



CPRN DISCUSSION PAPER

Outsourcing of the Engineering Design Process in the Alberta Transportation and Utilities Department

By

Sandra Rastin, M.A.

December 1999

Human Resources in Government Series
CPRN Discussion Paper No. W|09



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Foreword

Governments in Canada have undergone a period of unprecedented change throughout the 1990s. External pressures and the need for fiscal restraint have led them to reevaluate their services to the public and reduce the size of their workforces. This widespread restructuring has had tremendous human resource implications for governments, public sector unions, and for employees.

However, there was no clear understanding of the nature and magnitude of the changes that were affecting government work and workers at the workplace level. To fill this information gap, CPRN initiated a large-scale project on Human Resource Issues in Government. Launched in early 1997, this project was based on a research design that was jointly developed by Gordon Betcherman, Network Director at that time, and Anil Verma of the University of Toronto. The overriding goal of this Project is to generate new applied knowledge that will help the federal and provincial governments and civil service unions redefine the strategies, policies, and procedures needed to transform the public service. The Project is based on the belief that this transformation must include the development of both efficient and innovative workplaces and a healthy, motivated, and skilled workforce.

The research is guided by a Project Advisory Committee that includes representatives of the sponsoring organizations as well as experts in the field. The sponsoring organizations include three federal agencies (Human Resources Development Canada, the Public Service Commission, and Treasury Board Secretariat), four provincial governments (Nova Scotia, Ontario, Manitoba, and Alberta) and the Public Service Alliance of Canada.

The research is organized into a number of key research areas. The first group of studies sets the context for the overall project by describing how the environment shaping human resources in government is changing. They provide a statistical profile of employment trends¹, an analysis of trends in labour-management relations², and a comparative analysis of public-private compensation trends.

The next set of studies is based on two large-scale surveys, one of managers responsible for units of between 5 and 100 people and the other of government union representatives. Reports on these surveys will address technological change in the workplace, organizational change and human resource management innovation, flexible work arrangements, and industrial relations issues.³

¹ Peters, Joe, *An Era of Change: Government Employment Trends in the 1980s and 1990s*. Human Resources in Government Series. CPRN Study No. [03] (Ottawa: Canadian Policy Research Networks, 1999). Also see Work Network Research Highlights -- An Era of Change, No. 1, Spring 1999.

² See Swimmer, Gene (ed.) (forthcoming, OUP Press), *Public Sector Labour Relations in an Era of Restraint and Restructuring*. Also see Work Network Research Highlights Number 2, Summer 1999 – The 1990s: A Turbulent Decade for Labour Relations in the Public Service.

³ The remaining studies and discussion papers in the Human Resources in Government Series will become available throughout the year 2000.

Surveys such as these are extremely valuable in providing information on trends and patterns in a large number of workplaces. However, in order to illuminate the actual process of change, how it is implemented, and its effects, we looked in more detail at specific workplaces, conducting four case studies.⁴ The case studies serve as illustrations of the kinds of changes that are taking place in government workplaces – changes that clearly have significant implications for how government employees do their work and for how they are managed. Case studies such as these can be useful in identifying lessons learned and can help to inform the workplace change process across government.

On behalf of CPRN, I wish to extend my sincere thanks to the many individuals who contributed their time to the case studies. The insights they provided were invaluable in helping to make the change process come alive. I also wish to thank the authors of the four case study reports for working to provide these real-life stories of transformation in government. In examining these changes in more detail, we hope that other units in government can not only profit from the experiences we have documented, but also can see that change is possible, although not always easy.

Graham Lowe
Director, Work Network

November 1999

⁴ Lonti, Zsuzanna, “Restructuring the Corporate Function in Government – A Case Study of the Integrated Justice Corporate Services Division in Ontario,” Human Resources in Government Series, CPRN Discussion Paper W/06; Lonti, Zsuzanna, “Industry Self-Management as a Strategy for Restructuring Government: The Case of Consumer and Commercial Relations (MCCR) and the Technical Standards and Safety Authority (TSSA) in Ontario,” Human Resources in Government Series, CPRN Discussion Paper No. W/07; Peters, Joseph and Katie Davidman, “Aeronautical and Technical Services – Natural Resources Canada,” Human Resources in Government Series, CPRN Discussion Paper No. W/08; and Rastin, Sandra “Outsourcing of the Engineering Design Process in the Alberta Transportation and Utilities Department,,” Human Resources in Government Series, CPRN Discussion Paper No. W/09.

Executive Summary

- The Alberta Transportation and Utilities (AT&U) department restructured in 1995 as part of the Progressive Conservative government's plan to reduce the size of the public sector and to change the role of government from "rowing" to "steering".
- The Design Projects Reengineering Team was created to outsource the AT&U's engineering design process, which is the focus of this study.
- The main goals set for the Design Projects Reengineering Team were to:
 1. Generate \$3.2 million per year in savings;
 2. Outsource 100% of the engineering design process to the private sector, bringing the number of full-time equivalent (FTE) positions to 112, from the existing 333;
 3. To create performance measures to evaluate the outsourced engineering design process.
- The Team succeeded in outsourcing the design process 100%. They generated \$8.2 million annually in savings, and reduced the number of FTE positions to 73. They created 8 performance measures to evaluate the new design process, and at the end of their first year had met 3 of these 8 stated targets.
- The remaining 73 in-house positions no longer engage in design production nor in research and development activities, but conduct design review and set technical standards. These engineers and technicians monitor and review the work now done by private-sector consultants, and set engineering standards for the private sector highways and bridges consultants. Research and development activities are partly delivered through the Centre for Transportation Engineering and Planning which is a partnership the department has created with universities and engineering consultants and the cities of Edmonton and Calgary.
- The nature of work for the in-house employees has changed substantially as a result of their new roles. Project managers have been given much more responsibility and accountability for ensuring the success of the project, and are considered the "one-window" to the project.
- The technology used at the AT&U for the engineering design process was made obsolete with the outsourcing of the production process. New technology has been introduced to assist the remaining in-house employees in their monitoring and reviewing functions.
- The Alberta Union of Provincial Employees (AUPE) that represents public sector workers at the AT&U, was not able to play a very proactive role in the restructuring of the AT&U, or in the outsourcing of the engineering design process. The union was kept "informed" of the changes. The most significant impact on the union as a result of the outsourcing of the engineering design process was a loss of membership as outsourced employees moved to the private sector. The relationship between management and the union, while never overtly hostile or antagonistic, was characterized as changing very little with the restructuring.
- Human Resources within the AT&U were actively involved in assisting the organization through the outsourcing by offering training and counseling for laid-off employees, as well as

working to find positions for these employees in other parts of the government. Communications also prepared documentation for managers and Branch Heads to assist them in abolishing employees. Human Resources was in contact with the AUPE during the transitional period.

- Employee involvement in the outsourcing, while minimal, was actively solicited within the Planning and Technical Services Division.
- In-house employee qualifications have been enlarged to include heavy emphasis on the ability to work in teams, to be flexible, committed, able to learn new skills and to make decisions. High levels of experience is a requirement for any of the in-house engineering design monitoring positions.
- The challenges the department and the engineering design monitoring process will be facing in the future are skill maintenance and renewal. The in-house engineers and technicians are no longer engaged in production activities, so retaining a competent skill level in that area is an important concern. As well, the department no longer has very many positions that perform duplicative functions. This factor, combined with the fact that a large number of employees will be retiring in the next few years, has raised concerns about the replenishment of employees for these positions. This problem is exacerbated due to the fact that the department no longer hires and trains newly graduated engineers to refill these positions. To address these potential problems, the department has initiated some programs with the private sector.

Acknowledgments

I wish to thank the interview participants and my contact at the AT&U for their time, effort, and assistance in this project.

Introduction

This document is a case study of the outsourcing of the Engineering Design Process at the Alberta Transportation and Utilities (AT&U) department. The AT&U received both the gold Premier's Award of Excellence, in 1997, and the silver Award for Innovative Management bestowed by the Institute for Public Administration in Canada (IPAC) in 1998, for the outsourcing of this process. The growing use of outsourcing in the public sector is part of the shift to a new form of public sector managerialism, one that is focused on reducing the size of government while also striving to improve the quality of services delivered to the public, at reduced cost to the taxpayer. In this case study I elaborate on this form of managerialism prior to providing detail about the restructuring of the Engineering Design Process. Following this description I situate the outsourcing of the Engineering Design Process into the larger, concurrent, restructuring of the AT&U. The impact of the restructuring of the Engineering Design Process and the AT&U on human resource practices, employees, and the union at the AT&U is then detailed, followed by a discussion of the challenges that the organization will be facing in the future. The study concludes with a summary of the highlights of the case study and some of the questions that it raises.

Methodology

The unit of analysis of this case study is a *process* titled "engineering design". This encapsulates a range of *activities* conducted by engineers and technicians at the AT&U that are oriented towards designing engineering plans. This process was outsourced to the private sector, and the jobs of the remaining 73 employees at the AT&U still related to (but not conducting) engineering design have altered substantially. A complete definition of the engineering design process and how the work of AT&U employees changed as a result of the outsourcing is elaborated in the case study.

The data for this case study was derived from documentation and interviews. Documentation reviewed includes:

- the full report of the restructuring of the engineering design process written by the Design Projects Reengineering Team;
- the Design Projects Reengineering Team's written submission to the government of Alberta for the Premier's Award;
- the *Staffing Principles and Processes* document written by the Human Resources Transition Team to aid Branch Heads with human resource issues during the restructuring of the AT&U by laying out the organization's staffing principles and processes. It was also intended to inform staff on how position abolishments would be undertaken;
- A *Communications Framework* document that was distributed to Branch Heads by Communications outlining highlights of the restructuring, techniques of internal and external communication, and strategies for dealing with different audiences. It also contained responses to questions asked at the industry workshops and brown bag lunches;
- the *Line Manager's Handbook, Serving Notice of Position Abolishment* that provided managers with specific information on position abolishment;

- the *Departmental Overview Book*, a source of information for providing a description of the organization; and
- finally, the Survey of Workplace Issues in Government (SWIG) questionnaire, completed by the executive director of the Technical Standards Branch.⁵

Interviews were conducted with the acting Assistant Deputy Minister of the Regional Services Division, the Executive Director of the Technical Standards Branch, the Executive Director of the Human Resource Branch, and a union representative. These interviews were conducted in private offices between February 25, 1999 and March 11, 1999. All interviews were recorded, with the permission of the interviewees. Each interviewee was assured response anonymity as well as the opportunity to review drafts of this case study to ensure the accuracy of the information.

One member of the Design Projects Reengineering Team acted as a primary contact person to introduce the CPRN project to others in the organization and as a source of information about the restructuring of the Engineering Design Process.

New Public Management

Outsourcing is a management innovation, one among many that have become more and more frequently used in the public sector to address the growing economic pressures to cut budgets, reduce debt and deficits, increase national and international competitiveness, and to reduce the size of government. But public management is not only about the “neutral” and “objective” implementation of “best practices”. Changes in public management also reflect changing “normative visions and guiding philosophies for administering public affairs” (Aucoin, 1995: 3). It is in this latter role that we come to understand that “changes in public management are not merely changes to administrative processes and practices; they are also changes to government itself” (Aucoin, 1995: 3).

Since the early 1990s, the management style undergirding public administration in Canada has been New Public Management (NPM). NPM has four main characteristics: first, an intensive and frequent use of market-like mechanisms for parts of the government that cannot easily be fully privatized (“quasi-markets”). Second, an intensification of decentralization activities. Third, a very heavy emphasis on “quality,” and fourth, a similar emphasis on the needs and desires of the service user/“consumer” (Pollitt, 1993: 180). These relatively new features are combined with pre-existing features that developed in the 1970s and ‘80s, a period focused primarily on efficiency and budget control and on the perceived need to separate the “planning” function of government from the “production” function. Osborne and Gaebler (1992), perhaps the most popular proponents of this theory, describe this separation of roles as a difference between “steering” and “rowing”, arguing that each role should be conducted by a separate set of people who have different motivations and goals:

Steering requires people who see the entire universe of issues and possibilities and can balance competing demands for resources. Rowing requires people who

⁵ The survey of Workplace Issues in Government was conducted in 1998 as part of CPRN’s Human Resources in Government Project. Participating jurisdictions include Alberta, Manitoba, Ontario, Nova Scotia and the federal government.

focus intently on one mission and perform it well. Steering organizations need to find the best methods to achieve their goals. Rowing organizations tend to defend “their” method at all costs. (p. 35)

NPM encompasses these elements from earlier decades, as well as the characteristics introduced in the 1990s (Pollitt, 1993: 187).

The workplace innovations being instigated by politicians and current public sector managers can be seen partly as a response to the economic situation of the past two decades with its focus on reducing debt and deficits, but they are also a response to the problems of the traditional “bureaucratic” paradigm. It is this bureaucratic form of organization that characterized the “golden era” of the post-World War II welfare state. The bureaucratic organization itself was created to mitigate earlier forms of public management that were considered amateurish and patronage-oriented. The bureaucratic organization was characterized by an emphasis on following rules and regulations, controlling costs, the separation of the functions of planning and implementation, and as having a clear multi-layered hierarchy that defines the roles and responsibilities of the organizational members (Borins, 1995: 261-62).

In contrast, the characteristics of the new government organization are a reduced hierarchy, “empowered” employees, streamlined processes and procedures, a broadening of governance to include citizens, workers and unions under the rubric of “stakeholders”, and the privatization of specific operations or services. These initiatives are sometimes called total quality management, continuous quality improvement, “reinventing government”, or “eliminating government waste” (Verma and Cutcher-Gershenfeld, 1996: 201)⁶.

One of the ways governments have been able to achieve their goal of dismantling the bureaucratic form of organization has been to privatize the functions that could most easily be privatized. For the remaining services that could not be so easily privatized, governments have called for an increase in productivity while also demanding that they maintain or improve the quality of the services they offer, yet with seriously reduced financial resources. This latter situation has fostered a willingness by public sector managers to introduce workplace innovations as a means of complying with their new situation (Pollitt, 1993: 48). Outsourcing, the focus of this case study, is one such workplace innovation.

The Restructuring of the Engineering Design Process

The outsourcing of the engineering design process was no less than a complete restructuring of that particular component of the AT&U. Accordingly, the process to conduct the outsourcing was complex, starting with the creation of the Design Projects Reengineering Team, and resulting in substantial consequences for the nature of the work done by the remaining in-house

⁶ There are two different and competing sets of assumptions and principles underlying these initiatives which reflect the larger debate in employment relations. One - labour can be viewed as a cost to be reduced; or two - as a source of value to be enhanced. Both are often found in the same organization underlying the initiatives. In either case, both models “fundamentally alter the traditional roles of managers, unions and employees, as well as the dynamics of the employment relations system” (Verma and Cutcher-Gershenfeld, 1996: 201-2).

employees, and the information technology they required. In undertaking this restructuring process, human resources, the union, and the employees, to varying degrees, all played a role.

The Design Projects Reengineering Team

In 1994, the Deputy Minister, Jack Davis, created an executive team to re-engineer the entire AT&U's business processes and develop a new business plan. This team was called the Reengineering Transition Team. They were told to "downsize, restructure and achieve significant savings for the department" without compromising quality ("Design Projects Team Members", 1997: 1). By August, 1995, once the Re-engineering Transition Team had reviewed the AT&U's business functions, they recommended that the design process be re-engineered. A second team was created to do this: the Design Projects Reengineering Team.

The Design Projects Reengineering Team was comprised of nine members and a facilitator. Two members of this team were also members of the Reengineering Transition Team, which chose the remaining seven team members. The facilitator was brought into the organization to monitor the group to ensure they were working together effectively. Six of the team members were engineers, and the remaining three were, respectively, a management consultant, a systems analyst, and a communications consultant. It was mandatory to have some "line staff" on the team, as well. Therefore, of the 6 engineers, 2 were "staff", while the remaining 4 were "managers".

Not all members of the team were initially in support of their mandate, but "through open dialog and a healthy process, the group evolved to a position of solidarity on the task at hand. While there were philosophical concerns with the end goal throughout the project, *every* member of the group shared the attitude that there was a job to be done and it had to be done to the best of their ability" ("Design Projects Team Members", 1997: 4).

The philosophy underlying the restructuring of the engineering design process was to redesign the organization from the ground up; to design it as though for the first time. The team was given the following specific targets by the Re-engineering Transition Team:

1. generate financial savings of 3.2 million dollars per year;
2. outsource 100 percent of the engineering design process to the private sector, bringing the number of FTE positions to 112, from the existing 333;
3. create performance measures to evaluate the outsourced engineering design process ("Design Projects Team Members", 1997: 2).

The team worked on this restructuring project for four months from October 9, 1995 to January 22, 1996. In order to assist them in their efforts, the team developed a communications strategy. It targeted two audiences: department staff, and "key external stakeholders". "Stakeholders" were defined as "individuals and organizations who are involved in or may be affected by project activities" ("Design Projects Team Members", 1997: 7). Based on this definition, the Design Projects Reengineering Team identified department staff and the engineering industry as stakeholders, notably excluding the province's "citizens". They specifically refer to the Consulting Engineers of Alberta (CEA) and the Alberta Roadbuilders and Heavy Construction Association (ARHCA) as industry stakeholders. Engineering staff, as internal stakeholders were

encouraged to give feedback to the design reengineering team. They were “invited to fill out questionnaires, make presentations and participate in discussions at group information sessions and through group and individual interviews” (“Design Projects Team Members”, 1997: 7).

The key external stakeholders, the industry representatives, were considered the department’s “partners” in the new design process. They were therefore able to provide input through “a number of meetings with group representatives, as well as presentations and open houses attended by a larger number of interested members” (“Design Projects Team Members”, 1997: 7). This close working relationship with the professional body of engineers (CEA) and the contractors (ARHCA) “resulted in a higher degree of buy-in to the process and sharing of risks” (“Design Projects Team Members”, 1997: 9) due to the sense of “ownership” it gave the stakeholders over the new process (“Design Projects Team Members”, 1997: 12).

The team also looked to outside sources for information regarding reengineering. They met with representatives from two local firms that had recently re-engineered their in-house design processes: Interprovincial Pipe Line Inc. (IPL) and CoSyn Technology. Further to this, they contacted the New Zealand High Commission and Transit New Zealand to learn about their experience with outsourcing engineering (“Design Projects Team Members”, 1997: 13) and, in June 1995, they contracted the completion of a best practices literature review of other jurisdictions that had done the same thing. The department also surveyed 39 other government transportation departments in North America to learn to what degree they were outsourcing bridge, grading and surfacing design work. The findings of the literature review indicated that there was a definite trend towards outsourcing these functions although the author did recommend “that a small base of design engineering capability should be retained by Alberta Transportation and Utilities for least an intermediate review and evaluation period” (“Design Projects Team Members”, 1997: Appendix F).

Although the literature pointed to keeping some functions in-house, and it was the team’s first recommendation to also do so, it was ultimately decided that 100 percent outsourcing would be their goal because it was not “efficient” to keep anyone in-house. Keeping even one person in-house would entail having to provide that person with equipment, which would counteract the organization’s attempts to reduce the cost of engineering design activities. The team felt confident that they could resolve any problems that may come up as a result of this atypical decision. One of those problems was to maintain expertise, and as indicated further on in this case study, this is one of the problems that the organization is currently trying to deal with.

The team evaluated a number of options available to them with respect to how to outsource engineering design 100%, yet allow their remaining in-house engineers to maintain their production skills and to enlarge their management ones:

- two-way secondment: a department employee trades places with a private-sector consultant employee in order for each to maintain and enlarge their skills;
- increased training: through courses and workshops offered at institutions such as the University of Alberta or the Northern Alberta Institute of Technology, in-house employees can maintain and upgrade their skills;

- hire experience: hire highly experienced engineers from the private sector or other parts of the government;
- outsourcing: permanently transfer some technical experts to a private sector organization and, through a long-term contract, draw on their expertise as required;
- alliances: employees would do work for other clients, as well as for the department, according to the terms of an “alliance agreement”.

Recommendations of the Design Projects Reengineering Team

In their Final Report the Design Projects Reengineering Team made seven recommendations:

- the implementation of a new design process (to change the role from production to one of primarily monitoring and review);
- to 100% outsource design production and training consultants and to set internal staffing requirements related to the monitoring and reviewing functions at 73 FTE positions;
- to make changes in policies and procedures (elaborated below);
- to create performance measures to ensure that the redesign of the engineering design process is meeting corporate goals;
- to make changes in information technology (\$280,000 will be saved as a result of the systems made redundant when the staff number is reduced);
- to reduce office facilities (1,600 square metres of space would be required to house the 73 FTE positions); increased training (staff need to be trained to learn how to *manage* rather than *produce*); ongoing process evaluation and fine tuning (to be conducted as per the performance measurement results); and
- to create two different processes for handling simple versus complex projects.

Areas of the organization that were slotted to be impacted directly were roadway engineering, bridge engineering, planning, regions and districts (“Design Projects Team Members”, 1997: Appendix B).

The policy changes that the team recommended were:

- i. a review of the design standards and practices
 - They recommended that the current standards and practices be updated to ascertain their cost-effectiveness.
- ii. change in the authorities matrix
 - They recommended the department’s authorities matrix be updated in order to adjust for the engineering design’s new structure. They referred to the need for “empowering” employees, to be done by giving the project manager more authority, specifically in the areas of contract authority, the acquisition and sale of lands, gravel stockpiling and earth borrowing agreements, and the handling of third party claims.
- iii. ministerial approval of a three-year construction program
 - The team suggested that the minister approve a three year construction program, which would allow them to more “effectively manage the new design process and

guarantee its delivery through consultants” (“Design Projects Team Members”, 1996: 7).

- iv. a policy for the annual update of the 5 year construction program
 - They requested the creation of a rolling five year plan, wherein the five year program is formally updated every year.
- v. revision of the departmental policy for engaging consultants,
 - They suggested an update to the policy of requiring all engineering design work allocated to consultants to have to issue a request for proposals. Instead, they recommended the provisions of Standing Offer Agreements wherein consulting engineering firms can be pre-qualified, thereby saving time and cost for both the department and the consulting industry.
- vi. the scheduling of progress review meetings for future year projects
 - The team recommended that the current monthly meetings to review the progress of current-year projects be held tri-monthly.
- vii. policy for electronic data transfer.
 - It was suggested by the team that standards needed to be created with respect to the exchange of electronic data, both internally and externally, in order to facilitate such exchanges, both in terms of time and cost.

The Outsourcing of the Engineering Design Process

The Nature of Work

The engineering design process most broadly refers to all engineering studies needed to determine the appropriate location and design for a needed infrastructure. It also includes “all activities necessary to award a contract or develop specialized instructions to support the construction and rehabilitation of the infrastructure” (“Design Projects Team Members”, 1996: 1). More specifically, the design process conducts grading design, surfacing design, environmental studies, preliminary engineering, structural design, geotechnical design, specialization/ illumination/ pavement markings, contract preparation (tender and award), utilities, aggregates, property services, research and development, information services, testing services (lab), location studies, and functional planning (“Design Projects Team Members”, 1996: 1).

Previous to the restructuring, most of these activities were conducted by employees in the AT&U. The organization itself no longer actually produces engineering designs, but simply sets standards and monitors the designs created by the private sector consultants. This role, no longer one of production, but now one of management, is found in two divisions: Regional Services, and Planning and Technical Services. The Regional Services division is responsible for the engineering project from its inception to its completion. They decide what needs to be done (which “treatment option” to use), where, and when. They are also responsible for hiring and

managing the consultants to carry out the construction end of the project, and for the maintenance and rehabilitation of the structure once the work has been finished. Engineering standards, found in the Planning and Technical Services division, are brought in to review complex jobs conducted by consultants to ensure that they are done correctly. They are considered the “independent eye”.

The new design process categorizes projects according to different levels of risk. Eighty percent qualify as “low-risk” and follow a simplified path for both consultant selection and design review. Twenty percent qualify as “high-risk” and follow a complex path for both consultant selection and milestone reviews. A key element to the success of the organization being able to outsource 100 percent was for the process to be the “cleaned up” in this manner, before the transition was made. Prior to the outsourcing, each project was treated as a “high risk”, or “complex” one, and the work was started from the very beginning. With 80% of their projects now labeled “low risk” or “simple” due to their common, straightforward requirements, they were able to create a streamlined process that allowed the department to forgo much of the work needed in complex cases. This change in the process was considered to be an important element in the success of the outsourcing. One of the interviewees stated that had the process not been so divided, outsourcing the work to the consultants would not have saved the organization money, and would have perhaps increased the costs.

Those employees remaining in the organization that are monitoring the engineering design process being done by the private sector are now using a “one window approach”. The one window approach means having one person in control of the project to address all problems, questions, or concerns about it. This is in contrast to the previous situation wherein an individual may have been referred to three or four different departments to obtain information about a particular project because projects were delivered by various groups within AT&U (e.g. design by head office and construction management by field staff). For the engineering design monitoring employees, this means that the construction manager in each region, the project sponsor, becomes the one window for the project. This has shifted much more responsibility onto this person, giving them full project accountability.

As a result of the restructuring, the department no longer does engineering research and development activities. To compensate for that change, they have set up a partnership with universities and consultants and the cities of Edmonton and Calgary. This partnership is called the Centre for Transportation Engineering and Planning, and is based out of the University of Calgary. This group is used as the mechanism for technology transfer between AT&U and the private sector and for research activities. The centre provides technology transfer through the offering of courses and seminars in highway and bridge engineering.

The Workforce

Prior to the restructuring, there were 333 full-time equivalent positions (FTE's) involved in or supporting engineering design work. The new process now requires 73 FTE positions. The largest occupational group in the work unit is that of scientific/professional. Most of the employees are professional engineers, a group that is approximately 95% comprised of males. Women in the engineering design process were most likely to be working in CADD, which is a

technologist position that was almost completely outsourced. There are 6 CADD positions remaining in the Planning and Technical Services Division, of which 2 are women. The organization also no longer has many people under the age of 30. The estimated age range of employees working in the new engineering design monitoring process is between 40 and 55 years.

The Alberta Union of Provincial Employees (AUPE) represents all the technicians and administrative support people. It is a condition of employment stipulated by the provincial government that all eligible employees must join the AUPE, and may not opt-out. The union does not represent management nor engineers. The technicians/technologists are part of Local 12 of the AUPE and the administrative support people are part of Local 1. There are 1530 people in Local 12 across all of the departments in the government. There are approximately 750 people in the Edmonton chapter, but the numbers for how many of those members currently work in the AT&U are not known. Also unconfirmable via statistics, one interviewee stated that prior to the restructuring, the AT&U had the largest percentage of people from Local 12 working in their organization. Since the downsizing the proportion of Local 12 union members working in the AT&U have become a minority amongst Local 12 members.

Information Technology

Technology is extremely important to the engineering design process, although one interviewee was careful to point out that technology did not determine how the process was restructured, but acted as a tool that “enabled” them to meet the goals set down by the government.

Prior to the restructuring, the mass production of the engineering design process was conducted in-house at the AT&U. Accordingly, the computer technology was designed specifically to process that data. This was followed by software that would create the design using this data and translate the design into drawings. In-house software and “state-of-the-art tools” were developed by the AT&U employees to allow them to do this work and was in keeping with the research and development role they played at the time.

With a shift from a production role to one of monitoring, the focus of computer-aided technology has also changed from design production software to information technology software. They now require software systems that can assist them in their monitoring activities, that inputs information into the system quickly and allows them to process it. They also need software that will allow them to monitor programming of the work itself; that will allow them to see what areas need more work. Finally, they need technology that will allow them to do some “benchmarking”. This is a way of checking whether they are getting value for their money; a way of evaluating the new process.

The department as a whole is also in the process of developing what they call the “infrastructure management system” (IMS). Prior to the reorganization, information was collected by each separate engineering group and inserted into their own software program (e.g., “pavement management system, bridge management system and maintenance management system”). These systems were not able to communicate with each other. The new IMS integrates all of this

information, an important element in allowing for increased efficiency in engineering design. They are currently the only system in the world using Web technology for this.

Since the restructuring, technological innovation in design engineering and the advancement of transportation technology for government projects now rests with the private sector. The private sector motivation for generating these technological innovations comes from the government's pledge to reinvest any consequential savings in infrastructure, an activity which should result in more work for their private sector partners. It is seen as being in the private sector's best interests in the long run to be technologically innovative.

The Role of Human Resources, the Union, and Employees

The Human Resources Branch was involved in the management of human resources throughout the restructuring of engineering design and a number of different units within the department. They were involved in dealing with the employee issues, dealing with the union, handling the redeployment of employees, providing counseling, processing payrolls, and working with line employees to accommodate these changes.

Once the organization had established which individuals were going to be laid off as a result of the restructuring, the human resource people provided these employees with various forms of assistance. They provided job information and created a \$1000 per employee training allowance that could be used for any educational program that would improve the person's employability. They also marketed individuals where they could, meaning that they would include employee résumés with the contracts to the private sector. Further, human resources provided outplacement counseling access for the employee. The counseling was paid for by the department, but the funding came out of each branch division's budget. Finally, human resources conducted "brokering" within the departments, meaning that they worked to have employees moved to other departments that may have had positions available.

Communications set up a network to assist people through the transition. They sent out a newsletter on a regular basis, set up kiosks in both the main office and in the regional offices, created a help line and an email address for people to call, and had information sessions for line managers, telling them how to deal with people leaving the organization and ensuring that they knew the rights and entitlements of these individuals under union agreements. The role human resources played in this was to provide information to Communications with respect to the transition process.

With respect to bargaining unit members in the organization, the department had to undertake position abolishment according to Section 22 of the Public Service Act, and Article 15 of the Master Agreement. Position abolishment for opted-out and excluded employees (such as the engineers in the engineering design process) was also addressed by Section 22 of the Public Service Act, as well as Section E, subsection 46 and 47 of the Public Service Employment Regulation. Management was similarly covered under Section 22 of the Public Service Act, as well as Section 22 of the Management Employees Regulation, and Section II, Insert 2.9 of the Personnel Manual for Management Employees.

While one source indicated that the union-management relationship during the restructuring of the AT&U was close, the more common indication was that the union did not play a proactive role in the restructuring of the organization in general, and in the outsourcing of the engineering design process in particular. The union was “informed” of the changes that were going to occur, and how their members would be affected. While there is some disagreement as to how far in advance the union was given notice about the restructuring (from a few days, by one source, to a month in advance, from another source), there is consensus that the union was fairly ineffectual in dealing with it. As part of their collective bargaining contract, AUPE must be given 30 days notice if the government is going to abolish a position, prior to notification of the employee. The employee is then given 90 days notice. However, in this instance, the AT&U also informed the employees of position abolishments on the same day they notified the AUPE. They were not obliged to do this, but chose to. This gave the employee an extra 30 days notice of position abolishment.

The Human Resource Branch of the AT&U notified higher levels of the AUPE to inform them of the restructuring of the organization and to work with them through the process. This was a departure from the usual relationship that they had with the AUPE, which was a traditional, adversarial relationship. This time, however, they brought the union in, told them the time frame, and stated what this would mean for their membership. The organization kept the union notified of the changes by conceding to AUPE’s request to receive all material generated about the department’s transition process. The department also provided the union representatives with a copy of *Staffing Principles*, a document provided early in the transition process to Branch Heads explaining how human resource reductions were going to be made and how the department was going assist people in finding new positions outside of the organization. This document was also given to staff, to provide them an understanding of how and why certain staffing decisions will be made.

The union’s response to the restructuring was to become concerned with how their members were being treated in the process. They did contest the form of the restructuring. One of the concerns of the union was for fairness and equitability in the rehiring process. This concern led human resources to suggest the implementation of a written exam for all union members. Only those who passed the exam were granted an interview for the new job positions. The union did not exhibit an overt challenge to this idea, and it was implemented. Employees who did not want to go through this testing process were offered a severance package.

The lack of a proactive role played by the union in the restructuring of the AT&U is notable, given that researchers of workplace innovations have found that union involvement and support is often required in ensuring the success of workplace change. This is because there is a higher rate of unionization in the public sector, making them an important stakeholder (Verma and Cutcher-Gershenfeld, 1996: 236). This is discussed further later in this report.

There was little employee involvement in the reorganization too, although it was solicited. Within the Planning and Technical Services Division, the employees were asked to contribute to the grouping of the jobs, the writing of the job description, its classification, and what activities belonged to which job. While this feedback was requested, decisions were always made at the executive level, giving administration the final voice in these areas.

Context of the Restructuring

The outsourcing of the Engineering Design Process is intricately related to the larger restructuring of the AT&U, which in turn is related to the political environment. Soon after the 1993 election of Ralph Klein's Progressive Conservative government, the initiative to restructure the public sector began, and in 1995 the AT&U itself was substantially restructured, following the appointment of Steven C. West as the Minister of Transportation and Utilities. This section places the outsourcing of the engineering design process into the context of the larger restructuring of the AT&U. A description of the AT&U, its history and future plans, and the place of the engineering design process within the organization is provided.

Description and History of the AT&U

The AT&U is responsible for Alberta's primary highway construction, maintenance and rehabilitation, and road use safety. To a lesser degree, they also deal with multi-modal transportation, the control of dangerous goods, ensuring the safe movement of goods by commercial carriers, coordinate disaster and emergency response services, and provide municipal water/wastewater facilities. In doing this, they are committed to providing "best value" and responsible financial management.

The history of the organization goes back to the formation of the province of Alberta. At the birth of the province in 1905, the Department of Public Works was given responsibility for Alberta's then-minimal highway system. Following World War I, automobile use increased substantially, causing increased demands for better highways. To accommodate these demands, the Department of Public Works created a Highways Branch in 1923. In 1951 this branch became its own department, the Department of Highways. The department was renamed the Department of Transportation in the mid-1970s to adjust for the fact that Alberta's transportation system was not wholly comprised of highways. The department was also made responsible for community airports, provincial and forestry airports, rest areas, roadside campsites, vehicle inspection stations and ferries. In 1978 the department was divided into 6 regional offices and 15 district offices, each responsible for the day-to-day field operations, while the head office in Edmonton remained responsible for support services. The Department of Utilities, focusing on municipal water/wastewater, gas, and electric programs, was merged with the Department of Transportation in 1986, creating the existing Alberta Transportation and Utilities department. The department's responsibilities expanded even further in 1990 with the incorporation of staff and services from the Transportation Services Branch of Alberta Economic Development and Trade (now Economic Development). This resulted in the AT&U dealing with rail, bus and air services. The mandate of the department did not change from the incorporation of the department of utilities, in 1986, until 1995, despite numerous spending reductions. In 1995, the department underwent a substantial restructuring which resulted in the outsourcing of the engineering design process (the subject of this case study), as well as primary highway maintenance, construction supervision, information technology services, mail and photocopying services, and blueprinting services. Three years after the initiation of the restructuring, the department made adjustments to the organization, amalgamating project management responsibilities in the Regional Services Division, and adjusting some administrative processes.

In 1998 the department shed its responsibilities for natural gas brokerage with the privatization of Gas Alberta. It also transferred Rural Utilities to the Department of Energy. It has retained responsibility for water/wastewater programs (AT&U, 1999: 5-7).

The AT&U has also recently merged two of its six regional offices, leaving it with four. The head office in Edmonton, Alberta is a central coordinating body for these branches, ensuring consistency in standards across the four regions. These offices are located in Lethbridge, Red Deer, Barrhead and Peace River. They are known as the Southern region, Central region, North Central region and the Peace region, respectively.

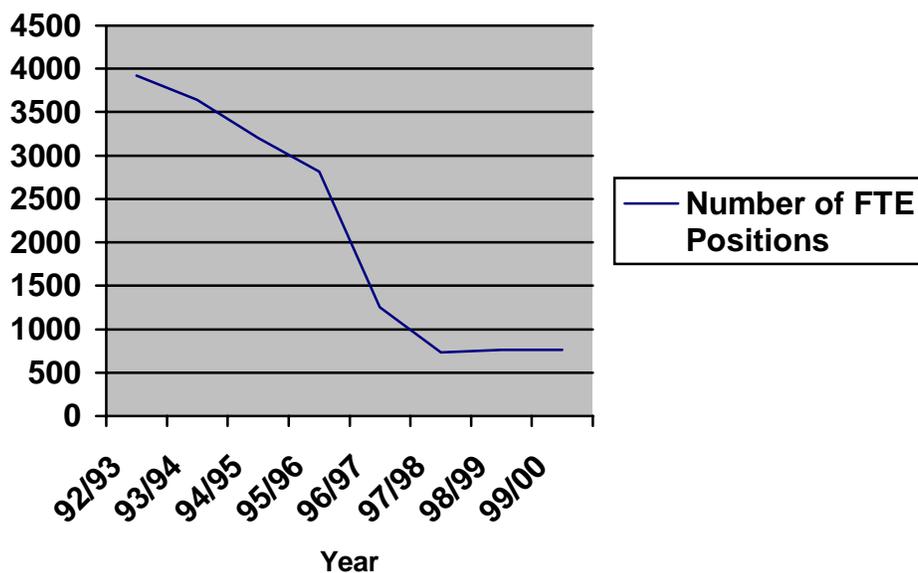
The strongest influence on the AT&U's activities and structure is the political environment. The current Progressive Conservative government, with its advocacy of "free market" politics, is considered to be an "enabler" rather than a "constraint" to the form of restructuring that was conducted at the AT&U. Given their unique role of providing transportation, utilities and infrastructure activities to the province, the AT&U does not have market competition. Through the outsourcing, privatizing, and downsizing activities it engaged in, it has attempted to create a competitive market amongst the contractors and consultants. While the department has attempted to create a "quasi-market", it should be noted that the AT&U still *defines* the parameters of competition for these quasi-market participants. The organization creates the market, decides what work will be done, and how much money is allocated towards it. It may no longer be in a monopolizing position, but it is still very much in an influential one.

Details of the Restructuring of the AT&U

The restructuring of the AT&U is characterized most strongly by outsourcing and decentralization. This had effects on both the size of the workforce in the AT&U and the amount of physical space the organization required.

In 1992/93 there were 3920 employees working at the AT&U and the department took up four floors of the Twin Atria building in which it is housed. The restructuring brought the number of

Figure 1: Number of Full-Time Equivalent (FTE) Positions at the AT&U, by Year



employees to 761 by 1998/99 (see graph) and utilizing only two half-floors of the building.

Prior to the restructuring the organization was comprised of four distinct main areas, each run by an assistant deputy minister: Planning and Development, Administration, Regional, and Engineering. The organization still consists of four divisions, but due to the significant change in their role from “rowing” to “steering”, the work done in these areas has changed (see “The Nature of Work” for specific details about how this change has been manifested in the engineering design process). The four divisions are now named Planning and Technical Services, Corporate Services, Traffic Safety Services, and Regional Services.

As part of the restructuring of the organization, the units within the department underwent a fundamental change. Initially, the organization’s units had been defined with reference to the object requiring attention, for example, a “bridge” unit versus a “road” unit. With the restructuring of the organization, the units were reconstructed based upon which function they performed, for example, “design” or “maintenance”. A specialist in bridges or roads was then allocated to these functional areas. The reason for this shift, according to one interviewee, was to break the “critical mass” of employees and therefore minimize resistance to the outsourcing, by getting everyone to “start from a new page.” This is in keeping with a further mandate to remove the term “engineering” from division and branch names in order to break down the culture of the engineering group who were characterized as “quite strong”, a situation that was seen to be a potential impediment to change in the organization.

There were problems with this structural change in the organization, at least in the Technical Standards Branch that houses the engineers that review consultants’ designs. The primary problem was that the regional offices, who were now responsible for monitoring the work of the consultants, did not also make this change. This caused a problem with the relationship between employees in the central and regional offices, with the central office employees no longer feeling like they were “part of the team”. Another problem was in the compatibility between the central office and the regional offices with employees in the regional offices having to contact a number of different units at the central office. For example, the regional bridge manager could not simply contact the corresponding bridge unit at the central office, but perhaps would have to contact the materials group as well as the structural and hydrotechnical group to obtain the information desired.

As a result of these problems, on December 15, 1998, the head office reorganized the Technical Standards Branch back to its original structure. The reorganization of this unit in the department realigns it with the regional offices and creates a “single window approach”, a criteria that is heavily emphasized in the restructuring criteria.

The most significant event in the AT&U’s recent history has been the initiation of the public sector restructuring by the Progressive Conservative government. In the immediate future, the organization intends to continue to deal with the effects of the recent transition, most notably, they intend to focus on how they will achieve employee renewal. This is discussed in more detail under “Current Challenges”.

Impact on the Organization

The outsourcing of the engineering design process had numerous impacts on various parts of the organization: human resource issues, employees, and unions. While these impacts, for the most part, have not been measured, in keeping with their move to New Public Management, the Design Projects Reengineering Team created performance measures to document the effectiveness of the outsourcing. This section discusses those impacts and measures.

Human Resources

If there is one agreed-upon area of weakness within the organization, it is that not enough emphasis has been placed on human resource issues, either throughout the transition or following. Human resource practices across government are fairly uniform, making information about the organization as a whole equally applicable to the engineering design process.

Recruitment and selection methods

Staffing and selection is mandated through the Public Service Act which gives responsibility or authority for that process to the public service commissioner. In the government of Alberta, staffing and selection is primarily conducted through a competitive process as mandated by legislation. Classification is also legislatively determined by the Public Service Commissioner.

The AT&U has approximately one hundred competitions for jobs every year, including refilling existing positions and the creation of new ones. However, while these are not all strictly new jobs, the jobs at the AT&U are changing so quickly that when a position needs to be refilled, it has usually been transformed into an entirely new position, making the skill sets required for jobs different almost every time the position is advertised. This is a result of the process or technology changing while the function of the job stays relatively the same. Prior to the restructuring, jobs were much more static. Selection for jobs is based on merit.

Employee Qualifications

This new fluidity in the skill requirements for positions has repercussions for the qualifications of employees sought to fill them. The department now requires people who not only have technical knowledge and qualifications, but have the skill sets that are needed to keep the organization on the leading edge. This is an emphasis that was not there 5 or 10 years ago. The department now values people with the competencies to work in teams, lead, provide client focus, and have a strategic understanding or the ability to identify strategic issues. These new attributes are being emphasized alongside the usual academic credentials because employees are now dealing with private partners. The impetus for this emphasis on these new competencies has come from all directions, but most specifically from the government's desire to change how they do business.

Educational qualifications have not changed since prior to the restructuring. However, knowledge and experience is now required. With the new structure of the design process the organization does not believe that they can put a new graduate in one of their positions unless he

or she has plenty of knowledge and experience. Whereas prior to the restructuring the organization would hire and train fresh graduates, they no longer have time to do this training. They now look for engineers and technicians with a minimum of five years experience⁷. The educational requirement for people wanting to work in the new engineering review process is a minimum of either a university degree (for the engineers) or a technical school certificate (for the technicians).

Training

The organization recognizes and emphasizes the importance of training. The Planning and Technical Services Division has created a “Learning Council” to focus on employee training in their unit. For budgeting purposes, this division has allocated \$1000 dollars per year per employee for training. This does not mean that each employee can only spend \$1000 a year on skill upgrading. Some employees spend \$2000-3000 a year, while others do not spend anything at all. The division has not been monitoring how much money is spent on training in recent years because they realize that it is essential to train employees if they want the restructuring to succeed. It is seen as being something that the organization can “give back” to the staff. The criteria for the division to decide whether they will fund any particular training is whether or not the training will help the employee become more flexible within the organization, or whether the training will help the person improve in her/his current job. In order to apply for this funding the employee has to complete a training and skills profile and identify his/her training goals. Training requests across the organization are approved by employees’ managers and supervisors.

The department’s Human Resource Branch is establishing a Human Resource Advisory Committee, which will address, across the entire department, most of the same training issues as the Planning and Technical Services Divisions’ Learning Council. As a result, it is likely that the Learning Council will fold into the newly formed Human Resource Advisory Committee.

While the organization places heavy importance on training employees, their training emphasis has changed since the restructuring. Prior to the restructuring the majority of the training effort went towards training new employees. However, the organization is no longer being used as a training ground for new engineers, given that engineers must have at least five years experience before they can be hired in the engineering review process. With the shift from designing to monitoring and review, the nature of their work is also now very different. As a result, the organization has become very concerned with training senior people to adjust to their new roles in the organization. The department does not have much experience in managing consultants, making it necessary for staff to learn how to do this, to meet departmental requirements, and to maintain employees’ technical expertise. They are also encouraging employees to obtain general skills, rather than remaining specialized. This enlarged focus will create a more flexible workforce that is able to compensate for each other’s absences. Given concerns that there may be higher attrition after the downsizing, it was thought best to cross-train employees so they can

⁷ The department does continue to hire level 2 engineers, who are engineers with some experience (usually from educational co-op programs) and an APEGGA membership. It is still a fairly junior level. They have hired approximately 3 to 5 level 2 engineers in the past couple of years. The department is also involved in hiring co-op students to provide them with the necessary experience to bring them up to a level 2 engineer.

have more flexibility and can be moved around within the organization. This is also in keeping with the department's desire to make their organization more "flexible".

Patterns of Promotions

Promotions are won through competition for positions at higher levels of the organization. These positions are advertised both internally and externally, depending on whether the required expertise can be found within or outside the divisions, departments or the government as a whole.

The restructuring of the department has affected the promotion process. Lateral movements between departments are being actively encouraged, a situation that was once considered less than desirable. However, now it is being promoted as a way to expand and maintain skills. Horizontal movement is starting to be recognized as "growth" alongside the traditional vertical movement. As a result of this, the department is taking a new approach to promotions and competitions in general. There will be much less structure in promotions and more individualized trading of people, a process that focuses more than before on individual personal career development. This is still very preliminary, but is expected to grow.

One version of this type of horizontal promotion is found within the Technical Standards Branch. At the beginning of a new project, an employee is assigned as project manager and given this seniority for the life of the project. At the conclusion of the project the employee is returned to her/his original position. Since such an opportunity to gain this experience would never have been offered to an employee prior to the outsourcing, this form of promotion is seen to benefit these employees. Senior managers are usually assigned these project management positions and junior staff members are offered the vacated senior management positions.

Monetary and Non-monetary Incentives

The nature of monetary and non-monetary incentives differs for staff covered by the collective agreement and the excluded or opted-out groups (i.e., engineers and managers). Any monetary or non-monetary incentives for the non-management staff are mandated by the collective agreement in terms of their salary ranges. Increases are based on performance and are kept within the defined range set by the collective agreement.

Management has a different system. The Government of Alberta implemented a new management payment plan in April, 1998 called the Management Rewards Strategy to reward individual and team performances and contributions. As part of this plan they compared their salary competitiveness with the private sector and altered the pay ranges to match, if necessary. They also reduced the number of occupational families across the government and reduced the number of different pay bands down to 4 from 17. The pay-range bands as a result are much wider and salary movement within the range is determined by the department, usually based on performance.

The heart of this new strategy involved the introduction of "variable pay", which is dispensed only on the provision that the government approves the payment of an achievement bonus. The

achievement bonus is not a part of base pay, nor is it pensionable income. The distribution of the achievement bonus to government departments is contingent on the government achieving its own debt reduction target. If the target is met, all department managers have access to the bonus. The amount that is received by each department, however, is dependent upon whether they have met their own objectives and their own business-plan. Once their bonus is allocated to them, the department determines how to best distribute it amongst its managers. The guidelines for distributing this bonus to managers is that there be a 50-50 split of the achievement bonus, with 50 percent of the funds being distributed amongst all managers who achieved a satisfactory level of performance. The remaining 50 percent is variably distributed to managers who had exceptional contributions towards the achievement of the business plan. The distribution of this latter 50% is considered “variable pay”. Last year, the first year that this was implemented, the AT&U received four percent of their total manpower bonus. Interestingly, in distributing their achievement bonus in 1998 they did distribute an across-the-board lump sum to both the opted-out and excluded groups (including engineers), as well as to bargaining unit members. In 1999 the government also included a distribution of variable pay to the opted-out and excluded classes. They are currently in negotiations with AUPE to determine if and how the achievement bonus can be distributed to bargaining unit members. Therefore, while not a member of management, nor of the bargaining unit, the engineers are still being offered some monetary incentives.

What is interesting about these bonuses is that they are all ultimately tied to whether or not the government first achieves its own goals. That is, the individual manager only receives a bonus if the government has succeeded in its goals and is not tied completely to individual performance. This is a situation that appears to be potentially alienating for employees, rather than motivational. At this point this is only a speculation, and this study did not cull any data that would validate it or disprove it. Further studies supporting or disclaiming this potential consequence would prove interesting.

The AT&U also introduced salary “modifiers” for management employees. These modifiers are temporary salary additions to individuals that are paid to recognize either “hot spots” in the market or to address a specific retention problem. They are not permanent salary increases. The modifiers were originally introduced at the AT&U because the department was facing a “compression problem”. This refers to a situation where a managerial position is unable to be filled from its potential pool of applicants because the annual salary of the managerial position is less than the annual salary currently received by the pool of applicants. By being able to temporarily modify the salary of that managerial position, the department was able to address this problem. However, it was only temporary and was removed once other adjustments to pay ranges had been made that alleviated the problem.

The approval of the use of modifiers come from the Deputy Minister, with the agreement of the Deputy Minister of Executive Council. They may increase salaries, where necessary, to up to 15% higher than the pay band allows for that employee. They may go higher than this only with the approval of the Treasury Board. Salary modifiers are rarely used and then they are only used when there is a “critical” need to recruit or retain managers.

Employee Involvement

The involvement of employees in the managing of the organization is an area that the department has been criticized for. There is a perception that there has not been enough employee involvement and participation within the organization, particularly in the restructuring of it. There are some initiatives currently underway to do that, and the organization's creation of the Human Resource Advisory Committee, already discussed, is meant to address this problem, as well as the training issues. This committee is comprised of people from all levels of the organization and their recommendations will go to executives, providing an opportunity to offer input into initiatives that are being undertaken in those areas. But currently, avenues for employee involvement are not evident in the organization.

Quality circles are now minimally used in the Technical Standards Branch, and were introduced following the restructuring because of the new managerial role that the employees are playing, a role that is seen as requiring employees to have a wider perspective. Quality circles are seen to provide them with this wider perspective because they are kept apprised of the activities and perspectives of employees in other parts of the organization. They also use the quality circles to revisit how some of their work is conducted and to minimize inefficiencies. Quality circles are very similar to the "tech-talks" that are also used. These are informal, periodically scheduled talks led by staff members regarding the activities in their area. This is a forum for information gathering as well as dissemination.

Employees

All of the above discussions are ultimately about the impact of the restructuring on the employees. The organization after the transition required a significantly smaller number of employees, meaning that almost two-thirds of the employees had to look for employment outside of the organization, or make use of the severance packages that were offered. Few jobs were guaranteed for any employee prior to the restructuring, and all employees still wanting employment with the organization had to compete for positions in the restructured workplace. The only positions that were guaranteed prior to the restructuring were the very senior level positions. This includes all Assistant Deputy Minister positions, and a very few Executive Director positions. These positions were guaranteed because it was believed that the people in those positions were crucial to the transition process and needed to be maintained.

The transition period was an extremely stressful time for both employees and management. The significant revamping of remaining positions within the organization meant that for those employees who remained with the AT&U, role clarity was a big issue, adding to their stress. This is a problem that has only recently been fully worked out. There is general agreement, however, that the employees who have remained with the AT&U comprise a very high quality workforce.

While there is no documentation supporting this, it was estimated by more than one interviewee that 95% of the employees let go from the organization found work in the private sector, and the

remaining 5% did not do likewise out of choice. They may have taken an early retirement package or changed careers altogether.

Union

Membership Levels and Support

The most obvious and largest impact on the union has been a reduction in membership and union revenue as a result of so many employees moving to the private sector. At the same time, the union raised dues. Dues were increased 25 percent from 1 percent to 1.2 percent monthly of members' gross salary.

The restructuring also served to highlight the powerlessness of the union for the employees in the engineering design process. During the restructuring, the general consensus is that the union did not serve the employees very well, and membership support for the union, while never overtly strong, has become even weaker. It is the sentiment of many members that the only purpose the union has is to collect union dues. This animosity towards the union by its members comes from the recognition that while the union really could not have done much to change the course of events, it could have done a better job at protecting its employees.

This powerlessness of the union in this regard is a result of the fact that striking is illegal for government employees and arbitration is perceived as being stacked against the union. In the instances where arbitration is necessary, the Labour Relations Board forms an arbitration panel of 3 members. One member is a union representative, and one member is appointed by the government. The Labour Relations Board ultimately appoints the chair. The perception that this three person panel is "stacked" against the union is derived from the fact that the members of the Labour Relations Boards are appointed by the government to their positions. The chair's interests are therefore perceived as being in accordance with the government's.

This situation is relevant to the major workplace issue that the union very recently faced at the AT&U: salary discussions. Local 12, the local covering technicians at the AT&U, have just completed salary negotiations, a negotiation that is related to the provincial government's actions five years ago. At that time, the government of Alberta made massive public sector cutbacks and all civil servants were required to take a 5% salary rollback. This rollback was accomplished through either a 4 percent or a 3 1/2 percent straight salary cut and the remaining amount was obtained through days off without pay. The Alberta economy is currently considered to be very healthy and the government has removed the 5% salary rollback and has added about another 1% on top of that. The bargaining committee for Local 12 (covering the AT&U's technicians) believed that their salary increases should be in the 13-15 percent range, as opposed to the government's offer. Even though a pattern of settlement had been created with other locals accepting the government's offer, one segment of this local wanted to push for more and to bring the situation to arbitration to support their principles. A second segment of the local wanted to settle as opposed to pushing for arbitration because it did not see the union as having any chance of winning the fight.

On March 25, 1999, the local members voted 76.9% in favour of accepting the government's offer, as opposed to pushing for arbitration. The general feeling amongst the membership was that the union's likelihood for success in arbitration was minimal, given that "the cards are stacked against us". As well, the government offered a 2% signing bonus that would have been lost if arbitration had been pursued.

As noted, it was the position of many of the interviewees that the union was ineffectual in protecting their members during the transition and downsizing of the AT&U and the outsourcing of the engineering design process. As noted, the ability of the union to actively resist the outsourcing was severely truncated, due to legislative restraints making it illegal for public sector workers to strike, and due to a grievance procedure that is perceived to be biased against them. So, while they did not actively support the restructuring of the AT&U, they were not able to substantially resist it, either. Given these parameters, the question becomes: what could the union have done to be more proactive? One of the interviewees pointed out that one of the ways the union could have better represented their members during the outsourcing was with respect to the treatment of long-term, non-permanent employees. There were a number of employees who had been with the organization for 10 to 15 years, but were not considered "permanent". As a result, these people were not offered the same severance packages that permanent employees had been. The interviewee stated that the union could have fought for similar packages for these non-permanent employees because the longevity of their employment with the AT&U unofficially made them "permanent" employees. I was unable to verify whether the union actually did or did not push for this. It was the observation of this interviewee that the union did not do so, but a second interviewee questioned whether that was the case. The latter person speculated that the union may have pushed for it, but had been unsuccessful in their bid. Regardless, the AT&U did not have very militant union members prior to the outsourcing, and the restructuring, perhaps contrary to expectations, appears to have diminished union support even further.

Relationship with Management

Prior to the restructuring, the relationship between the union and management at the AT&U was fairly amicable and nonconfrontational. The restructuring, if it did anything at all to this relationship, appears to have helped it. The union was under heavy pressure at the time of the transition and they did not always agree with management on the restructuring of the organization, but they certainly understood what was being done and how it was going to happen. Differing somewhat from previous practice, during the transition both were more willing to communicate with each other in advance than they had been in the past. The union did express their concerns to management at the AT&U, and were successful in having a few slight revisions made. This experience strengthened the rapport between the union and management, and grievances filed in the AT&U have declined "dramatically".

Currently, management generally only meets with union representatives when there is a problem. The union is rarely involved in organizational change, except to be informed about it. On a departmental level, the organization has joint initiatives with the union in the areas of health and safety, placement of employees, and scheduling.

The restructuring improved communication between line employees and executive members. Prior to restructuring, interaction with a manager was infrequent, but due to the reduced layers of hierarchy after the restructuring, this interaction is now occurring on a daily basis. By many reports, the technical workers and management are working together very well. While it is noted that many employees are now skeptical about new management-driven initiatives, it is also recognized by these members that the decisions about outsourcing the engineering design process, and the AT&U generally, were politically driven decisions made above upper management (executive directors, assistant deputy ministers, and deputy ministers) and that management was not directly responsible for the decisions made.

As is typical in such cases, the Award of Excellence conferred on the unit in 1997 was accepted on behalf of the team by the managers. Many of the staff were of the view that this kind of practice should be changed to explicitly include the non-managerial staff as well.

Performance Measures

In keeping with New Public Management principles, the Design Projects Reengineering Team designed performance indicators to evaluate their new form of service delivery. The organization's standards for evaluating the success of the restructuring were whether the new process reduced cost to the government, and increased the quality of work, while holding steady the amount of time required to complete a project.

The Design Projects Reengineering Team recommended that cost be reduced in the following areas:

human resources	\$3,505,600
process improvement	\$3,566,300
information technology	\$280,000
office facilities	\$864,000

The savings for human resources has been realized primarily through the reduction in the number of full-time equivalents working within the AT&U. Process improvement saves the organization money as a result of being streamlined and because design cost is reduced as a percentage of the whole project cost. Information technology saves money by reducing the use of unnecessary and obsolete systems, although it should be pointed out that how these savings fare against the continual need to upgrade the new IT is not mentioned. Office facilities save the department money due to the reduced amount of office space and work stations needed as a result of the reduction of full-time equivalents.

The Design Projects Reengineering Team also developed seven performance measures to evaluate the new process's effectiveness in meeting various aspects of the department's Corporate Measures. These corporate measures are grouped under three categories:

- 1) *Measures supporting public safety.* This includes reducing highway collision rates, improving safety for commercial vehicles on the highways, reducing the risk of accidents

involving dangerous goods, having effective provincial response to emergencies and disasters, and reducing the risk of accidents requiring the services of rural gas distributors;

- 2) *Measures supporting preservation of the transportation infrastructure.* This includes maintaining the condition of primary highways and bridges, reducing weight overload damages to roads and bridges, determining highway user satisfaction with the driving conditions on the primary highway system (interpreted to equal their satisfaction with the outsourcing), and that private contractors are meeting all the maintenance standards;
- 3) *Measures supporting contribution to the Alberta Advantage.* These goals are to accelerate the key highway improvement initiatives and to ensure the efficient movement of people and goods along key primary highway routes (“Design Projects Team Members”, 1996: Appendix E).

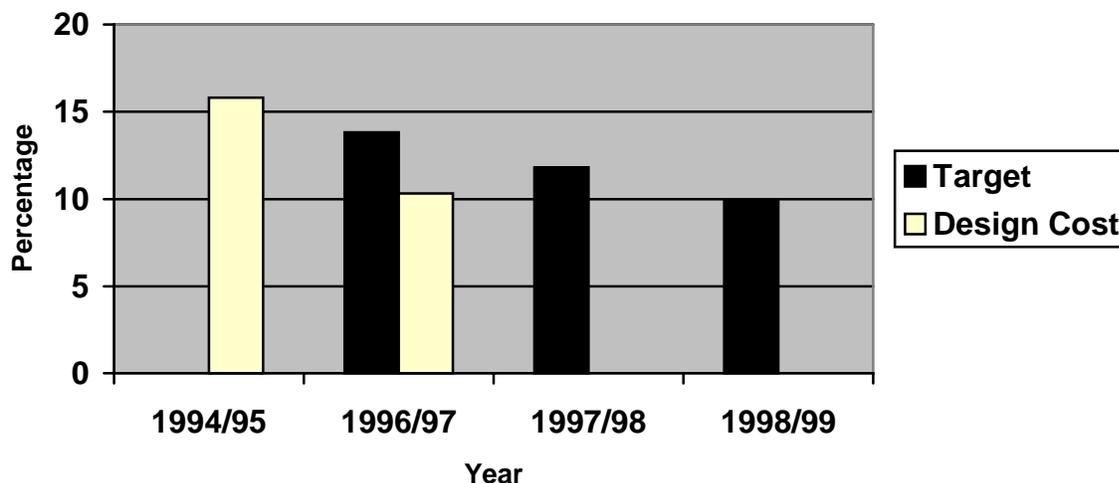
The measures that the project team created to ensure that the outsourcing of engineering design assists in allowing the department to meet these corporate goals are:

- 1) total design cost as a percentage of total project cost;
- 2) number of redesigns within 10 years of construction;
- 3) cost increases due to design deficiencies (addenda);
- 4) cost increases due to design deficiencies (unit price approvals);
- 5) collision rate exceeding provincial average for roads and bridges;
- 6) variance between design estimate and tendered amount;
- 7) percentage of design projects delivered on time; and
- 8) performance evaluation ratings.

In all but the last two of these measures, the respective figures for AT&U in 1994/95 were used as a baseline for comparison. There were no comparative figures in 1994/95 for the last two measures. The first set of measures completed in 1996/97 indicate that in all areas they have improved over their 1994/95 baseline measures, but only in some cases did they meet or exceed their targets for 1996/97.

They brought their total design cost as a percentage of total project cost to 10.3%, down from 15.8% in 1994/95 and exceeding their target of 13.8%. This even exceeds their 1997/98 target of 11.8% and almost meets their 1998/99 target of 10.0%. This measure is meant to determine

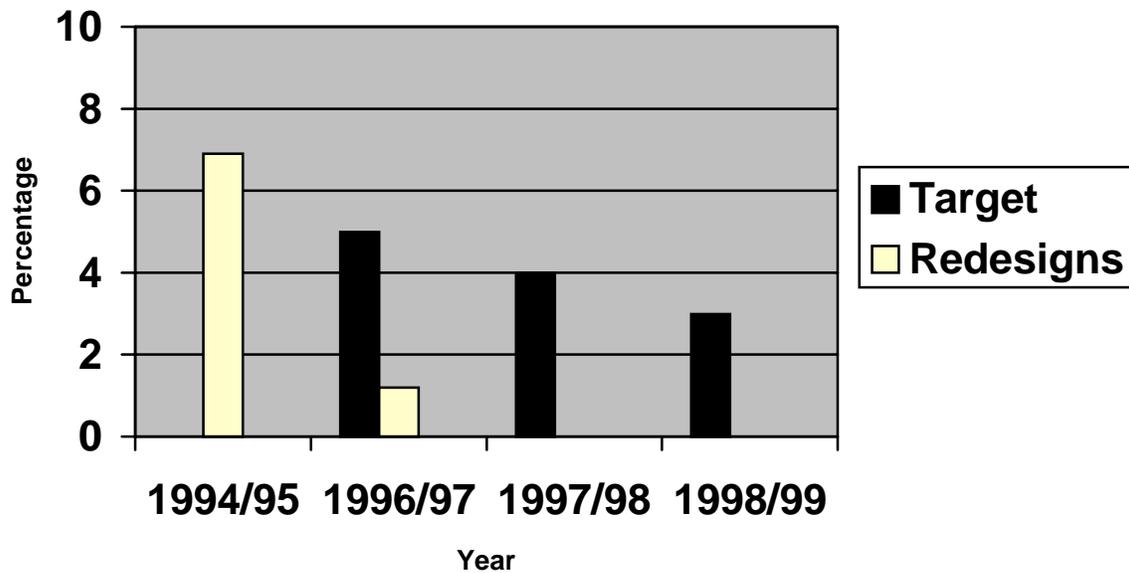
Figure 2: Design Cost as a Percentage of Total Project Cost



whether the redesign contributes to the Alberta Advantage by reinvesting in highway infrastructure, thereby ensuring the acceleration of key highway improvement initiatives.

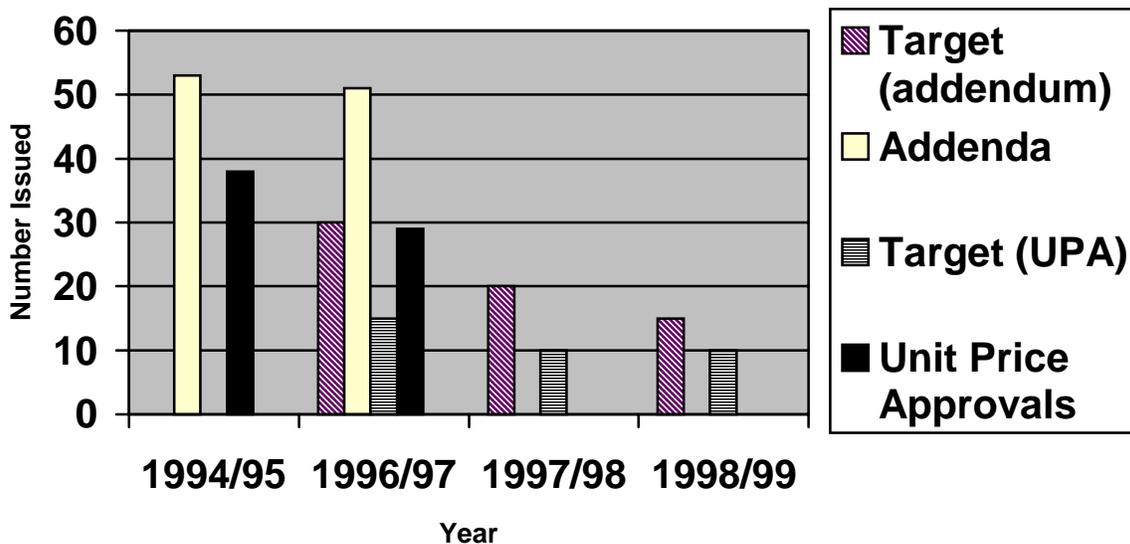
The same is true for the number of redesigns required within 10 years of construction. In 1994/95 6.9% of their completed projects had major design work done on them within the past 10 years. At the end of 1996/97, 1.2% of their completed projects required major design work within the past 10 years. Their target had been 5.0%, and their target for 1998/99 was 3.0%. One year past the restructuring they had exceeded all of their targets. This measure is meant to determine whether the redesign contributes to the Alberta Advantage by addressing the level of service for primary highway users, thereby ensuring the efficient movement of people and goods along key routes.

Figure 3: Redesigns as a Proportion of Total Projects Completed



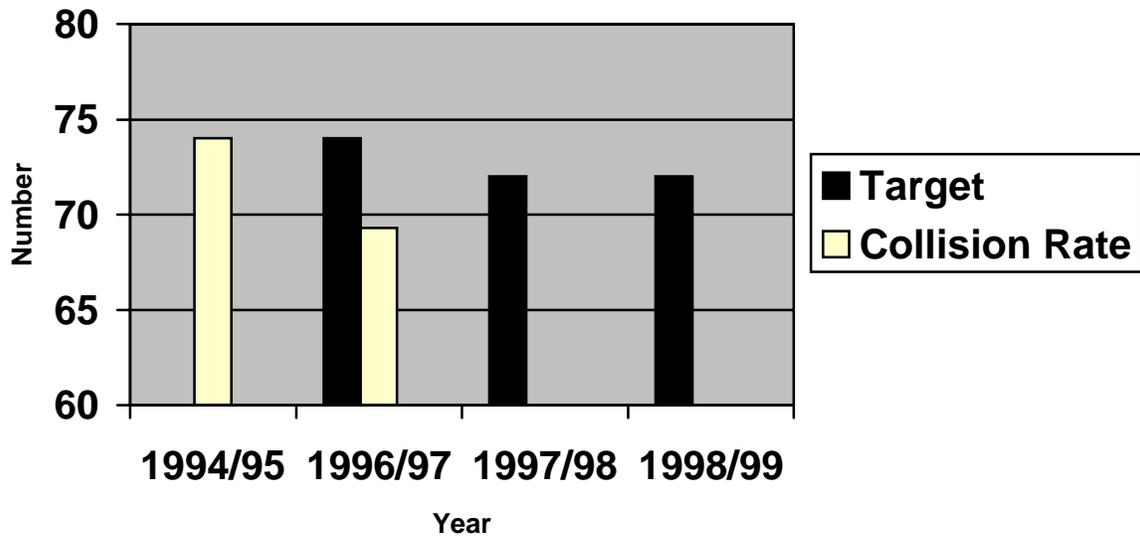
In the case of reducing the number of cost increases due to design deficiencies (meaning that they were required to issue “addendum” during tendering or “unit price approvals” during construction as a result of design oversights or errors), they reduced the number of cases in which this was required, relative to the 1994/95 baseline, but they did not meet their 1996/97 targets. In 1994/95 they issued 53 addenda and 38 unit price approvals. In 1996/97 they issued 51 addenda and 29 unit price approvals. Their targets were 30 and 15, respectively. Their 1998/99 targets are 15 and 10, respectively. These measures are meant to determine whether the redesign contributes to the Alberta Advantage by reinvesting in highway infrastructure, thereby ensuring the acceleration of key highway improvement initiatives.

Figure 4: Number of Projects Having Cost Increases due to Design Deficiencies (Addenda and Unit Price Approvals)



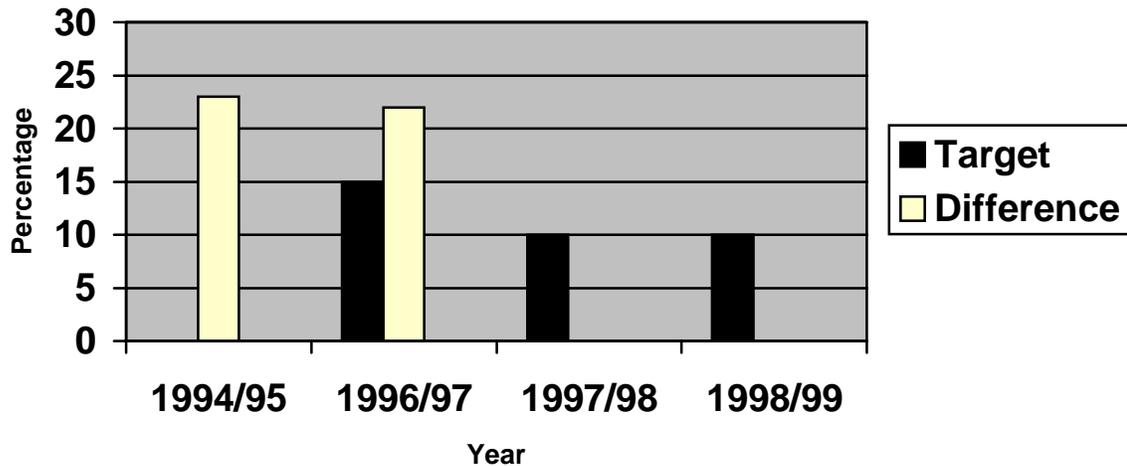
In 1994/95, the department measured 74 collisions per 100 million vehicle kilometers, which is also the current provincial average collision rate. In 1996/97, there were 69.3 collisions, which is lower than their target for that year of 74. It also exceeds their 1998/99 target of 72 collisions per 100 million vehicle kilometers. These measurements are derived from the collision rates on roads and bridges that were constructed or rehabilitated within the preceding 20 years. This measure is meant to determine whether the redesign of the engineering design process supports public safety by reducing highway collision rates.

Figure 5: Number of Collisions per 100 Million Vehicle Kilometres



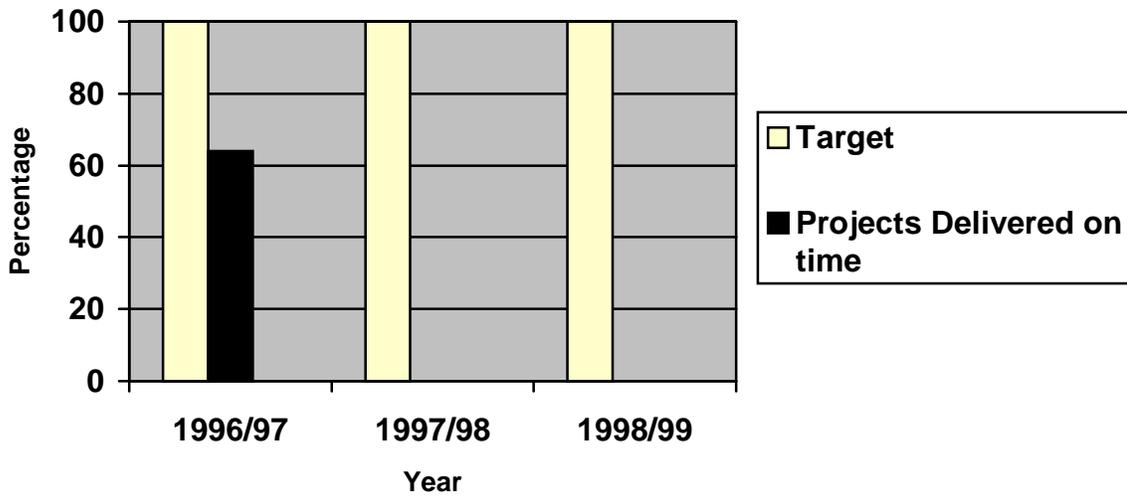
In 1994/95, the variance between the cost of the design estimate and the actual tendered amount averaged 8% above or below the estimate. However, 67% (or two-thirds, or one standard deviation) of the organization's projects had a variance between the design estimate and tendered amount that fell somewhere between 23% above and below the average of 8%. The department's goal in 1996/97 was to have 67%, or two-thirds, of their projects fall between 15% above and below the average difference in variance. In this respect, the department did not meet their target, and barely improved over the 1994/95 baseline. In 1996/97 67% of their projects had cost variances that were between 22% above and below the average. Their goal for 1998/99 is to bring this variance to 10% for two-thirds of their projects. This measure is meant to determine whether the redesign contributes to the Alberta Advantage by reinvesting in highway infrastructure, thereby ensuring the acceleration of key highway improvement initiatives.

Figure 6: Difference Between Design Estimate and Tendered Amount for 2/3 of the Projects



In 1996/97 the organization had targeted having all of their projects completed on time. With only 64% of their projects meeting this goal in 1996/97, they did not reach their target. 100% is also their target for 1998/99. This measure is meant to determine whether the redesign contributes to the Alberta Advantage by reinvesting in highway infrastructure, thereby ensuring the acceleration of key highway improvement initiatives and by addressing the level of service for primary highway users, thereby ensuring the efficient movement of people and goods along key routes. It also is meant to determine whether the redesign supports the preservation of transportation infrastructure by ensuring the maintenance of primary highways and bridges.

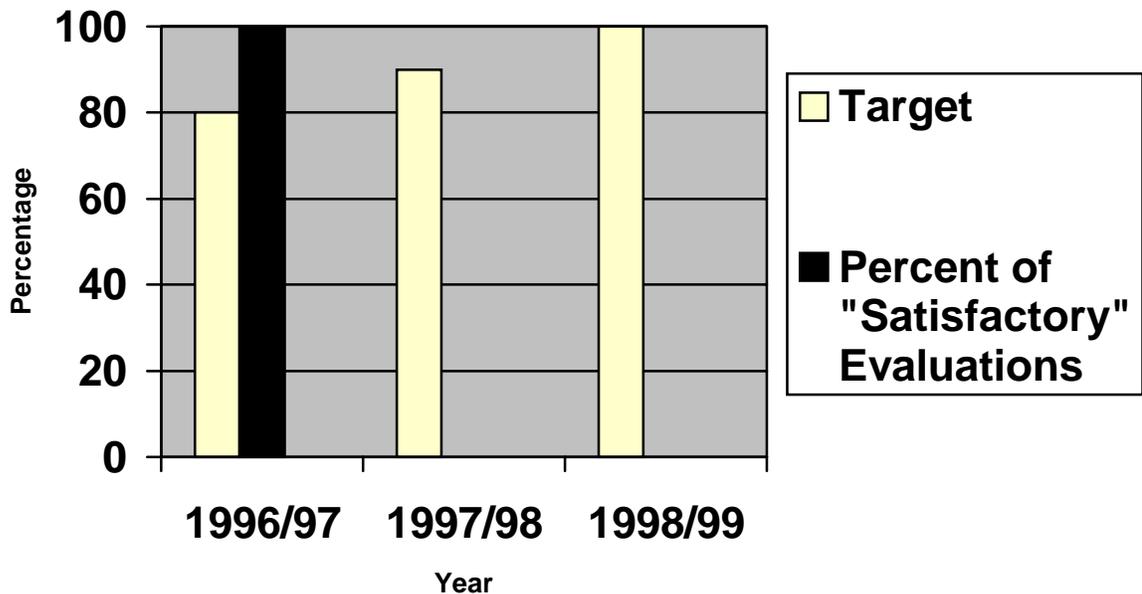
Figure 7: Percentage of Design Projects Delivered on Time



New in 1996/97 was the implementation of survey questionnaires for each project, intended to allow the consultants and contractors to evaluate the department's new process. The rating was set on a 5 point scale, with "3" being considered satisfactory. In 1996/97, the department targeted 80% of their projects to receive a "3" or better rating. They exceeded their goal, with 100% of their projects receiving this rating. This also exceeds their 1997/98 goals of 90% and meets their 1998/99 target of 100%. This measure is meant to determine whether the redesign supports the preservation of transportation infrastructure by confirming that the highway users are satisfied with the primary highway system, and indirectly, that they are satisfied with the outsourcing. However, as the questionnaires make evident, the "highway users" are never asked their opinions; the surveys are filled out by consultants, and contractors. As well, even if the "highway users" *were* asked how satisfied they were with the highway system, that cannot be taken as an indication that they are therefore satisfied with the department's new process. Service delivery mechanisms are not equivalent with service outputs.

A second point that should be made about this particular measure is the self-reinforcing nature of the evaluations. The department outsourced a tremendous amount of work to the private sector, thereby benefiting the businesses of the private sector consultants and contractors immensely. Asking only these same beneficiaries to evaluate the process is not likely to produce objective results.

Figure 8: Stakeholder Evaluations of Transportation Infrastructures



In their submission to the Alberta government for the premier's award, the authors of the report evaluate themselves:

General feedback is that the new process is operating satisfactorily and is meeting the needs of the stakeholders. This transfer of technical expertise to the private sector has both stimulated the highway transportation industry and provided an opportunity for this expertise to be marketed around the world (i.e. The Alberta advantage).

As of January 1997, cost savings have reached \$8 million for the last 12 month period....In terms of customer satisfaction, AT&U's regional directors are pleased that projects are delivered early and at lower costs while quality of project designs are not compromised.

Private sector engineering consultants are pleased with the increased opportunities for design work and have proven they can maintain standards without increasing overall cost. The transfer of department technical experts to the private sector has provided an opportunity for the private sector to market this expertise around the world (i.e., contributing to the Alberta Advantage). Contractors have found that they can work on projects designed by consultants just as well as they did on projects that were previously designed by AT&U's staff.

Not everyone agrees that quality has managed to remain so high, however. Concern for quality comes from belief that consultants are concerned with profit and this works against offering a good quality service. One interviewee stated that this has meant that the quality of the design work initially decreased with the transition to 100% outsourcing, because consultants did not yet know how to do the work cheaper, yet still retain high quality. In the three years since the outsourcing, consultants have been given the information they need to allow them to cut these overhead costs, which should assist them in turning their focus to quality.

Overall, the design projects reengineering team managed to exceed their mandated goals. They estimate eight million dollars a year is being saved with the new process, almost five million dollars per year more than their targeted 3.2 million. They also exceeded their goals in reducing full-time staff equivalents. Their goal was 112 FTE's, but they managed to reduce staff to 73. A year after the design projects reengineering team completed their report the majority of the recommendations had been "successfully implemented".

Current Challenges

With such fundamental and sweeping changes to the organization, it is almost inevitable that some new problems are going to arise as a result. In the case of the AT&U, these challenges come in the form of managing employee renewal, maintaining corporate memory and maintaining employee skills.

Employee Renewal and Corporate Memory

A very critical issue for the organization and for the engineering design process is going to be one of renewal, or “succession planning”, to address the problem of a lack of “bench strength.” There are very few employees working in this area that have less than 10 years of seniority with the government and many of them may be eligible to retire within the next five years, or moving to the private sector (to satisfy their “itchy fingers”; to do the outsourced engineering design production). The potential loss of experience or “corporate memory” this presents is going to be a large challenge for the organization because currently the new engineering design review and monitoring process has only one and a half employees per specialty. Should any of these employees leave the organization, the department does not have the employee-power required to refill their positions. As well, there were high amounts of employee stress during the transition, and it has not completely dissipated yet. Almost four years after the transition “role clarity” is sometimes still ambiguous, further exacerbating the problem of encouraging people to leave the organization.

Employee Skill Maintenance

There is concern about the stagnation of current employees’ skills in the engineering design process because they are no longer using them in their new roles as reviewers. As well, no one in the organization works with the full design process any longer. Delivery of the full range of the program is now done by a number of different organizations so new employees are not exposed to the entire task. These concerns have led to a partnership with the Consulting Engineers of Alberta whose member firms are now doing the design engineering work, and the Alberta Road-builders and Heavy Equipment Construction Association, who are facing a similar problem. The three organizations have put together a task force to determine how they can generate interest about the industry amongst students coming out of high school and university and to augment and enhance the skill set of the current employees.

The previously-mentioned Learning Council in the Planning and Technical Services Division has also been concerned about this problem. To address it, the council set up a training program whereby the organization supports any course work done by employees to maintain or enhance their skills. The Learning Council has also suggested an exchange with private industry be implemented, and the Human Resource Advisory Committee has uptaken this idea. It will be introduced shortly. This program would see department staff temporarily transferred to a private sector consultant as part of the awarding of a department contract. This would allow the department employee to keep their “hands dirty”, be exposed to production work, and gain an understanding of the whole process.

Conclusion

The outsourcing of the engineering design process at the AT&U is one of the many management innovations being implemented in industrialized states to meet politicians’ goals of transforming governance from a “rowing” role to a “steering” role. This changed role is the essential characteristic of the outsourcing of the engineering design unit. The AT&U moved all of the individuals involved in the production work of the design process to the private sector, creating a

quasi-market amongst the engineering consultants. Those who remained in the organization are completely focused on “steering” activities: monitoring and reviewing work done by the private sector consultants, and setting policy and standards for those consultants to follow.

This change in philosophy bore out a plethora of other significant changes in the AT&U and in the engineering design process. The nature of the work conducted by employees involved in engineering design at the AT&U changed substantially from being a hands-on job of producing designs to a managerial job of reviewing work done by consultants. With the production function of the design process outsourced, the number of employees remaining at the AT&U still dealing with the engineering design process was reduced from 333 to 73, a situation that indirectly reduced the number of women working at the AT&U because the positions in which women were more likely to be found (CADD work) were moved to the private sector. The changed role of the AT&U to take on a “steering” rather than “rowing” role triggered a reorganization of the department such that the engineering design monitoring, reviewing, and standard setting functions became housed in different parts of the organization. The change of role from production to managing also required substantial technological changes; new hardware and software was required.

Human resource issues have also changed as a result of the new role of the engineering design staff. Qualifications of employees for engineering design review positions have broadened to include an emphasis on the ability to work in teams, to be flexible, to be committed, and to be able to learn new skills and make decisions. Greater levels of experience are required of new employees and training has become focused on helping existing employees become more useful to the department (via an increase in generalized skills that would allow them to become more “flexible” within the organization) rather than on incorporating new employees into the workplace. Skill retention of engineers and technicians has become a concern, given that in-house employees are no longer doing production work, but are only evaluating the work done by consultants. Programs are being created with the private sector to attempt to address this problem. The traditional form of vertical promotions has become less emphasized in favour of lateral movement within the department, given that the hierarchical layers within the organization have been reduced.

An important human resource issue is that of renewal. New, young engineers and technicians are not being hired and trained to take over for the large number of current employees who will be retiring in the near future. As well, there is concern that the current employees may be tempted to move to the private sector where they can do actual production work, instead of strictly monitoring and reviewing tasks. The organization has become very lean as a result of the restructuring, with very few people working in duplicative roles. Should engineers and technicians leave the organization to work in the private sector, there will not be the necessary highly experienced people required to take over these positions.

The above elements are in keeping with the characteristics of New Public Management, with its focus on the de-bureaucratization of the employment relationship. Also consistent with NPM’s characteristics of emphasizing merit and performance indicators, the government has introduced monetary incentives and placed a heavy emphasis on performance measures.

Based on the measures set out by the Design Projects Reengineering Team, the outsourcing of the engineering design process has been successful. They managed to save \$8.2 million annually, exceeding their target of \$3.2 million, and reduced FTE positions from 333 to 73, exceeding their target of 112. In one year they met the targets for 3 of their 8 performance measures: they reduced their design cost percentage of total project cost, reduced the number of redesigns as a proportion of total projects completed (although given that this is measured over 10 years, it is difficult to say that the outsourcing of the engineering design the year prior was the cause of this), and they exceeded their target for the percentage of “satisfactory” evaluations by consultants and contractors regarding the new design process. They did not meet their targets for reducing the number of projects having cost increases due to design deficiencies, nor for reducing the number of collisions per year on Alberta’s main highways. They were also not able to reduce the difference between the design estimate and tendered amount on 2/3 of their projects to the degree desired. Finally, only 64% of their projects were delivered on time, thereby not meeting their goal of 100%.

While by many accounts the outsourcing of the engineering design has been successful for the Alberta government, it needs to be acknowledged that the transition was an extremely stressful process for the department’s employees. One of the interviewees stated that a common sentiment amongst some department employees is that the employees who left the organization four years ago were the “lucky ones” because they did not have to deal with the stress that arose as a result of the restructuring. Furthermore, one of the policy recommendations of the Design Projects Reengineering Team was to “empower employees”. However, this translated into an actual recommendation of giving the project manager more authority, a situation which only works to further “empower” managers. This is reflected in the emphasis on the need for a “single window” approach to projects that give the project manager complete responsibility and accountability. How staff employees are themselves “empowered” is not addressed.

Comment also needs to be made on the ability of the private sector to take on the work outsourced by the government. A concern emerging from the interviews was that the engineering design process work was contracted to the private sector before they were fully capable of handling it. While this situation is starting to improve, one of the concerns is that research and development work is not being given enough attention by the private sector, leaving this important task undone. The private sector is only now (three years later) managing to deal with the amount of work being given it by the government, a situation that increased the stress of the transition for employees working in the new engineering design monitoring and review.

Before concluding this case study, I would like to pose a few questions. How would the outsourcing of the engineering design process rate if the term “stakeholder” was broadened to include “citizens”, or the “public”? Would outsourcing still be considered a “best practice”? This brings to the forefront the issue that the public/citizens may be interested not only in the outcome of their government service deliveries, but also in the how those services are delivered and in the quality of worklife experienced by the employees offering them.

Another question that can be raised concerns the department’s shift from a “rowing” role to a “steering” one. To accommodate this, the jobs of employees at the AT&U changed substantially. As already stated, they no longer engage in the production side of design, but in the monitoring

and review side of it. With such a change, it appears that the creative element to their job has been removed. Consequently, are those employees remaining at the AT&U satisfied with the nature of their work? Certainly the department *is* concerned about in-house employees getting “itchy fingers” and moving to the private sector where they can engage in design production. While this concern was not the driving force behind the introduction of arrangements with the private sector to have their employees work there for short periods of time, these arrangements may nevertheless work to ameliorate this potential problem.

These are questions for further thought and research. The outsourcing of the AT&U’s engineering design process has proved to be an interesting and informative case study for public policy researchers and government workplaces that may also be considering it.

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