure 2 shows the complete Policy 3.2 - Project Team Organization:

Policy No. 1.3 - Project Life Cycle

Projects shall be managed in accordance with the Project Life Cycle model. The objectives evolve through three phases: identification, definition and implementation. Generally, each phase will:

End with approval of subsequent phase or termination.

End with a measurable Milestone, (often a document for approval). Each milestone will have a pre-determined checklist of auditable characteristics.

Produce an end product (key deliverable).

Provide an opportunity for project review.

Policy No. 2.3 - Estimated Project Costs

For each project, cost estimates shall be developed for each phase in the project life cycle. Subsequent cost estimates shall be developed to a greater level of detail consistent with the WBS and include contingencies that are appropriate for the specific potential risks.

Policy No. 3.1 - Project Participants

The Project Initiator shall appoint a Project Manager who has the appropriate qualifications for the specific assignment taking into consideration the nature of the project.

Project Teams will be comprised of the Project Manager, the assigned Task Managers and a representative from the User of the Project (the User Representative).

Task managers from within B.C. Hydro will be assigned to the project by their respective Functional Managers and accepted by the Project Manager after confirming the qualifications and availability of the candidate.

Policy No. 4.4 - Cost Control and Reporting

The project should be managed such that the final costs at completion do not exceed the authorized budget. A commitment-based cost report utilizing periodic forecasts of costs to complete shall be utilized.

Corporate Reorganization

This is where several of the comments from our survey become relevant. In response to deregulation of the electric utility industry in North America, B.C. Hydro underwent a corporate restructuring in early 1995. The chief aim was to reorganize our electric utility to be better able to respond to increasing competition as our industry moves from a protected monopoly to one driven by market forces. Customers, particularly the larger ones, are demanding a wider range of choices and better rates.

We are now organized into the following five business units: Power Supply, Transmission & Distribution, Customer Services, Corporate & Financial Affairs and Human Resources, Aboriginal Relations & Environmental Affairs.

Significantly, two of the business units have chosen to adopt Management by Projects/Programs (MBP). These two units, Power Supply which is responsible for generation of electricity, and Transmission & Distribution which is responsible for delivery of the electricity to the customer, carry out over 90% of the capital works for B.C. Hydro.

Lessons Learned

The corporate reorganization saw an unparalleled regrouping of the various divisions. Despite a significant number of changes in positions, groups etc., the only changes required to the policies were due to the previous Project Management Division being split between two strategic business units. This major reorganization affected only 3 of the 28. policies where the words 'Project Management Division' had to be changed to reflect the new organization. If we had continued with the detailed procedures approach, it is clear that a complete rewrite of an expected 3 volume manuscript would have been required.

Experience

Although MBP has only recently been embraced by B.C. Hydro, there appears to be a marked change in

B.C. Hydro
Project Management Policies

Section 3.0	Number	Issue Date	Page
Project Definition	3.2	30 May 1994	1 of 1

SUBJECT: PROJECT TEAM ORGANIZATION

PURPOSE: To ensure that project participants understand both their functional and project responsibilities (ie. to whom they are responsible and for what).

POLICY: Project teams shall be organized in a matrix format and an appropriate organization chart shall be prepared for each project. Exceptions to this policy require Project initiator approval.

RESPONSIBILITY: Project Manager.

DESCRIPTION: Personnel are assigned to the project as Task Managers by their Functional Managers. Task Managers remain responsible to their Functional Managers for the quality (e.g. technical content) of their work but are responsible to the Project Manager for timing and cost of their tasks and for coordination with other Task Managers. This concept of reporting to two managers for different aspects of the work is called a matrix organization. If a consultant is utilized because a skill or resource is not available within BC Hydro, the terms of reference must define to whom the consultant is responsible for quality (the Task/Functional Manager) and to whom they are responsible for timing and coordination (usually the Project Manager).

In the event an employee is direct-hired (or a consultant retained) for the project and there is not a BC Hydro Functional Manager with the expertise to be responsible for the quality of these tasks, then this employee or consultant is responsible to the Project Manager for quality as well as timing and cost.

The same name may appear for more than one responsibility on an organization chart.

KEY ELEMENTS: List of team members
Organization chart
Hierarchy
Functional responsibilities
Project responsibilities
Matrix organizations
hard (team physically together)
soft (team members in functional areas)

ATTACHMENT: Typical Project Organization

FIGURE 2. B.C. HYDRO PROJECT MANAGEMENT POLICIES

attitude toward project/program deliverables. For example, a systems analyst described the use of the new policies within the IT area of B.C. Hydro. Prior to issue of the policies, projects had a budget, timeline and a general description of the work but the scope was not well defined. Since issuing the policies, all new

software development and hardware acquisitions were being managed as projects. A database application project plan was reviewed and it adhered to the policies. The plan contained a full scope of the tasks, WBS, cost estimates, schedule and listing of project parti-cipants. There was even a user representative responsible to accept the results. As of May 1995, the forecast cost to complete the project was within the original budget and the project is about 1 week behind schedule.

Conclusion

A concise set of project management policies has provided a framework to manage a diverse range of projects undertaken by a major utility. These policies are based on the concept of the Project Life Cycle and allow auditing for compliance. Experience to date indicates general acceptance and use of the policies throughout B.C. Hydro. Our future plan is to add a list of references to the manual to fulfill the User Requirement of providing a guide to other resources.

References

1. Hubbard, D.G. Policies, Plans and Procedures Profit Makers or Profit Takers. Proceedings of the PMI 23rd Annual Seminar/Symposium, 1992. pp .275-281.

2. Pells, D.L. Project Management Standards at the Idaho National Engineering Laboratory. Contrasts in Project Management, Northwest Regional Symposium, 1988, pp.E1 - E1-10.