

Policy Networks, Policy Change and Causal Factors
A Uranium Mining Case Study

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ABSTRACT

Policy networks have been studied for decades with the intent of understanding the interrelationships between policy actors, the policy regimes within which they are found and the exogenous and endogenous events that can impact policy making and change. Policy network theory has developed established relationships that can be used for policy research into the mechanisms that drive policy change. Howlett (2002, 2009) and Howlett and Cashore (2007) have developed analytical tools that form a model which first organizes policies into two broad categories –firstly, the components of the policy associated with its overall aims or policy goals; and secondly, the instruments or means required to deliver the policy. These two broad categories are separated into three sub-categories of: firstly, policy aims or instrument preference; secondly, policy objectives or specific policy tool, and thirdly, a specific on-the-ground target or policy tool setting (calibration). This policy categorization results in six component categories. Secondly, the model can distinguish policy network type by examining the relationships between actors and ideas that move within a policy network and thirdly, determines the pace, direction and type of policy change. When this model is applied to a policy sector that can be studied over a long period of time, causal relationships between policy actors, ideas, network type and policy outputs can be determined. The identification and analysis of these causal relationships will demonstrate the value of policy networks and their important role in the study of policy systems and change. A case study covering six decades (1942-2007) of evolving Saskatchewan uranium mine policy will be presented. There has been a rekindled global interest in nuclear power which includes the uranium mining policy sector. New uranium mine exploration is continuing at a high rate in

northern Saskatchewan driven by expected high future demands for uranium.

Saskatchewan is currently the second largest producer of uranium in the world.

Understanding the complex relationships involved in this policy sector can result in better policy decision making processes and societal outcomes. The key research questions associated with this case study are: What kind of policy networks were in place? What types of changes took place and what were the drivers of change? What are the causal factors related to policy actors, their regimes and policy instruments? Were the changes sustainable and why or why not? What were the successes and failures of the policy initiatives and reasons? How effective are the analytical tools that were used?

Answering these questions will provide another source of data and analysis to policy network study and provide some potential tools for policy practitioners to improve policy derivation within their fields of practice.

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DEDICATION

I dedicate my dissertation work to my family. My children, Leah, Colin, Martha and Breda have encouraged and supported me throughout this long journey. Their commitment to me and our family provided me with the strength and confidence to complete this project. My best friend and love, Mary Sue was with me throughout the pursuit of this degree, the preceding degrees and all the work, frustrations and triumphs they represent. She made the extra efforts to keep the family right side up throughout and to her I dedicate all.

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INTRODUCTION

The mining of valuable minerals and materials from the earth has been carried out since the beginning of civilization. The mineral uranium was identified by Martin Heinrich Klaproth in 1789. Its radioactive properties were discovered by Henry Becquerel in 1896. Research by Enrico Fermi and others resulted in its use as a fuel for the nuclear power industry. World War II and the race to develop a nuclear weapon launched the global uranium industry that has now been in place for over seventy years. Post World War II witnessed the development and application of nuclear power as a source of electrical power and the era of nuclear power commenced in the late 1960's and 1970's. The industry has ebbed and flowed over the past number of decades impacted by high costs associated with nuclear power, the effects of the anti-nuclear movement concerned with the use of nuclear energy for non-peaceful purposes and the long-lived impacts of radioactivity on the environment. Moving into the 21st century we are witnessing a global nuclear revival due to the rising demand for electrical power, the attention now being placed on climate change and the energy production byproducts of greenhouse gases. This has resulted in a drive to diversify electrical production to fuel sources other than fossil fuels (Bratt 2012). The demand for uranium and the creation and operation of uranium mines is driven primarily by this global demand for nuclear power.

The rekindled interest in nuclear power within Canada and around the world has also reignited the visceral emotions and conflicts between those supporting nuclear power and those diametrically opposed. In between these polar opposites are most of the rest of society that either wish to become better informed regarding these issues or they remain

indifferent to the complexities of how energy reaches their homes and workplaces and the societal impacts – good and bad - that result, leaving these issues to their duly elected officials and policy decision players. The study of how and why policy decision makers and members of society interact to discuss and address policy issues of this nature is the primary driver of this thesis. Studies resulting in a better understanding of these relationships can allow the design of better policy decision making processes in the energy sector and ultimately better societal outcomes. As will be shown in this thesis, events such as World War II, electoral changes and fluctuating market supply and demand of uranium have resulted in changes to the Saskatchewan uranium policy sector and the policy actors and ideas found within. Understanding these relationships amongst these actors and the resultant policy changes will help to inform current policy decision makers in adapting to a future where energy decisions have impacts that can change our economy, our environment and our society.

Policy network theory has become a major approach to the study of public policy making in Canada and elsewhere. Thinking about policy making as involving more-or-less fluid sets of state and societal actors linked together by specific interest and resource relationships has emerged as a powerful tool in policy analysis, both from a theoretical and practical perspective. (Howlett 2002, p. 235).

The primary aim of this dissertation is to contribute to policy network study through the analysis of policy derivation and change in an historical case study of uranium mining in Canada and Saskatchewan.

In Dowding's 1995 critical review of the policy network approach, his principal critique is based primarily on the contention that network structures cannot be causally

related to different types of policy outcomes and impacts and the regimes within which they are found. In order to study relationships between policy network and policy outcomes, tools to understand and measure policy changes and causal relationships must be developed and applied. Most policy change that occurs is normally accomplished with incremental steps building on past policy decisions and their implementation instruments (Howlett 2002). Policy change can also be more significant, which is termed paradigmatic change (Hall 1990) and is usually associated with new policy actors engaging in the policy system (Kingdon 1984). Policy changes, whether these are paradigmatic or incremental, can occur at a rapid or gradual pace depending on the policy actors and the ideas that they bring to the network. Measuring these changes can be accomplished through the analysis of policy goals, instruments and how those instruments are used and adjusted.

This dissertation will employ analytical tools developed by Cashore and Howlett (2007) and Howlett (2002; 2009) to: examine the relationships between policy network actors, the ideas they bring into an interest network and their interactions with the discourse community; classify the components of policy that were developed and implemented over the case period into six distinct categories - policy goals and policy means each sub-divided into: policy aims or instrument preference; policy objectives or specific policy tool, and a specific on-the-ground target or policy tool setting (calibration). The pace and directionality of policy changes that occur will also be determined.

These tools will be used to identify the causal relationships between policy actors, ideas, network type and policy outputs, outcomes and impacts. The identification and

analysis of these causal relationships will demonstrate the value of policy networks and their important role in the study of policy systems and change related directly to Dowding's critique specified above. The use of these tools will allow for an in-depth analysis of complex policy derivation over a long case study period. The robustness and application of these analytical tools has been tested and applied to other policy case studies (Howlett 2002; Cashore and Howlett 2007; Kern and Howlett 2009; Martens, McNutt and Rayner 2014). A thorough examination of policy derivation, successes and failures in the past in any given policy area will provide the opportunities for better policy innovations in the future.

Any policy area connected with nuclear energy contains polarized views. Beginning in the war years amidst the secrecy and security surrounding the race to develop nuclear technology to the multiple uranium mine development proposals in the 1980's and 1990's involving conflicting interests groups and controversy within the governing NDP party, this policy sector provides an opportunity to study changing policy networks and actors and their relationships with the policy process within a changing policy framework. While the Saskatchewan uranium mining policy sector provides the case study, this dissertation validates the use of analytical tools that can analyze complex policy change, causal relationships and network theory over an extended period of time.

This dissertation will present a case study covering six decades (1942-2007) of evolving Saskatchewan uranium mine policy. It will examine the patterns of change that have occurred over this 65 year period. Empirical data was collected through: interviews with a range of policy actors that were directly involved in the policy development over significant periods of time; government reports and documents; legislative changes;

permits; public and internal reports; academic papers interspersed with the author's personal experiences as a senior government decision maker in the resource and environmental regulatory field. The changes that occur in policy network membership and subsequent causal changes in policy outputs and outcomes were determined utilizing analytical tools described below.

The key questions which drove the research associated with this case study are: What kind of policy networks were in place? What types of changes took place and what were the drivers of change? What are the causal factors related to policy actors, their regimes and policy instruments? Were the changes sustainable and why or why not? What were the successes and failures of the policy initiatives and reasons? How effective are the analytical tools that were used?

A key component in understanding policy and policy change is achieved by distinguishing between policy outputs, outcomes and impacts. A common nomenclature with respect to these terms is important in navigating the complex literature of public policy. Schmitt (2013) clearly distinguishes between policy output, policy outcomes and policy impacts which would be the common development pattern in the derivation and implementation of policy. Policy outputs are the 'content of the decision'. Policy outcomes are the 'immediate consequences of a policy decision'. Policy impacts can be measured by analyzing the 'policies' effects on the target of regulation. Using an environmental policy as an example, a decision to develop an emission standard – the standard itself with defined limits would be the policy output. The policy outcome could be the creation of a structure(s) and/or mechanisms to enforce or deliver the standard. The policy impact would be measured by the change in emissions levels as a

consequence of the standard. This study focuses primarily on the policy actors, networks, exogenous factors and their relationships to policy outputs, outcomes and impacts.

This study is of importance because it brings into the literature a case study on uranium mining policy in Saskatchewan. The case study is longitudinal in nature starting at the beginning of uranium policy development in Canada in the early 1940's and ending in 2007. Through the use of personal interviews with government, environmental, anti-nuclear and public interest policy actors, new empirical data will be presented and analyzed.

The policy debate concerning the trajectory of the uranium industry in Saskatchewan has resurfaced in recent years because Saskatchewan is the second largest exporter of uranium in the world, has the third largest known reserves (OECD 2005) and is a primary user of coal fired electrical plants with international demand for uranium anticipated to increase with the projected expansion of nuclear energy (European Nuclear Society January 2006; Guinnessy 2006). In Saskatchewan questions have arisen regarding the potential for increased research and development activities of some or all facets of the nuclear cycle (Saskatchewan Uranium Development Partnership 2009).

In addition to being a major producer of uranium, Saskatchewan is the largest Canadian producer of greenhouse gases (GHGs) on a per capita basis (Sask Trends Monitor 2014; Environment Canada 2006; Statistics Canada 2006). Coal is the primary source of electrical power in the province (CNA 2005; SaskPower 2004) and any reductions in GHGs must start with a shift in power generation to either clean coal technology and/or alternative sources of energy. Saskatchewan, as a uranium exporter and a leading per capita producer of GHGs, has expressed interest in expanding into other

aspects of the nuclear energy cycle and will benefit from better understanding how its uranium policy evolved in the past in order to improve policy development in the future (Uranium Development Partnership 2009).

Within the Canadian context, this debate is also of significance given the prevalent use of fossil fuels across the country, the expanding uranium mining industry both within Saskatchewan and developing in other Canadian jurisdictions, the current use of nuclear power in two Canadian provinces of Ontario and New Brunswick and the Canadian CANDU nuclear reactor technology developed and delivered by Canada.

The international community also has an interest in these topics because as with any major policy analysis with global implications, applications developed in one jurisdiction can be applied elsewhere. Canada contributes to global GHG emissions and participates in global climate change negotiations. Fully understanding the impacts of its energy choices and entering into meaningful public dialogues on this subject would place Canada in a leadership role. As John Dewey said: “We do not learn from experience... we learn from reflecting on experience” (As cited in Fisher-Yoshida et al. 2009, p. 103).

The uranium mining policy in Saskatchewan was first developed in the 1940's. This first 'era' is the formative policy era which will be described and analyzed and against which policy changes from 1971 to 2007 will be measured. There were substantial policy initiatives starting in 1971 with a change in government and a significant build-up in the number and complexity of uranium mines and their subsequent policies in Saskatchewan. The Blakeney government was in power for this ten year period (1971-1981) that will be analyzed as the second era. A third era study period will begin post 1981 when another government change occurred. Significant new uranium mine

development continued through the 1980's and 1990's as part of the third and final era to be studied. The case study period concludes in 2007 with another change in government. The study periods are summarized as: 1st Era – 1942-1970; 2nd Era – 1971-1981; 3rd Era – 1982-2007.

This introduction will be followed by chapter one which provides a conceptual framework for the case study with a description of the theory and analytical tools that will be utilized in this case analysis. The basis of the analytical model from Howlett (2002, 2009) and Cashore and Howlett (2007) will be presented with an analysis of the trends and development in policy network theory based on a review of academic literature in this area.

Chapter two will describe the analytical approach being used for the presentation of the case study. A discussion of the merits of a qualitative approach for the data presentation and analysis is provided. The case study type chosen for this analysis (longitudinal case study) is chosen given the length of the case study, the complexity and variety of data made available and policy change that is studied. The interview techniques that are available are discussed and one approach selected (semi-structured interview technique) based on the interview topic, the policy actors who participated in the study, and the data and contextual information anticipated. The limitations of the study are presented at the end of this chapter.

Chapters three, four and five provide the case study data that was collected and analyzed for the 65 year case study period 1942-2007. Chapter three presents the first era data for the period 1942-1970. This chapter provides a pre-1942 contextual narrative, the 'network beginnings' that provides the basis for the formation of the uranium policy

sector during the war years. The Second World War Canadian allies' impact on the Canadian uranium mining sector is discussed in this chapter. The nationalization of the industry is reviewed as well as the Saskatchewan government's entry into the policy area. All of the case study data is presented within the context of the policy network and the relationships between policy actors, policy outputs, outcomes and impacts and causal factors. Endogenous and exogenous events are examined for their impacts on policy change. Chapter three is the first chapter where Howlett's model is applied and there is a more thorough review of the analytical tools presented in this first case study era to ensure that the reader is familiar with the model being used. A 'findings and summary' section is found at the end of each of the three case study era chapters that presents a summary of the data and analysis for each of the three study eras.

Chapter four presents the data and analysis for the second era 1971-1981. This chapter explores the most dramatic shift in network type and the significantly increased role of the provincial government in the policy sector. It is during this period that many of the policy actors that were interviewed began their activities associated with the Saskatchewan uranium mining policy network. This interview data is presented as part of the case study period presented in chapter four as well as the next era. The Warman inquiry (which is seen as having a major impact on the development of the uranium policy sector) is reviewed as part of chapter four.

Chapter five presents data and analysis from the last case study era 1982-2007. The greatest proportion of modern uranium mine development in Saskatchewan is examined within the context of policy network impacts and relational factors in this chapter. The burgeoning federal provincial overlap in the uranium sector is fully discussed. The

evolution of the environmental movement and its connection with the uranium industry is presented. The pro and anti-uranium mining conflicts within the provincial NDP who held power in Saskatchewan for 47 of the 65 year study period is also discussed in chapter five.

Chapter six provides a summary and discussion of the case study results. It reviews the analytical models developed by Howlett (2002, 2009) and Cashore and Howlett (2007) that were utilized in this case study. The evolution of the policy network shifts, the patterns of policy change, and causal factors is discussed.

The thesis concludes with a review of the key research questions that were formulated around the case study. The conclusion links the policy change with causal factors and discusses the policy learning that occurred. The policy implications of the case study analysis are discussed with the intent of providing some applied learning to policy practitioners to allow the potential optimization of policy derivation. Suggestions for future studies close this chapter.

CHAPTER ONE: POLICY NETWORKS AND A POLICY CHANGE MODEL: LITERATURE FOUNDATIONS

1.1 Literature Foundations

1.1.1 Policy Networks

The concept of policy networks appeared in the literature as a way of studying not only how government decisions are made but also a rationale for why. Policy networks are defined as: sectorally, a generic representation encompassing all types of networks (Rhodes and Marsh 1992); political structures created to govern or rule (Daughbjerg and Marsh 1998); sectoral based constellations of interests who have varying degrees of influence on decision making (Montpetit and Coleman 1999); or structural linkages between private corporate and public actors (Skogstad 2005). In the modern study of policy, policy network structures have established relationships that exhibit certain norms and discourses. These policy networks are well established conceptual tools or relationships that are often used for policy research of case studies and elsewhere (Coleman, Skogstad and Atkinson 1996; Howlett 2002, 2009; Cashore and Howlett 2007).

One of the earliest attempts to systematically categorize network actors, interests, and structures was the iron triangle hypothesis developed in the 1960's, which suggested that certain policy sectors were vulnerable to capture by tightly knit groups typically composed of the bureaucracy, special interests, and the state (Cater 1964). These studies were focused in policy areas such as water, agriculture and nuclear energy. This work was particularly important in revealing the importance of formal network relationships and processes of change. The term 'sub-government' was coined during the same era to

describe a small number of interest groups, government legislators and agency or governmental staff who dominated a policy area (Jordan 1981, Dowding 1995; McCool 1998).

Numerous policy network typologies have been developed to support empirical studies and formal analyses. In 1974, Heclo and Wildavsky described 'policy communities' as policy actors with a shared framework of understandings. Heclo (1978) challenged the dominant theory suggesting that there were other types of networks than iron triangles and sub-governments that were much more 'open'. Heclo coined the term 'issue networks' to describe a less cohesive policy community. These 'issue networks' were open to new actors, much larger in size, had fragmented decision making, unpredictable relational patterns and less institutionalized than iron triangles or sub-governments. The iron triangle and issue network approaches were largely metaphorical and had limited empirical testing capabilities (Heclo 1978; McCool 1998).

Further studies led to a large variety of subsystem or network categorization. Rhodes (1984) explored the relationship between government agencies and social organizations suggesting that networks varied according to how they integrated with each other. Wilks and Wright (1987) took Heclo's and Rhodes work further by characterizing the two iron triangle/issue network extremes by arguing that highly integrated networks (iron triangles) have stable membership, are tightly aligned within, and are insulated from other networks, while issue networks are weakly integrated and loosely structured with multiple and changing links with other groups and actors. The term 'policy communities' used to describe groups of policy actors who were tightly aligned and share a common policy focus was also used by a number of scholars (Atkinson and Coleman 1989;

Coleman and Skogstad 1990). Marsh and Rhodes (1992) provided a clearly defined distinction between policy communities and issue networks. Policy communities were described as being limited in number of actors who have economic and professional interests, have some level of resources and who all share the same basic values and a balance of power between members. Issue networks were generally larger, with the ability of actors to enter and exit the network regularly, experienced regular conflict within the group and had unequal powers. Coleman and Skogstad (1990) defined a policy community as a set of actors, public and private, that coalesce around an issue area and share a common interest in shaping its development. They defined a policy network as the interests within the policy community who are actively involved in policy design and/or implementation. When policy networks are formed, they operate on a general set of agreed upon principles and have a shared view on what objectives they wish to pursue through policy derivation and implementation.

The concept of advocacy coalition was introduced by Paul Sabatier and his colleagues in the 1990's describing a coalition as being comprised of a set of actors from private and public institutions sharing the same set of basic beliefs who want to work together in changing the policy systems to achieve their goals (Sabatier and Jenkins-Smith 1993). These actors from both the state and public can exist at the national and local level. With the multiple concepts that were developed, work proceeded to classify the various types of policy networks based on state and society and how they linked, network functions and structure, as well as separation of policy community from policy network (Atkinson and Coleman 1989; Van Waarden 1992; Howlett and Ramesh 2003).

Bratt (2012) uses the advocacy coalition framework to analyze the Canadian nuclear policy sector across four Provinces: Ontario, New Brunswick, Saskatchewan and Alberta. He identifies two coalitions: a pro-nuclear coalition made up of Atomic Energy of Canada Limited, its suppliers, provincial utilities and business associations; and an anti-nuclear faction comprised on environmental groups such as the Sierra Club, Pembina Institute and specific anti-nuclear interest groups. This analysis shows the complex relationships between public and social policy actors and how they influence provincial and federal policy change in this sector.

As described above, the relationships among the network of actors engaged in policy decision-making varies considerably with some networks organized around loosely-knit affiliations among global policy institutes and advocacy coalitions with minimal access to decision makers, while others are organized around privileged access to centers of power.

Howlett (2002) divides all of the policy actors and institutions into two primary groups of actors. The first group of actors, the 'discourse community', is affiliated through a broad but common knowledge of the policy area. These members share a common understanding of the policy problem and its causes. The 'interest network' is comprised of policy actors who participate in 'exchange relationships' and are motivated to serve their self-interests within the policy network. They are more directly involved in the policy area making and implementing policy (Howlett 2002; Howlett and Ramesh 2003). Howlett's approach simplifies network analysis into two basic groups of actors, those who participate directly in the policy decision making and those that share a common interest in the policy area and exhibit varying degrees of participation dependent

on the nature of their relationship with the interest network actors. This model as described below defines relationships between the types of policy, policy actors, policy ideas and the policy network type.

Following Howlett's definitions, for purposes of this thesis, a policy network will be defined as containing both the interest network and the discourse community. The term policy community can be considered synonymous with policy network. The primary terms used in this analysis will be discourse community, interest network and policy network.

Howlett identified four ideal types of networks who are characterized by how new ideas and actors permeate each policy network type. How the actors move between the discourse community and the interest network - the 'extent of symmetry' and the 'degree of insulation' between actors in the discourse community and the interest network impacts the movement of new ideas in each network type. A closed policy network has a high extent of symmetry and high degree of insulation and is a stable system that resists new actors and their ideas (Howlett 2002). Closed networks are protected from exogenous influences and thus remain stable and insulated. Open policy networks allow a regular movement of actors and ideas into and out of the network (low extent of symmetry –actor's movement and low degree of insulation – ideas movement). Open networks have more 'dynamic and innovative policy outcomes' (Howlett 2002, p. 239). Howlett also identifies resistant and contested networks, which are also classified by degrees of insulation and extent of symmetry between network and community. This model suggests that network configuration provides predictable regularities on the effects of policy outcomes. In the resistant networks, the boundary (degree of insulation)

between the discourse community and the interest network is low and some new actors are able to penetrate the interest network. This results in a predicted change in specific policy targets, policy instruments and calibrations. The contested networks exhibit a larger difference in agreement between the discourse community and interest network and actors do not flow back and forth easily. This network type predicts changes in instrument types, tools and calibrations. See Tables 1.1 and 1.2. Table 1.1 illustrates the relationships and resultant movement of policy actors between the discourse community and interest network. Table 1.3 combines these interrelationships into one table.

Table 1.1
Network configurations and policy actor interactions

Extent of Symmetry between Discourse Community and Interest Network	Interest Networks Degree of Insulation from Discourse Community	
	High	Low
High	Closed Network Tends towards change in Instrument Calibrations	Resistant Network Tends towards change in Specific Policy Targets, Instrument Types/Tools and Calibrations
Low	Contested Network Tends towards change in Instrument Types/Tools and Calibrations	Open Network Tends towards change in Policy Goals and Means

Howlett 2002

Table 1.2
Network configurations and policy actor/idea interactions

Interest Network's Receptive to New Ideas	Interest Network's Receptivity to New Actors	
	No	Yes
No	Closed Network Tends towards change in Instrument Calibrations	Resistant Network Tends towards change in Specific Policy Targets, Instrument Types/Tools and Calibrations
Yes	Contested Network Tends towards change in Instrument Types/Tools and Calibrations	Open Network Tends towards change in Policy Goals and Means

Howlett 2002

Table 1.3
Network configurations and policy actor/idea interactions

Extent of Symmetry between Discourse Community and Interest Network	Interest Network's Degree of Insulation from Discourse Community	
	High	Low
High	Closed Network No new actors/no new ideas Tends towards change in Instrument Calibrations	Resistant Network New actors/no new ideas Tends towards change in Specific Policy Targets, Instrument Types/Tools and Calibrations
Low	Contested Network No new actors/some new ideas Tends towards change in Instrument Types/Tools and Calibrations	Open Network New actors/new ideas Tends towards change in Policy Goals and Means

Howlett 2002

Using Table 1.3 (page 19) enables the specific type of network to be identified based on the movement of ideas and policy actors between the discourse community and the interest network. Howlett has modelled the typical types of policy output/outcome change such as instrument calibrations, goals and objectives associated with each network type. The use of this table is a key analytical tool in determining policy network type. This is the key component of the analytical model because it connects the actors, ideas and interrelationships within the policy network with one tool that can then determine the type of policy network that is in place.

1.1.2 Policy Change

Early studies of policy change focused on the influence of social pressures and conflicts that were exerted on and accepted by a passive government (Bennett and Howlett 1992). Hall (1993) conceptualized policy change as three orders of change that can occur in policy outputs and outcomes: ‘first order’ – instrument calibrations; ‘second order’ - instrument changes; ‘third order’ – paradigmatic changes resulting from external events and societal based learning where the policy goals are altered. The primary pattern of policy change (first and second order changes in Hall’s model) occurs in an incremental fashion building on existing policies and practices from the past and providing an overall pattern of stability. Paradigmatic change (third order in Hall’s model) often follows periods of policy stability, results in substantial change, and involves new struggling policy actors interacting with entrenched views (Lindblom 1959; Hall 1993, Baumgartner and Jones 1993; True et al. 1999; Howlett and Ramesh 2003).

Howlett (2002) expanded this conceptual model to four types of policy changes; that is changes in policy goals, programme specifications, instrument type and instrument

components. Cashore and Howlett (2007) build on Hall's (1993) and Howlett's (2002) work and apply a comparative policy model illustrating policy changes in the U.S. Northwest forestry policy development area that provides an analytical tool that can deal with the complexity of changing policy systems. Howlett's (2002) four policy type approach was expanded to include six levels of policy types that can undergo change. These six types are divided into two primary levels – policy ends and policy means each of which are subdivided into policy aims, objectives and settings (calibrations). Howlett (2009) takes the same six policy types and studies the importance of 'policy mix' or how the policy goals and instruments as well as policy aims, objectives and targets in each of the two primary levels are linked (Table 1.4). The table illustrates that every policy initiative is a complex mix of policy goals and means. Therefore the analysis of policy change must take into account how these policy goals and means are integrated and how they are adjusted to accommodate the new policy decision(s). The level of integration across the six components will determine the success (or not) of policy initiatives.

Table 1.4
Public policy components

Policy Content			
Policy Goals	Broad Ideas that Govern Policy Development	Specific Requirements of Policy Operational Policy Objectives	Specific on-the-ground Policy Targets Specific Policy Targets
Policy Focus			
Policy Means	General Policy Implementation Preferences (organizational Devices)	Specific Types of Instruments or Policy Tools	Specific way Instrument is Used (Tool Calibrations)

Howlett 2009 and Cashore and Howlett 2007

Policy modification is patterned with long periods of stability punctuated by brief surges of policy change. This is accomplished by some actors employing a dual strategy of controlling the pertinent policy issue through continued engagement with the other policy actors, but at the same time seeking out a more favourable policy venue that may be more accepting of their policy interests (Baumgartner and Jones 1991; True et al 1999). Significant policy change can also occur as a result of an extraordinary event or crisis such as the Exxon Valdez catastrophe (Birkland 1998).

In addition to providing clarity around incremental and paradigmatic change, Baumgartner and Jones (1991) also show how these changes are linked and illustrate how different sectors, policy issue areas or policy networks go through these change processes at different times. The traditional approach to policy change was that the change was either fast and paradigmatic or slow and incremental. The punctuated equilibrium model introduced the dimension of policy change in relation to 'direction' – whether the policy change is cumulative or moving away from an existing equilibrium to another state, or whether the change is a fluctuation within the equilibrium currently in place.

Policy change can also be measured as it relates to the pace of change. We can diagnose the direction of the policy by determining whether it is slow and incremental and within an equilibrium pattern or fast and paradigmatic and whether these changes, in particular the paradigmatic changes are sustained or revert back to their regular positions. In examining long term policy changes where governments come and go, there can be policy changes that appear to be paradigmatic, which can be the result of genuine intent by government to exercise significant change (or for those more cynical, a government that wants to project a real change when in fact the changes are cosmetic) that due to ill-

conceived policy and implementation and/or embedded policy regimes the changes cannot be sustained (false paradigmatic). Incremental changes can be measured from a directional perspective whereby policy adjustments occurring in one direction will result in significant change over a long period of time versus policy alterations that occur in both directions with an end result of no real policy change over time (Cashore and Howlett 2007). See Table 1.5 for an illustration of the four policy change types.

Table 1.5
Taxonomy of policy change by tempo and direction

	Tempo of Change	
Directionality of Change	Fast	Slow
Cumulative	Classic Paradigmatic Fast change that results in new equilibrium	Progressive Incremental Slow change in one direction resulting in real change
In Equilibrium	False Paradigmatic Fast change that reverts back to regular equilibrium position	Classic Incremental Slow change in both directions resulting in no real change

Cashore and Howlett 2007

1.2 Causal Factors

The uranium policy changes that have occurred in Saskatchewan's uranium policy will be analyzed utilizing the analytical policy tools discussed above to classify the policy within the appropriate phyla and determine the tempo and direction of changes (Table 1.5) that occurred through specified eras. The policy goals, means (Table 1.4) and outcomes/outputs/impacts can then be related to the policy networks, their membership and type of network configuration that occurred in the same eras (Table 1.3, page 19). The policy network type and evolution will be tracked and analyzed as it relates to Saskatchewan uranium policy and causal factors determined (or not) for policy outcomes and impacts. The evolution of the environmental movement and its influence on network membership and interests (new ideas) will be analyzed as part of the network investigation.

The proper taxonomic sorting or classification of policy goals, objectives, targets and tools is critical in studying policy change allowing 'apples to apples' comparisons. Sharply defined analytical tools can measure successful and not so successful policy outcomes and most importantly the drivers for these successes and failures. By understanding these relationships, policy makers can improve future policy processes. In moving this area of study forward we need a better understanding of what tools and models are the most effective in measuring change and explaining causal relationships. Long term case studies allow us to analyze institutional changes that occur over these long periods of policy making. In complex and issue-ridden areas such as nuclear energy, a broad and complex range of policy instruments are of value. The Saskatchewan uranium mining policy case study allows the analyses of the multiple relationships found

within the development and implementation of these policies and can provide improved analytical tools.

Figure 1.1 provides a visual conceptual framework illustrating potential causal relationships between policy network and existing or adjusted policy system structure and ultimately effects on policy outputs, outcomes and impacts. The analytical tools that can be used to measure these relationships and policy change are positioned on Figure 1.1 to show where in the policy system the change or relationship being studied may occur.

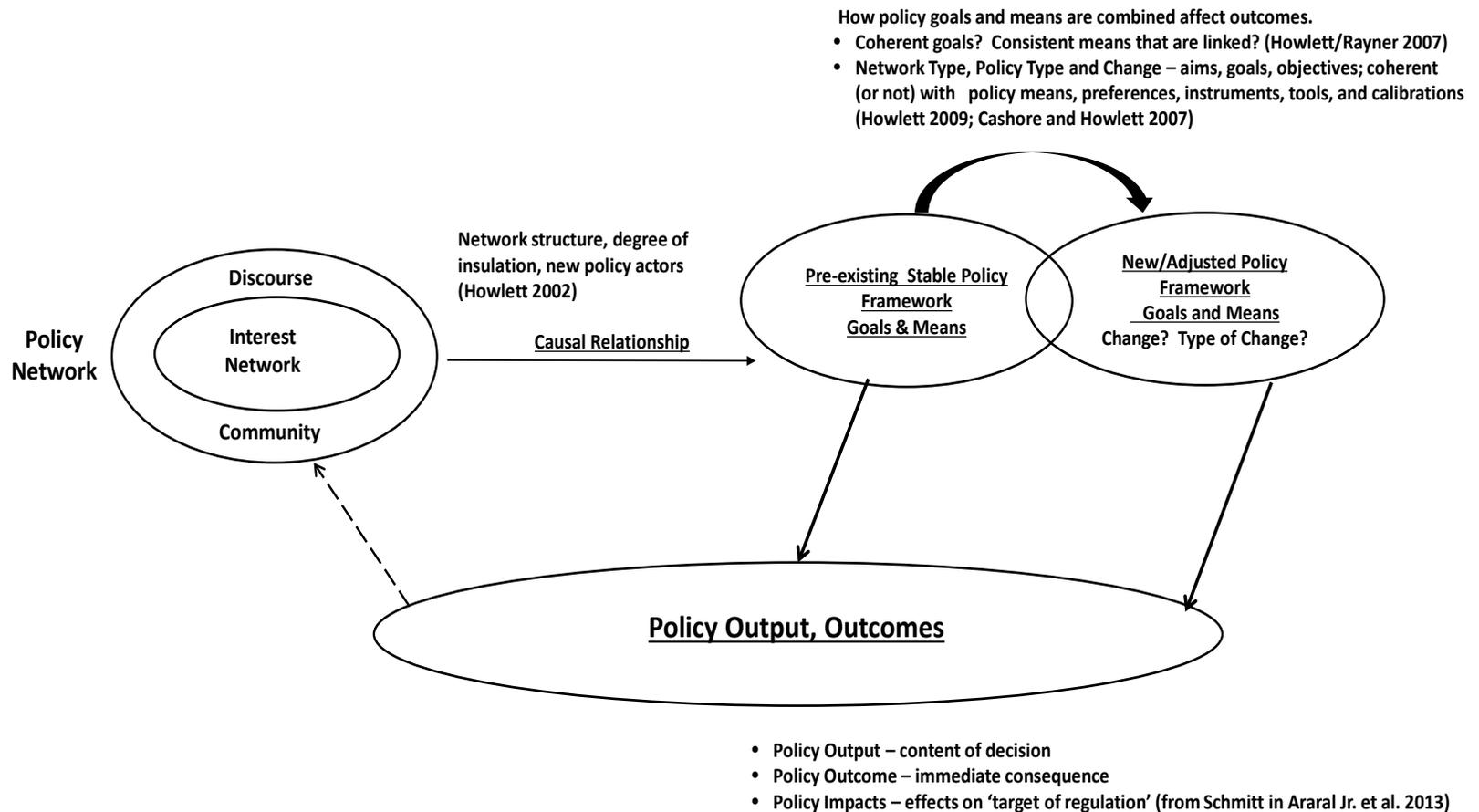


Figure 1.1 Conceptual framework

CHAPTER TWO: METHODOLOGY

Using an in-depth case study approach this research will use qualitative data gathering techniques including interviews, documentary analysis, government documents, legislative changes, historical studies, academic papers and the author's personal experiences within the policy sector to trace the evolution of uranium mining policy network at a provincial level. Using the conceptual framework outlined in the previous chapter, the outlined methodology will provide data on policy network analysis and change, discuss the taxonomy of policy that occurred throughout the study period, identify the direction and tempo of the policy change as well as the causal factors and relationships driving these changes.

A variety of methods will be used to study the uranium mining policy sector in Saskatchewan's policy network. The analytical tools used for the analysis were developed by Howlett (2002, 2009) and Cashore and Howlett (2007) as described in chapter one. The three interdependent analytical tools to be used in this case study analysis will provide a rich contextual analysis of this complex policy area. The first tool will look at the relational structures of the policy network type and identify the actors participating in the networks in different historical eras. How these actors worked together both inside the interest network and in the discourse community are important determinants in identifying the type of network that was operating in a given time frame. How those actors in the discourse community interacted with the interest network (extent of symmetry and degree of insulation) will identify emerging new ideas and shifting policy preferences over the history of the regime. The use of network analysis will

identify the type of policy network that was in place in any given study period and how new actors and ideas from both the discourse community and the interest network influenced policy changes in the uranium mining policy network.

Howlett's second tool differentiates policy into two broad categories - policy means and policy goals- each of which are further separated into broad goals or logic, objectives and settings or calibrations. These components are further sub-divided into broad policy goals and the operational policy means resulting in six component classes. In a case study stretching over decades it is helpful to classify the broad policy goals and objectives and specific requirements (policy goals) separately from the policy means (policy instruments and their calibrations) used to implement the policy. The ability to take a very complex policy history and be able to organize it into six well defined categories allows a detailed measure of policy change across decades of policy derivation. Being able to compare policy instruments that have been defined consistently throughout the study period provides an analytical view into how policy often changes in very subtle ways than would otherwise not be obvious.

Differentiating policy change in an instrument versus a policy goal or objective is critical in understanding the causal factors related to policy change over a period of time. An adjustment to the calibration of a policy instrument is a much different change as compared to differences in policy goals or objectives. Understanding these changes and where they originated from (for example from a previous policy goal or a new goal) helps the analyst to understand the relationships between the policy regime's actors, ideas and institutions, as well as the impacts of exogenous events on the sector. If policy changes that occur over a period of time do not match the other policy components, then

inconsistent policy goals and instrument use will result which can impact policy results (Howlett and Rayner 2007).

This model with its categorization of policy components into policy goals, means and their sub categories also allows a final check on the type of network that is operating at any given time. This is accomplished by determining what policy component changes have occurred within the selected network for the study period and ensuring that the changes match the tendencies identified. For example, a closed network tends to show policy component changes only in instrument calibration. When conducting this final network validation, if the policy component changes do not match the network type, this would signal the need to re-examine the analysis.

The third component of Howlett's model is used to analyze the pace of policy change that occurred and the directionality of that change. This tool allows for a very clear analysis of policy change that occurs in a cumulative fashion progressing forward or in equilibrium where the specific policy can revert back to its original form before changing again. These changes can be slow and incremental or fast and paradigmatic. This tool allows the analyst to examine change over years or decades and determine the pace and direction of policy change.

These three conceptual approaches when used together provided a thorough analysis of policy change. Causal relationships as evidenced in the study period analysis can be determined between actors, ideas and the policy communities and networks in which they operate. These tools are able to provide a rigorous approach to study complex policy changes occurring over long periods of time, providing a number of checks and balances within a multifaceted area of policy.

2.1 Research Approach – Qualitative vs. Quantitative

In designing the research framework for this study, the question of utilizing qualitative versus quantitative research methods was considered. Morgan and Smircich (1980) suggest there is a need to understand what it is you are studying before deciding on how the study should be carried out: “because the choice and adequacy of a method embodies a variety of assumptions regarding the nature of knowledge and the methods through which that knowledge can be obtained, as well as a set of root assumptions about the nature of the phenomena to be investigated” (p. 491). In discussing qualitative vs quantitative research approaches they use a continuum showing the objectivist view of reality conveyed as a ‘concrete structure’ at one extreme with the subjectivist view of reality as a projection of human imagination at the other. The objectivist metaphorically studies the relationships around this concrete structure. Moving down this continuum towards subjectivism these relationships can be viewed metaphorically as a world moving away from the closed concrete system to a more open system synonymous with a living organism. Operationalizing this metaphor, an objectivist sees the world as unchanging or as a concrete “structure composed of a network of determinate relationships between constituent parts” where human beings are conditioned by their environment to behave and respond in predictable ways to which causal relationships can be built (Morgan and Smircich 1980, p. 495). A subjectivist portrays the world as a pattern of relationships and meanings developed through human interactions with these social actors interpreting this environment in a way that is meaningful to them.

This research focuses on network actors and how they interact within a sector specific policy network. How the actors interact dictates the typology of the network

within a given time frame (open network or closed network or in-between the two). This study of the uranium policy sector in Saskatchewan entails an historical review of uranium mining policy change in an area where multiple and changing actors engage in various modes of discourse that are influenced by internal and exogenous events. This complex and fluid policy system is best studied through the use of qualitative study methods because a qualitative approach allows the use of context to better understand the changing relationships and events that occur throughout the study period. Morgan and Smircich state:

Historical change, contextual fields of information, and processes through which human beings engage in symbolic modes of discourse, create their reality, and project themselves from the transcendental to more prosaic realms of experience, can be captured and measured only through means of static techniques and only in the most partial and limited of ways. ...scientists can no longer remain as external observers, measuring what they see; they must move to investigate from within the subject of study and employ research techniques appropriate to that task. (p. 498).

Bryman (1984) suggested that qualitative research is exploratory in nature as well as fluid and flexible. It allows the researcher to encounter unanticipated findings and to have the ability to alter their research in response to these findings in order to harvest 'rich' data:

...it is also used to denote a fieldwork strategy which includes general interviewing, usually of a relatively unstructured kind, the perusal of documents, and the interviewing of key informants. But it is the ability of the participant observer to get close to his (her) subjects and so see the world from their perspective that is its chief attraction. In so doing qualitative researchers produce data which they often call 'rich' by which is meant data with a great deal of depth. Survey data are typically seen as deficient in this respect for they provide

superficial evidence on the social world, winking out the causal relationships between arbitrarily chosen variables which have little or no meaning to those individuals whose social worlds they are meant to represent. (p. 78-79).

A final qualification is required regarding the use of a qualitative research approach to this study. Torrance (2008) suggests that where qualitative approaches are used the researcher(s) should also ensure that detailed descriptions of the context from which the data is being harvested, descriptions of background and history, and any diverse or multiple perspectives or positions be included. He also recommends that discussions of how any fieldwork methods may have influenced data or ideological perspective/values of the researcher(s) take place.

This case study involves studying changing relationships at the local, national and international level. The policy sector was formed during the war years out of a deemed necessity to counter nuclear weapons development by the 'enemy'. The formative policy years saw a very fast paced policy development that was dependent on relationships. This period was followed by a province building policy goal that changed the formative policy network leading to significant uranium mine development in Saskatchewan, unmatched in North America. A qualitative approach to this study allows a broader range of rich data to be brought into the analysis and better inform the causal deductions. Policy network theory involves the study of relationships and the use of qualitative methodology provides a sound basis for this type of investigation.

2.2 Case Study and Type

Experts in any field tend to explain their knowledge based on examples.

Learning starts and ends often with real life examples. Much of our learning is based on context. Researchers can learn by placing themselves within the context of the subject being researched. Researchers can then understand the interactions and drivers that characterize behavior of social actors. (Flyvbjerg 2006). The best method to achieve this learning is with the application of case studies:

...scientific research without a large number of thoroughly executed case studies is a discipline without systematic production of exemplars, and a discipline without exemplars is an ineffective one. Social science may be strengthened by the execution of a greater number of good case studies. (Flyvbjerg 2006, p. 219).

There are a number of different types of case studies that can be used. They range from snapshot to longitudinal, pre-post patchwork and comparative case studies.

Snapshot is a study of a research entity at a single point in time. A longitudinal case study is a time-ordered analysis that focuses on changes that occur over an extended temporal period. "Time is the organizing device and the dynamics of change are the primary focus" (Jensen and Rodgers, 2001, p. 238). Pre-post case studies involve a pre and post-assessment before and after implementation of the program, policy or decision. Cause and effect relations are then examined. Patchwork case studies involve the aggregation of a number of case studies that have examined a specific entity at different points in time. A comparative case study examines a number of case studies but is not limited to a single unit or entity. Meta-analysis is a method which allows the gathering of all previous case studies on a specific research topic into a single analytical dimension.

This type of analysis provides added value to single case studies in that they can now contribute to a much broader reservoir of rich data available for further examination: “Viewed cumulatively, case studies comprise an intellectual goldmine awaiting discovery” (Jensen and Rodgers 2001, p. 235). This case study will make available rich data sources for potential meta-analyses across a range of study areas including the specific uranium mining policy sector as well as more general areas of policy study.

This study of the Saskatchewan uranium mining policy network will utilize a longitudinal case study approach. This study is time ordered occurring over a 65 year period. The focus of this analysis is on the policy changes that occurred and the causal factors related to the dynamics of change. This type of qualitative approach fits very well with the study topic. There is a ‘rich’ collection of policy which will be analyzed through the review of archival and government documents and historical studies starting with the initial development of the policy sector in 1942 and proceeding into the 21st century. Significant change will be presented and analyzed that occurred in the policies themselves, the actors and the policy institutions. Policy outputs and outcomes form the policy taxonomy for each study period. Internal and exogenous events are revealed through the use of this data and inform the causal analysis.

This type of case study analysis affords the opportunity to provide a detailed level of context to the study of policy change that occurred during the study period. A ‘contextualist’ analysis allows change to be studied at different levels of analysis through time. For example, a socioeconomic change can impact organizational changes in an entity or public institution and interest network behavior. Change is usually holistic and multi-faceted (Pettigrew 1990). A longitudinal case study allows the narrative to explain

the multiple factors that may impact change. Causal factors can still be determined but it is within the 'contextualist' analysis of potential multiple factors that this change can be explained. Pettigrew summarizes:

The key points to emphasize in analyzing change in a contextualist mode are firstly the importance of embeddedness, studying change in the context of interconnected levels of analysis. Secondly, the importance of temporal interconnectedness, locating change in past, present, and future time. Thirdly, the need to explore context and action, how context is a product of action and vice versa; and finally the central assumption about causation in this kind of holistic analysis, causation of change is neither linear nor singular-the search for a simple and singular grand theory of change is unlikely to bear fruit. Explanations of change are bound to be holistic and multifaceted. (Pettigrew 1990, p. 269).

Pettigrew also speaks to the issue of institutional change that may take several years to implement. A longitudinal study allows these causal factors to be included so as to determine the time-ordered dimension. This case study breaks the 65 year analytical period into three eras. Each era boundary is marked by a significant event such as changes in governments, wars and new technologies such as nuclear power and weaponry. Time is seen as a continuum with change occurring over intervals of time some of which can be tracked very specifically to an exact date and other change that occurs through the era period. The developmental policy era that is marked as starting in 1942 is preceded with a contextual narrative that speaks to events that occurred prior to the formation of the uranium policy network that would have had an impact on how it was formed. The narrative descriptions provided in this study are offered within the context of the research study.

Pettigrew (1990), Yin (1999) and Garson (2002) all speak to the need for a case study to be used within a ‘triangulation approach’ or a multi-method design. Data should be collected from a variety of sources to be able to use as a cross check on the case study. These multiple points of data collection ensure that data is cross-supported but also provides other sources of data that help the researcher to identify cause and affect relationships. This study will include the review and presentation of government reports and documents, legislative changes and various policy instruments, public and internal reports and academic papers. In-depth interviews with policy actors that were directly involved within the policy sector will also be utilized with the methodology to be used described below.

The author of this thesis was also a senior government decision maker in both the environmental and resource management regulatory field for several decades during the last era to be studied. Pettigrew (1990) remarked:

Skill in the field is critical to the success of any endeavor based on the longitudinal comparative case study method...These include asking and interpreting apposite questions, listening, being adaptive and flexible, being knowingly unbiased, and having a firm grasp of the issues being studied. In addition to these requirements the long distance fieldworker needs the social and political skills to develop and maintain credibility with a wide range of respondents from different levels and functions inside and outside the focal organization. (p. 277).

2.3 Interview Methodology

An interview approach was chosen as one of the research tools because it provided the opportunity to collect contextual and factual information from policy actors many of which had participated within the uranium mining policy network for decades. Interviews allowed the collection of data and relational factors that would have been difficult if not impossible to co-relate in advance of any other research methodology. The purpose of the interview is to: “explore the views, experiences, beliefs and/or motivations of individuals on specific matters...provide a deeper understanding of social phenomena than would be obtained from purely quantitative methods” (Gill et al. 2008, p. 292). Opdenakker (2006) cites the interview purpose is to: “gather descriptions of the life-world of the interviewee” (p. 1). There are three types of interview techniques that can be utilized. Structured interviews are based on the preparation of a questionnaire that is administered to the interviewee verbally. Questions are asked without the ability for follow-up to any responses. They are limited in their ability to collect in-depth data. Unstructured interviews do not have prepared questions and are very open-ended allowing the participant to take the interview in whatever direction they feel is best. They are often used where very little is known about the study area or a different perspective of the study area is desired. They can be confusing to either the interviewee and/or interviewer and take a long time to deliver as there is little guidance provided to the participant. They are difficult to manage for the same reason. A semi-structured interview consists of key questions that help to define the area to be explored. Semi-structured interviews are more flexible allowing the interviewer to diverge in a direction based on the participants’ responses. This divergence permits more detailed data to be

collected and also presents opportunities for the participants to bring up subject areas that may not have been thought of as important to the study area by the researcher(s).

Dilley (2000) lists four elements of interview practice. First it is important to study the background information about both the subject area and the person being interviewed. The researcher should be very familiar with the area under investigation in order to design the right questions, the best format and the appropriate follow-up questions. It is equally important to have some level of background information about the interviewee in order to understand the context from which he/she provides the detailed data. This in-depth knowledge of the subject area and the interviewees also allows appropriate follow-up questions to be asked to gather further information that would otherwise remain un-harvested. Second, researchers must be comfortable with conducting an interview. Having experience in both interviewing subjects and being the person interviewed is of value in that this experience can build interpersonal styles of communication that can be used to probe appropriately for details, relax the interviewee and build trust. Third, create protocols that result in a prepared list of questions that have been strategically developed, with open questions at the start of the interview followed by more detailed inquiries as the interview progresses. Fourth, be prepared to deliver a 'self-reflexive' interview. That is, develop the skills to listen very carefully, analyze the answers as they are being delivered, ask the follow-up questions respectively, make the connections between the data given and ask for further comments from the interviewee. The interview should be a conversation between the researcher and the interviewee with the interviewer talking about 20% and listening 80% of the time (Dilly 2000).

A semi-structured interview process was used for this study. Background information and context regarding the policy network under study was gathered for several months before the interview questions were designed. This documentary analysis drew from a number of different sources including the academic literature, government publications regarding policy instrument implementation such as the reports from the multiple public hearings that were held during the second and third eras, public accounting reports, and internal government requested by the researcher.

The semi-structured interview process allows the researcher to probe beyond the question format to gather a greater depth of detail. The interview process was reviewed and approved by the University of Regina Behavioural Research Ethics Committee. A script for initial contact with potential participants (Appendix 1), a participant consent form (Appendix 2), and a list of interviewee questions (Appendix 3), formed part of the application process. The ethics approval is attached as Appendix 4. All participants were told of potential risks associated with the interview, advised that they could withdraw at any time in the process, and/or choose not to answer a specific question. They were also alerted that the interview would be recorded and transcribed. The consent form listed the author and his academic advisor as the researchers for the project. The author of this study conducted all the interviews.

The prepared list of questions was sent out to the participants in advance. Some of the participants wanted to review the questions before they consented to the interview and they were sent the questions in advance of their consent. During the interview process the questions were consolidated into four main areas: interviewee's background, interests, outcomes and final as shown in the list of questions contained in Appendix 3.

Eight participants were designated for an interview. One participant was not able to be reached. The other seven all consented to being participants. Six out of the seven participant interviews were conducted by phone to meet their time and schedule requirements. One of the participants requested that the interview be in person and that request was met. While the questions were used as a general guideline during the interview process, probing questions were used throughout the interview process to gather more detailed information when the opportunity presented itself. The interviewees were assured that their specific identities would not be revealed. The data that is presented in this study is assigned to each interviewee per a numbering system.

During the interview process there was information/data that came forward that was unexpected/unknown to the researcher which provided a significant richness to the data gathering and analytical processes. Each interview was conducted over a 1 to 1½ hours period. Approximately 12½ hours of interviews were conducted and transcribed. The researcher was familiar with all of the interview participants from his past and present positions with Saskatchewan government.

2.4 Limitations of the Study

The study was limited by a number of factors. As with most studies, time and money was a restrictive factor. The interviewee's time availability was limited and a broader study utilizing more of their time may not have gotten the same level of participation. Quantitative studies could have been designed and delivered to a broad range of policy actors that were active during the time period that could have provided additional data regarding such things as the receptivity of the actors to the implementation of some of the policy instruments that were utilized. Some of this

information was provided through the qualitative interview process. Ideally, the researcher/author would have been able to contact and interview policy actors from the first era during the formative years of the policy network. The long time frame associated with the case study did not allow this data to be collected. There is sufficient data presented to reach defensible conclusions but being able to talk to all the actors involved with this network throughout its history would have provided further corroboration.

The researcher/author of this study based on his background and experience regarding the study topic brings a bias into the project. Having been a provincial regulator in this field for some of the last era under study may have resulted in a bias both with respect to designing and asking the questions during the interview periods and in the responses from the interviewees. The researcher has not been employed in the regulatory field since January 2008 where he had been an Assistant Deputy Minister with Saskatchewan Environment. As the first step in solving a problem is in recognizing that there is a problem, the researcher was very careful to screen the interview questions with academic advisors before they were used and focused on the listening mode while conducting the interviews. The researcher was never in a direct regulatory role (in his previous employment positions) with any of the interviewees at any time. The researcher enjoyed cooperation with all of the interviewees during the interview process and all expressed gratitude at the opportunity to participate. The corollary of having had this previous employment and relational bias was the expertise that the researcher was able to bring to the study to ask the probing questions and obtain a level of richness in the data

that might otherwise not have been possible. Credibility and trust with the interviewees was an important component of the process.

The first era that occurred between 1942 and 1970 was an early period where policy actors that directly participated in the era were limited. Fortunately, there was excellent academic material available for this period and a rich historical record around the birth of nuclear power during World War II. One of the interviewees utilized for this study was elected to the legislature in the latter stages of this era and worked with Allan Blakeney before the NDP took power in 1971. He was able to provide information regarding the latter stages of this first era as well.

2.5 Summary

Analytical tools used by Howlett and Cashore were utilized to track changes and causal relationships in the formation and evolution of the Saskatchewan uranium mining policy network. The typology of the policy networks, patterns of change, interrelationships within and between network type, internal and exogenous events and policy ideas, institutions and actors was examined over a 65 year period.

A qualitative research approach was used that is focused on a study grounded in historical change, policy formulation and change, information context and policy actor discourse. A longitudinal case study type was applied which allows a time ordered review and analysis of policy change through three distinct policy eras identified in the research analytical period. This type of case study allowed the collection of contextual information that would not be available in the same level of detail under quantitative approaches. Because this study is focused on interrelationships within policy

communities that grew/evolved to develop and deliver uranium mining policy in Saskatchewan, the qualitative approach enabled key causal factors to be determined and linked with policy outputs and outcomes. The case study was applied using a triangulation approach necessitating the collection of data from multiple other sources as described above.

A semi-structured interview process was utilized which allows for flexibility in the interview process to allow the researcher to ask additional interview questions in the pursuit of additional data on the subject area. The interview process was vetted through the University of Regina's ethics process and met all requirements. A prepared set of initial questions were sent out the interviewees. Seven interviewees contributed a rich data bank consisting of 12½ hours of interviews which were recorded and transcribed. This information will be utilized throughout the study report.

CHAPTER THREE: THE FIRST ERA – 1942-1970

3.1 Introduction

This first era in the development of uranium and uranium policy in Canada and Saskatchewan is of importance for a number of reasons. This era marked the beginning of uranium mining in Canada and it would be the war and post war regime that would come to control all aspects of the mineral's discovery, removal and use for years to come. Canada was in the middle of a World War and uranium had become a mineral of national security and an important component of the war effort with both the United States (U.S.) and British nuclear weapons development program dependent on a secure supply of uranium. Post 1945 and into the 1960's, uranium was also required to build up a stockpile sufficient to supply the U.S. military needs during the nuclear arms race.

The policy decisions and institutions created during these first two decades were developed in direct response to the needs of Canadian war allies to secure an ample supply of uranium. The use of uranium for commercial nuclear powered electrical plants did not appear until the late 1960's and early 70's. Most of the major policy decisions made during this era were made under the extraordinary circumstance of war. The focused event of a World War resulted in very quick and significant policy development. The national interests associated with uranium and its development resulted in the need for decisive policy decisions to be made in very short time spans. See Birkland (1998) for a modern day example of policy created under crisis as a result of the Exxon Valdez event. These policy decisions affected the development of the uranium industry in a unique fashion that continues to impact the industry today.

Analysis of the first era over its 26 year span provides an opportunity to analyze the building of a new policy system with its policy actors, goals and means. This period saw a quick build-up of policy involving relatively few policy actors that resulted in both policy successes and failures. Many adjustments or calibrations were made as a result of these tumultuous times.

This chapter will provide a case history of this period beginning with an analysis of the early formation of the sector's policy network(s). This section will examine the policy regime's formation and changes in the actors, institutional structures and ideas over time. Secondly, the type of policy network and its inclination towards change will be analyzed using Howlett's 2002 ideal type typology. Third, the successes and failures of first era policy initiatives and the causes of these outcomes will be analyzed and discussed. Fourth, the type and characteristics of policy change will be examined using the Cashore and Howlett 2007 model. The chapter will conclude with a discussion of the findings and their implications.

3.2 Pre 1942 - Network Beginnings

The first policy 'actor' in the uranium policy sector was not in fact looking to mine uranium. Eldorado Gold Mines Limited staked a claim in 1930 at Great Bear Lake, Northwest Territories that showed promise of silver and pitchblende, a black crystalline material containing radium and uranium. Radium was a material in demand at the time because it was used for cancer treatment (its primary use) and to illuminate gauges and other instrumentation. Uranium was a byproduct of the radium extraction process that was of no real use or value other than as a material that could add colour to pottery. Radium had been produced industrially as early as 1904 in Paris and was a valuable

mineral selling for \$60,000 - \$100,000 per gram from 1913 through the 1930's (Bothwell 1983).

The next actor to enter the uranium policy arena was the Department of Mines (now Natural Resources Canada) that was designed as a developmental agency for the federal government. Its primary mandate was to provide assistance for the development of the mining industry. At the time of Eldorado's mine staking, radium was selling for \$70,000 per gram on the world market. Because there was a large international and national demand for radium to treat cancer and Canadian supplies were very low (Ontario's medical supply was 16 grams in 1930) the federal government was very interested in developing a domestic supply (Bothwell 1984).

Upon confirmation by the Department of Mines of sufficient radium concentrations in the pitchblende, the production mine was built. As one of only two network actors the federal government became involved in many aspects of the mine development including designing an extraction process that was specific to the pitchblende found in northern Canada and solely processing the ore at the department's pilot plant in Ottawa until a processing plant was built in Port Hope, Ontario several years later. A civil servant from the federal government visited the site in 1931 and later announced to the American Institute of Mining and Metallurgy in New York that the Great Bear Lake find was the most important pitchblende/uranium discovery in many years (Bothwell 1984). This speaks to the close relationship that the federal government had with this early pre-uranium mine. The federal representative who was speaking at the meeting in New York would have had substantial impact in raising share prices for the company. It was clear from the onset that Eldorado did not have the expertise to

move this project forward and was dependent on the federal government to develop the mine:

Until 1933, no professional engineer or geologist was associated with the company. Rather, it leaned on the services provided – indeed, freely offered – by the Government of Canada. In so far as the LaBines (mine owners) relied on anything other than their knowledge of mines, minerals, and the north, it was on the information and services of the Mines Branch of the Canadian Department of Mines. Those services were remarkably comprehensive, extending from running a pilot plant for a radium refinery to an estimate of the market radium would have and the price it would fetch. (Bothwell 1984, p. 37).

Following an announcement by the federal Minister of Mines regarding the find, the federal opposition parties immediately asked for the nationalization of the radium discovery based on its importance in treating cancer patients and the high prices it garnered. The Minister deferred the discussion given the recent discovery and as the mine was not yet in development. This debate continued over several years but nationalization did not occur until 1944 when uranium as opposed to radium became the mineral of national importance. The federal government's position regarding direct policy intervention in this industry had been pre-positioned in the early 1930's with direct intervention discussions occurring immediately following discovery (Bothwell 1984).

The federal government's involvement with the radium mining business of Eldorado Gold Mines Limited was but a foreshadowing of their continued future relationship. It is important to note, even though this initial period occurs prior to the formal mining of uranium, the federal government and Eldorado were already working closely together. At this point the federal government was providing direct support to

Eldorado to assist them in the re-operationalization of the mine as was the case in other industries important to the war effort (Bothwell 1984) but no uranium sector policy network was in place. While there were public announcements by both the federal government and Eldorado, as with any major mine discovery, the details of the mine were limited to a select few in the interests of stock market impacts and competition; a culture of secrecy was emerging. Entering the 1942 era, the forming policy network was effectively Eldorado Limited and the federal government. This period is considered the genesis of the nuclear sector in Canada in which the Saskatchewan uranium mining policy regime was created.

3.3 The Beginning of the Uranium Policy System

By 1942 changes in the sector were already occurring. Eldorado had shut down its Great Bear Lake (Port Radium) mine in 1939 due to the loss of European markets and the start of World War II. Eldorado was still operating as a company, processing some of its stockpiled pitchblende, but operating at a loss. Uranium, which had been a waste product, had now become an important mineral in the war effort.

In order to understand the formation of the uranium policy network it is important to analyze the relationships amongst the Canadian actors that were responsible for the development of the uranium industry. The onset of war and the race to develop a nuclear bomb quickly encouraged a closed and insulated structure of emerging policy network. The national importance of uranium had moved uranium policy discussions to the secret War Committee that was comprised of some key Cabinet Ministers including C.D. Howe, the Minister of Munitions and Supply who was appointed to the post in 1940. One of Howe's tasks was to ensure that all mining continued in Canada to supply all the essential

minerals for the war effort such as nickel, coal, lead and other crucial minerals. C. D. Howe established a number of government-owned companies or 'crown corporations' to supply many of these war materials to the war effort. The federal government already in the role of controlling key mining activities was able to direct effort to uranium mine development seamlessly to ensure that uranium was also available for the war effort (Bothwell 1984). The Canadian government's leadership role in uranium development during this era had a very significant influence on the both the network formation and its operations. The U.S. entered the war in December of 1941 and was at the time working on the development of nuclear weapons. The U.S. contacted Eldorado directly in 1942 asking for a stable supply of uranium. Through discussions between Eldorado and C.D. Howe it was agreed that the Port Radium mine would be re-opened with the principal goal to mine uranium for export to the U.S. C.D. Howe agreed to supply the necessary machinery and supplies. The issue of whether or not this uranium supply should be left in private hands was raised but it was decided that this would be premature given that the mine had not even yet been re-opened (Bothwell 1984).

This history demonstrates the close working relationship that Eldorado had developed with the federal government for the mining of uranium, just as they had with radium. During the war years and into the Cold War era this relationship became even more entrenched and moved to the inner circles of government. All policy decisions regarding the re-opening of the mine and the mammoth effort to increase production were made directly by this forming policy network. The mine was located on federal lands and therefore there were no other jurisdictions that needed to be involved. These decisions were of national significance and involved supplying the U.S. with uranium to make

nuclear bombs. There were no new actors that were entering this network. All the existing actors were in agreement regarding their policy goals and objectives (increasing a secure supply of uranium). A closed policy network was forming.

3.4 United States and British Involvement

What had been nuclear science research prior to the war had now become part of the war effort. Responsibility for the U.S. bomb project was moved to the U.S. Army Corp of Engineers and Eldorado, under the guidance of the Canadian federal government, began to sign contracts to supply the project with uranium. The British government was also purchasing much smaller amounts of uranium from Eldorado for their program. The British in wanting to take advantage of sharing nuclear research with the U.S. and Canada decided to move most of their scientific team to Montreal in order to be geographically closer to the U.S. (Sims 1980). The British were concerned about uranium supply as most of Canada/Eldorado's ore was going to the U.S. They also expressed concern about Canada's valuable supply of uranium being held in private hands. In 1942 at Britain's urging, it was agreed that C.D. Howe would approach Eldorado in secrecy and offer to purchase their shares. The owner of Eldorado agreed to the sale but revealed that his family did not own the majority of stocks. The purchase of this portion of the Eldorado's shares was secretly made by the Canadian government and Eldorado's owner/president was tasked with covertly purchasing as many other shares as possible on the Canadian government's behalf. It was also agreed that the control of the company would pass into the hands of a tripartite government group consisting of the U.S., British and Canada (Bothwell 1984). Minister Howe directly controlled the operations of the company. All of these significant policy decisions were made within the confines of the small policy

network comprised of Eldorado and the Canadian government inner war committee with input from its allies the U.S. and Britain.

Over the next 18 months shares were purchased secretly on behalf of the Canadian government. The federal Government in essence, fully controlled the company but Eldorado's shares continued to be traded on the public stock exchange. This demonstrates the level of secrecy that characterized the network during the war years and that the government of the day dealt with its war requirements at all costs.

In the following years, although the development and shipping policies for the Canadian uranium industry were managed by this tri-partite group, the formal control always remained with Canada (Eldorado and the federal government). The U.S. (in particular) and British influence on the uranium industry brought them into the policy network in a peripheral fashion. Both parties influenced the direction of the early policy decisions. The U.S. had been a member of the network from the beginning of its formation by virtue of its purchase of large relative quantities of uranium from the Canadian government/Eldorado as early as 1942. Britain had also been involved as early as 1942 as evidenced by their urging Canada to purchase the private Eldorado shares (Bothwell 1984). Britain exerted influence through their 'Commonwealth' relationship with Canada as their purchases of uranium were relatively small and short-lived relative to the U.S.

In 1943 uranium supplies could not meet the demands of both the British and American war efforts and as a result the U.S. government's supply needs were given priority. This resulted in a shortage of uranium available for the British who in turn raised this issue with the U.S. In August 1943, Churchill and Roosevelt met in Quebec

City and signed a Combined Policy Agreement that resulted in the creation of a Combined Policy Committee with C.D. Howe appointed as Canada's representative (Sims 1980; Bothwell 1984). This committee allowed for the discussion of any major issues at senior levels of government. Thus the network moved formally to an international level with the U.S. and Britain joining Canada. The network would still be considered a closed network with the same basic actors and no new ideas flowing into the network from elsewhere.

In 1943, the U.S. also expressed concern to C.D. Howe regarding a Canadian uranium mine development company that was working with some private U.S. interests (under contract to the U.S. Army Corp of Engineers) to build uranium mines in a number of countries around the world. There were two Canadian companies involved with developing an additional uranium supply, Ventures Limited and International Uranium both of which wanted to supply uranium independently to the U.S. government interests. Claims were registered by Ventures Limited in the Great Bear Lake region by the Canadian developer on the direct behalf of these U.S. interests. The markets were abounding with speculation and rumors regarding Canadian uranium being sent to the U.S. under long term contracts. This was driving up the price of uranium as well as the share price of Eldorado. International Uranium had direct contacts with Eldorado and was publically discussing potential new uranium developments. These public discussions were driving up the market shares of Eldorado which was still trading shares and considered to be a private company in the eyes of the public. The British and Americans were concerned about the rising price of uranium and the share price of Eldorado as

stocks were still being secretly bought by the Canadian government. They also did not want the complications of purchasing uranium from a second supplier (Bothwell 1984).

In September 1943 the Canadian government amended the Quartz Mining Regulations of 1932 reserving rights for all radioactive substances to the government. The mine claims that had been made on behalf of the U.S. government were transferred to Canada as per direction from the U.S. Army of Corp Engineers. Uranium supply was confined to one mining entity (Eldorado) that was still publically considered to be private but was in fact being run by the Canadian government as part of the tripartite agreement (Bothwell 1984). This event shows the significant power that the federal government was able to exert over the policy network during its formative years. Eldorado had not yet been formally declared a federal Crown but the federal government, by using a federal legislative instrument, was able to exert control over the ownership and marketing of uranium.

3.5 Nationalization of Uranium Mining

The next change to the policy network occurred with the nationalization of Eldorado Gold Mines Limited. C.D. Howe wanted centralized decision making and addressed this issue with the quartz mining regulatory instrument. In discussions with the U.S. and Britain and given the price issues that had erupted as a result of market competition and speculation, the need to have formal control over Eldorado was concluded. In January 1944, the Eldorado Mining and Refining Limited (company had been renamed in 1943) was formally designated a federal crown (Bothwell 1983). It reported directly to Minister Howe who, until 1957, remained in charge of the company on behalf of Canadian government under a variety of department portfolios. C.D.

Howe's continued post war involvement in Eldorado ensured direct power and control was exerted over Eldorado for 12 years after the war. As such there were minimal government disruptions to the network and its actors throughout this period.

With the nationalization of Eldorado, the policy network became very stable with key actors sharing a consensus on instruments applications, goals and priorities. During the war years principal actors included Canada, in particular the Minister of Munitions and Supply C.D. Howe, Eldorado, and the U.S. and British governments. This did not change for several decades with the exception of the exit of the British. After the war the British were in need of uranium for further research but had very little money and chose to buy the cheaper uranium from the African Congo starting in 1946 (Bothwell 1983). This removed the British from the network. The British, during the war (for the first four years of the policy network formation and operation) had influence within the network because of their close 'Commonwealth' relationship with Canada. However their post-war influence was limited as they had never been a major buyer of uranium. This post-war change is not considered to be significant within the context of the remaining 24 year period of this era. The most significant policy actors and instruments were already in place.

The only actor that entered the network in this era was the Saskatchewan Provincial government. In the late 1940's and early 50's exploration to find other sources of uranium was active and a number of sites were found in northern Saskatchewan. This brought the Saskatchewan provincial government into the network although in more of a peripheral fashion as described below.

3.6 Saskatchewan Government's Entry

In 1944, the CCF government of Tommy Douglas was elected in Saskatchewan. The government wanted more control over the mineral resources in Saskatchewan and wanted to diversify the provincial economy and its dependence on agriculture. The Mineral Taxation Act of 1944 was created with the primary role of collecting lost mineral revenues gained from mineral rights the federal government had previously been granted to homesteaders, the railroads and the Hudson Bay Company. These lands were taxed on a per acre basis with land forfeiture if taxes were not paid within a year. In 1947 the Mineral Resources Act was passed, which created provincial powers to regulate the production, distribution, sale and control of any mineral containing potassium, sodium or radioactive substances. The Act was amended in 1964 to give mines a three year sliding scale royalty free period, and again in 1969 to encourage drilling for uranium in the Athabasca sandstone deposits. The Prospectors Assistance Program was developed in 1948 to provide free assays, claims, aerial transportation and large free leases on blocks of land to encourage mineral exploration. An Aboriginal prospectors training program was also created under this initiative (Murray 1978). These developments are significant in that the provincial government in the post war years was actively initiating policy to promote mineral exploration and mine development. The Mineral Resources Act resulted in both the federal and provincial governments exerting legislative control over the provincially owned uranium resource. These policy outputs/outcomes brought the Provincial government into the uranium policy discussions and early entrance into the policy network, even though the federal government still controlled almost all aspects of uranium. The Atomic Energy Control Act was passed in 1946 that provided legislative

powers to the federal government to control all aspects of uranium mining and marketing based on a national and international security rationale. Saskatchewan immediately met with Atomic Energy Control Board (AECB) officials and indicated that the province had already developed detailed regulations and did not want to introduce any policy confusion to the industry. AECB responded that Saskatchewan could control prospecting and staking but that the federal government would control mining development and operations. The Saskatchewan government was trying to develop appropriate policy instruments which would allow it to exert some legislative control over its uranium resource. It was clear that the federal government by virtue of their over-riding legislative instruments was the dominant actor in the policy network during this era.

While the Provincial government did gain early access to the network with respect to exploration and mining incentives in the latter part of this era, it did not play a major role in any key policy decisions that affected the industry. The primary tool used by the provincial government in managing the operations of the uranium industry was the issuance of resource permits that specified rent and contained some fire protection conditions. The permits were quite general and generic from mine site to mine site. The provincial government also played a role by incenting exploration and some level of mine development. This was accomplished through prospector education and monetary incentives described in detail later in this chapter. The Provinces (including Saskatchewan) would continue to ask for jurisdiction over uranium through the 1960's but were refused. The province did regulate mine safety and in the federal AECB permits there was a clause that required all applicable provincial safety statutes to be met (Duncan 1977).

Despite the Saskatchewan government's desire for greater control of provincial uranium resources, their influence in the established policy network was nominal, especially considering the federal regulatory power of the Atomic Energy Control Act and the national and international security importance attached to the uranium and nuclear industry.

The dominant player in the policy network during this era was the federal government. The U.S. by virtue of their buying power was also a member of this network. The provincial government while considered a member of this network was unable to exert any substantial control over the uranium policy sector in Saskatchewan. The province did develop some policy instruments that would prove to be very powerful in the next era and would lead to federal/provincial overlaps in the application of these instruments in later eras. The policy network in this first study period did not appear to be open to new actors or ideas.

3.7 1942 - 1970: Network Type

This section will use the analytical tools presented in chapter one to determine the network type that was operating during this era. In the years prior to 1942 when radium was the primary mineral of interest, Eldorado was indeed a private business. However, it almost immediately required the assistance of the federal government to move beyond the staking of a claim at Great Bear Lake to the development of a working radium mine. By 1942 the war had started, demands for uranium was high and Eldorado was publically considered private but was really controlled by the federal government. Shares had been bought secretly by the Canadian government with decision-making centralized through the appointment of C.D. Howe. The tightly controlled network that was emerging in

1942 had firmly been established with the nationalization of Eldorado and the passage of the Atomic Energy Control Act in 1944 and 1946 (Sims 1980). As this time the policy network did not include any private actors but rather was populated with government staff after the passage of this legislation. Network membership did not change in any significant fashion during this era.

The policy system that was in place could be referred to as an ‘iron triangle’ or a ‘sub-government’. The literature has many examples of this early form of network type during this era characterized by government decision making. These systems were closed to outside participants, were stable and consisted of a limited number of government actors and key agencies who dominated policy making (Baumgartner and Jones 1991; McCool 1998; Howlett 2002). Doern and Morrison (1980) described the Canadian nuclear industry in those years as a “very small, governmental community” whose regulatory approach was “a closed professional shop” which did not break up until the mid - 1970’s (p. 132). He goes on to say that in the 1970 -1974 AECB regulatory review of their organization and management, there were no public meetings, with AECB relying only on internal committee processes.

One of the criticisms of the ‘iron triangle/sub-government’ approach is that it over simplifies complex relationships and was valid for a limited number of cases (McCool 1998). The nuclear industry (which includes uranium mining) has been used a number of times as an example (Baumgartner and Jones 1991, 1993; Shrader-Frechette 1995; Bolduc and Hayden 1998). However, in order to provide an apples-to-apples analysis it is necessary to ensure that the term ‘sub-government’ can be placed properly within analytical tools that have been developed more recently and are being used as part of this

study. How the sub-government type of network aligns within this analytical model can be examined using Howlett's study of the relationship between policy networks and policy change and what was occurring in the uranium policy sector during the 1942-1970 era. McCool (1998) provides a thorough review of policy systems terminology where 'iron triangle' is described as a closed policy system with a limited number of participants and 'sub-government' as a subsystem that consists of limited number of interest groups, legislators and key agency participants who together dominate policy making. McCool uses Klijn's 1996 definition of a policy network: "Policy networks are described as (more or less) stable patterns of social relationships between interdependent actors, which take shape around policy problems or policy programs ..." (p. 97). The policy system that was in place for the 1942-70 era should still be classified a sub-government because of significant government involvement and the limited and stable number of actors. As such the secrecy surrounding the development, management and policy direction of the uranium industry resulted in a closed system with a limited number of actors and a strong consensus on the appropriate governance approaches.

Howlett (2002) makes a key observation that there is one consistent subsystem causal relationship between type and policy outcome that is observed in all of these policy system descriptions:

Subsystems were seen to range from "open" to "closed" or highly to poorly "cohesive," in terms of their membership and institutional linkages and boundaries, with open subsystems associated with dynamic and innovative policy outcomes and closed subsystems with an incremental or status quo orientation. (Howlett 2002, p. 239).

The closed policy systems tend to be stable over the long term experiencing only incremental policy change with no new actors being introduced into the system, limiting

the entrance of new ideas in the discussions. The same approaches or tools to deal with policy issues are used as the same policy actors are more comfortable with the status quo. Open policy systems tend to experience more change due to new actors which bring new ideas that can result in policy change. These policy actors react to the changing environment and bring innovative change to the policy system. There is an intuitive logic to the concept of an open system versus a closed network system. There is a continuum that connects these polar opposites where the sensitivities of the analytical tool are revealed.

The 1942-70 uranium policy network had a limited number of members that shared certain assumptions about the appropriate response to the sector. Saskatchewan tried to gain entrance to the network in the 1940's but was met with opposition and was successful only with respect to exploration and staking. The province was told that they could operate in the exploration, staking (Doern and Morrison 1980), and safety policy areas (Doern 1976) with any policy instruments implemented being specific to these areas. The land tenure permits were used in a limited fashion to collect nominal lease payments and enact fire protection conditions. The province did enact the Minerals Resources Act but were restricted to economic incentives for mine development in the latter part of the era. They had no opportunity for marketing and selling uranium as that was led by the federal crown Eldorado. Ultimately any export had to be approved by the federal government the key player in the policy system. This same policy network would ultimately be in place right through the 1950's and 1960's.

In Howlett's (2002) typology of ideal type networks each network type is characterized by the policy system's movement of new actors and ideas into the policy

network (see Table 1.3, page 19). As the analysis has shown the uranium network in this era was largely a closed network that was not receptive to the entrance of new actors. Still this leaves the question of whether the network was receptive to new ideas.

During this era, the industry grew from a small mine on Great Bear Lake to a thriving national mining business. This was accomplished on the advice of foreign governments, private business and Canadian government bureaucrats, not all of which would be considered actors within the 'sub-government' system. There are examples of change that occurred as a result of inputs. The mining of uranium which had been reserved for the federal government with the 1943 legislative amendments was re-opened in 1948 for private companies to participate with the goal of increasing the uranium supply. The Saskatchewan government, while not allowed into the inner circles of the policy system, was still allowed to manage the exploration, staking, and safety components of the industry with AECB permits adjusted to recognize the provincial role. At the time the emerging sector was under heavy pressure to deliver the desired quantity of uranium, while the network was receiving new information and adjusting the policy tools to support new goals and objective. These policy goals and objectives focused specifically on government's control and development of the uranium industry as it related to national and international security. In other words, the policy goals did not change. What did change were the settings of the instruments as the supply of uranium moved from U.S./British/ Canada to U.S and Canada only. In addition, the supply of uranium for primarily weapons policy was changed in 1965 to export for peaceful purposes only (Sims 1980). In the first five to ten years of this era (1942-1952) the

policy foundation was laid, and in the following years it was the instrument components that were adjusted.

Table 1.3 (page 19) describes the type of change in policy that would occur under each of the classified networks. New ideas were part of the formative policy formulation and were not the result of new actors entering the system. In a new emerging policy system such as the uranium mining industry in Canada, ideas were implemented to establish the uranium mining policy network, especially given the pressures to deliver uranium during the war and cold war years. This occurred in a period of secrecy that was required during the war years as the ‘closed network’ was being formed. The 1942-1970 era moved the policy networks towards a closed structure protected from exogenous influences and thus stable and insulated, as opposed to a contested network that while open to new policy information and competing ideas, impedes the entrance of new membership.

Another check on the new ideas discussion and the potential for a contested network classification is whether the operational policy objectives changed during this era. As discussed, these objectives included national security, control and development of nuclear energy, and economic resource development. Beginning in 1942 the overriding objectives were national security and the control and development of the uranium mining industry (Murray 1978). Economic resource development was a primary aim of the provincial government but they were not a key player in the policy deliberations. The federal government wanted a stable and growing supply of uranium up to the early to mid-1960’s with economic development peripheral to their major objectives. Throughout this time the program objectives did not change. Moving into the late 1960’s, economic

development objectives were introduced to ensure the industry financial sustainability following market downturn with the cancellation of the U.S. purchase contracts. Still, no significant policy initiatives were developed as a result. A minor exception was the provincial incentive programs, which were introduced in the mid to late 1960's (Murray 1978).

If we examine the policy changes that are expected to occur in a closed network in Table 4, we see that a closed network shows changes in instruments components versus the operational policy objectives of a contested network. All of the initial policy tools that were developed during this formative era were implemented as the program was being developed. For example, there were multiple instrument calibrations regarding uranium prices (Bothwell 1984) and there was a five year period from 1943-1948 where private companies were not allowed to participate in uranium mining based on national security considerations due to the federal amendment to the Quartz Mining Regulations.

Before any conclusions are drawn, there is a further level of analysis which speaks to a 'discourse community' and 'interest network'. A 'discourse community' is comprised of various actors who are associated together based on similar affiliations associated with the sectoral topic but do not have access to policy decision making within the interest network. The 'interest network' refers to actors engaged in information exchange relations, whereby participation is instrumental and motivated through self-interest. These actors are directly involved in policy decision making. Howlett then bases network typology on the interest network's relationship to the discourse community. This relationship is analyzed by the degree of insulation (how easily do ideas move from the discourse community to a receptive (or not) interest network) and the extent of

symmetry/overlap (how easily do the actors move from the discourse community to the interest network sharing a common approach to policy issues and solutions).

In a closed and stable policy network, the discourse community and interest network have a high extent of symmetry sharing similar goals and approaches to policy issues and changes to policy. In a closed policy network there is also a high degree of insulation between the discourse community and interest network and actors and ideas do not flow from one to the other. In an open policy network the policy actors in both the discourse community and interest network do not share common policy approaches within the policy sector (low extent of symmetry) and actors and ideas from the discourse community are able to enter and participate within the interest network (low degree of insulation. In between these two polar network types is a continuum with two identified policy networks. The 'contested policy network' exhibits a poor or low level of agreement between the discourse community and the interest network and actors and their ideas do not flow between the two. The 'resistant' policy network has movement of actors from the discourse community to the interest network but no new ideas are brought into the interest network. The resistant policy network is comprised of a discourse community and interest network that share similar policy approaches (see Table 3.1).

Table 3.1
Network configurations and policy actor/idea interactions
1942-1970

Extent of Symmetry between Discourse Community and Interest Network	Interest Network's Degree of Insulation from Discourse Community	
	High	Low
High	<p style="text-align: center;">Closed Network No new actors/no new ideas Tends towards change in Instrument Calibrations</p> <p style="text-align: center;"><u>Conclusion:</u> <u>1942-1970 Sub-Government Uranium Mining Policy</u></p>	<p style="text-align: center;">Resistant Network New actors/no new ideas Tends towards change in Specific Policy Targets, Instrument Types/Tools and Calibrations</p>
Low	<p style="text-align: center;">Contested Network No new actors/some new ideas Tends towards change in Instrument Types/Tools and Calibrations</p>	<p style="text-align: center;">Open Network New actors/new ideas Tends towards change in Policy Goals and Means</p>

Howlett 2002

The members of the discourse community shared the same beliefs with the actors in the interest network and were supportive of their overall goals. The beginning of the anti-nuclear movement would not come into play until the late 1960's with real opposition beginning in the 1970's and onward. The analysis shows that the policy network operating in the 1942-70 era was a closed network. Because the federal government and staff dominated this policy network composed of government officials and a small number of private interests this closed policy network could be more accurately called a 'sub-government'. This 'sub-government' was closed from a new actor perspective and no new ideas were introduced into the policy network once it had been formed.

3.8 1942 -1970: Policy Taxonomy and Policy Integration - Key to Successful Outcomes

In order to examine the changes that occurred in uranium policy throughout this era, it is necessary to organize the complex mix of policy outputs, outcomes and impacts into a consistent taxonomy. The separation of policy goals from the tools or means used to deliver these goals is critical in understanding what change occurred and why. Hall (1993) made this initial distinction and developed three key elements of a policy and how it can change: 'first order' changes occur through the calibration of instruments and cause incremental change; 'second order' changes occur through the change of instruments still resulting in incremental change; and 'third order' policy changes occur through policy goal adjustments resulting in paradigmatic changes. First and second order change are caused by events internal to the policy network. Third order change is caused by external events and involves altered institutional structures. Howlett (2009) in applying

taxonomic terms to these three orders of change separates the 'ends' (policy goals) from the policy means (policy instruments) resulting in six distinctive categories in which to classify policy type. The policy goals and means comprise the policy mix. The policy goals consist of a very broad policy goal or idea, a more specific policy objective relative to the goal and an operational on-the-ground policy requirement. The policy means deliver these ideas/objectives and specific goal through the use of broad policy applications, policy instruments and the specific tuning of these instruments to achieve the policy goals. As new policy instruments are introduced into a policy mix it is important that the instrument complements/addresses the policy goals and objectives that may already be in place for optimal policy results.

The composition of a policy mix is important to understand so that the policy tools and their application can be matched to specific goals and objectives to understand their level of integration relative to policy success or failure. See Tables 3.2 and 3.3 below with the era's policy goals and means by taxonomic classification.

Table 3.2
Policy goals 1942 – 1970
Saskatchewan’s uranium policy

<p style="text-align: center;">GOALS</p> <p style="text-align: center;"><i>What General Types of Ideas Govern Policy Development?</i></p>	<p style="text-align: center;">OBJECTIVES</p> <p style="text-align: center;"><i>What does Policy Formally Aim to Address?</i></p>	<p style="text-align: center;">SETTINGS</p> <p style="text-align: center;"><i>What are the Specific On-the-ground Requirements of Policy</i></p>
<p>Federal/Provincial Corporatist</p>	<p>National Security</p> <p>Control and development of nuclear energy</p> <p>Economic resource development</p>	<p>Ensure supply of uranium per joint British/Cdn/U.S. research and development (up to 1946).</p> <p>Ensure uranium supply and production information is not shared outside of Cdn/British/U.S.</p> <p>Ensure supply of uranium for weapons build-up in U.S. (up to 1962)</p> <p>Ensure uranium export is controlled</p>

Table 3.3
Policy means – 1942 – 1970
Saskatchewan’s uranium policy

<p align="center">LOGIC <i>What General Norms guide Implementation Preferences?</i></p>	<p align="center">OBJECTIVES / MECHANISMS <i>What Specific Types of Instruments are Utilized?</i></p>	<p align="center">SETTINGS/CALIBRATIONS <i>What are the Specific Ways in Which the Instrument is used?</i></p>
<p>Non –Participatory</p>	<p>Controlled Information sharing</p>	<p>Established Cdn/British facility in Montreal (1942)</p> <p>Combined Policy Committee British, USA, Cdn. (1943)</p> <p>AECB permit condition requiring restricted reporting</p>
<p>Significant Federal Government intervention and control through policy and legislation</p>	<p>Formation of Federal Crown – Eldorado Nuclear Limited (First Canadian. Government shares bought in 1942; 1944 public announcement); transitioned to private industry in 1988</p> <p>Atomic Energy Control Act (1946) provided powers to control atomic energy materials, equipment and information for national and international security.</p> <p>Creation of Atomic Energy of Canada (AECL) in 1952</p> <p>Federal policy – export permits for uranium issued for peaceful purposes only (1965)</p> <p>Federal foreign ownership policy (1970)</p>	<p>All radioactive substances reserved to the federal Crown – (1943 O/C amendment to the Quartz Mining Regulations)</p> <p>Atomic Energy Control Board (AECB) created under the Act.</p> <p>Safeguard agreement with importing country</p> <p>Limit foreign ownership</p>

<p>LOGIC <i>What General Norms guide Implementation Preferences?</i></p>	<p>OBJECTIVES / MECHANISMS <i>What Specific Types of Instruments are Utilized?</i></p>	<p>SETTINGS/CALIBRATIONS <i>What are the Specific Ways in Which the Instrument is used?</i></p>
<p>Increase the supply of uranium to meet U.S. weapons needs (up to 1966)</p>	<p>Encourage private industry participation to open more mines</p>	<p>Quartz Mining Regulations, 1932 - Revoked 1943 O/C amendments in 1948</p> <p>Federal government (1948) announced a minimum price for uranium guaranteed for five years. (prices and guarantee periods extended several times (calibration) to meet policy goals</p> <p>Policy calibration in 1955 - last five year contracts to be signed in 1956. No guaranteed purchase by U.S. after 1962</p>
<p>Provincial Crown land tenure, provision of surface rights and land protection mgt.</p>	<p>Department of Natural Resources Permit specifying rent payment Condition requiring fire protection procedures</p>	<p>Condition allowing Minister to cancel permit upon three months' notice</p>
<p>Exert Prov. control over use of mineral resources; stimulate development; and derive revenues from mineral resources</p>	<p>Mineral Taxation Act, 1944</p> <p>Mineral Resources Act, 1947</p>	<p>Lands granted by federal government with mineral rights taxed on a per acre basis with land forfeiture if not paid within one year</p> <p>Regulations to govern disposal, mining, production, distribution, sale and control of any mineral containing potassium, sodium or radioactive substance; after discussions with AECB allowed provinces to keep control of prospecting and staking</p> <p>1964 Amendment to give mines a 3-year royalty free period and sliding scale royalty based on net profits;</p>

<p>LOGIC <i>What General Norms guide Implementation Preferences?</i></p>	<p>OBJECTIVES / MECHANISMS <i>What Specific Types of Instruments are Utilized?</i></p>	<p>SETTINGS/CALIBRATIONS <i>What are the Specific Ways in Which the Instrument is used?</i></p>
	<p>Prospectors Assistance Program, 1948</p>	<p>1969 Amendment to subsidize drilling in Athabasca sandstone</p> <p>Free miners license, free assays, claims, aerial transportation to sites; 500 square mile blocks given to large companies under guaranteed exploration; Aboriginal training program</p>
<p>Federal/Provincial Jurisdiction</p>	<p>AECB Permit condition – compliance with Prov. safety and mining statutes</p>	<p>AECB discussions with province</p>

The policy goals identified in table 3.2 are focused on a government controlled policy sector or a ‘corporatist’ approach (Howlett 2009). The policy means described in Table 3.3 are directly linked with the overall goals that were set. They address government need for intervention and control, security and resource development to meet supply needs.

3.9 1942 - 1970: Policy Change Patterns - Tempo and Directionality

In delineating goals, objectives and settings for policy goals and means we also need to understand the patterns of change such as tempo: whether the policy change is sustained and moving progressively forward or deviates back to its original state (direction of policy). The speed of change can be rapid or slow and the direction of the policy can be incremental or paradigmatic. These types of policy behaviours can be observed in long term case studies that cover policy change over decades such as shown in Cashore and Howlett’s 2007 study of the policy development in the U.S. Pacific Northwest or Baumgartner and Jones 1993 study of the U.S. nuclear policy monopoly. Paradigmatic change, in particular can revert back to its original state due to firmly embedded policy regimes, change in political structures or other external changes. A new government replacing a governing party which may have been in power for a long period of time must deal with an existing bureaucracy and systems which may make it difficult to effect policy change. An example would be a party such as the NDP coming into power in Alberta where a privatization agenda and its systems have been in place for decades. The current policy regimes in place would make it difficult for the new party with very different party ideals to implement effective long term policy change in policy sectors that differ radically in ideology from one party to another. Significant policy

change in this environment could revert back with a government change and a policy regime in place that is more comfortable with the previous policy framework. Incremental policy change can be slow moving in one direction either making progressive change or oscillating back and forth staying in equilibrium with little or no real change (Table 1.5, page 25).

3.10 1942-1970: Policy Regime and Patterns of Policy Development

Using the classification framework described above, the policy regime and any changes that occurred as it was formed are analyzed below.

3.10.1 Goals and Logic

The over-arching policy goal in the formative years of the Saskatchewan uranium policy was the direct government intervention and control of the uranium industry (Murray 1978). Both the federal and provincial governments were directly intervening in the market and were not letting market actors influence policy formulation. A controlled and managed industry was the underlying principle that describes this corporatist approach.

As a result of the nuclear race to build a weapon of mass destruction in the 1940's and the continuing weapons build-up following 1945, federal control was exercised through the use of policy initiatives and legislation. The primary driver for these interventions was to meet the increasing demands for a secure supply of uranium. The uranium was needed for weapons research and development for the U.S. and British allies. The goals and objectives were borne from this need and shaped the policy regime that was created. The federal government's policy goals and logic had to be put in place

very quickly. This pace was maintained following the World War II as the increased demand for uranium exploded with the onset of the cold war. The tempo of change was very fast in the developmental years but once the policy network was formed the tempo slowed with a high degree of calibration occurring. As can be seen in Table 1.5, the pattern of change in the goals and logic is best described as classic incremental resulting in no change.

The provincial government wished to exert provincial control over the use of uranium, stimulate economic development, and derive revenues from the uranium resource; however, their goals was not met because federal legislation and policy initiatives provided the federal government with complete control over the uranium resource. The province was told that they could manage the exploration and staking files to which they complied. The province also exerted jurisdiction through the use of its crown lands permit and management of mine safety. The benefits of this approach were not immediately evident but became more significant during the 1970's (McArthur 1983).

The province had developed the appropriate policy goals and instruments but was unsuccessful in its attempt to penetrate the already existent closed policy network. They were, however, able to establish their policy presence in the sector which proved to be critical in later years. The pace of change was slow because the federal government prevented the province from participating in the core of uranium policy decision making. Their policy goals and logic were classic incremental.

3.10.2 Objectives

National security was the principle objective during this era (Sims 1980).

Economic resource development would be considered a secondary objective, driven more by the province. In order to increase the supply of the uranium to meet post war needs, incentives were required to encourage public and private capital in the exploration and development of new mines. Other objectives included the control of information regarding research needs and results, quantity and quality of uranium resources, their locations, costs and methods of extraction, and a host of other uranium resource mining dynamics all necessary to protect the interests of national and international security.

Several key statutory actions set very clear objectives regarding the development and management of the uranium industry. The formation of the federal crown, Eldorado Nuclear Limited in 1944 whose primary task in this era was to find, produce and sell uranium to Canadian allies; followed by the passage of the Atomic Energy Control Act in 1946 laid the foundation for the control of all aspects of uranium in Canada, many policies which are still in place today. In 1948 following the war and with even greater demand for uranium, the federal government set an objective of encouraging the private development of mines which had been restricted to the federal Crown Eldorado. In 1952 the Atomic Energy of Canada Limited (AECL) was created with the mandate to research and develop safe applications for nuclear energy. The Canadian CANDU reactors (fueled by Canadian uranium) and the development and production of medical isotopes were the result of this objective. AECL was created to relieve the National Research Council of the responsibilities associated with the industrial/commercial component of the growing CANDU nuclear reactor business (Finch 1986). The Canadian CANDU

reactors, in addition to being a commercial venture, were also a means to demonstrate the value of Canadian nuclear technology on a global scale.

Legislation and policy controlling the export of uranium in 1965 was a significant objective, setting the stage for incremental change in later years. This legislation allowed companies to stockpile uranium for up to five years with the requirement that uranium was to be used for peaceful purposes only. It was argued however, that uranium could not be separated from military uses and the “prohibition existed only on paper” (Finch 1986, p. 108). When this legislation was introduced, France was negotiating with a Canadian company (Denison Mines Corporation) to acquire a large shipment of uranium. France refused to accept the Canadian safeguards and the sale did not proceed. There was speculation that the U.S. had encouraged Canada not to go ahead with the French shipment because of De Gaulle’s desire for an independent nuclear program (Finch 1986).

A foreign ownership policy, announced in 1970 was also introduced that blocked the sale of Denison Mines Corporation to the American controlled Hudson Bay Oil and Gas. This policy ensured Canadian control of a mineral of national security and is still having effects today (Finch 1986).

The federal government objectives in these formative years created a policy landscape that was to survive for decades. A policy system was put in place where only a semblance of a system had operated previously. Radium had been mined with the federal government providing technical and supply services to a private company. Federal officials attended mine meetings speaking openly about mine developments that had impact on share prices and markets. At the time uranium was a byproduct with only

minimal use. In a very short period, driven largely by a World War and its aftermath, a myriad of policies were put in place to control and develop the uranium industry. The pace was rapid initially during the policy system formative years of World War II. However, once the policy objectives were in place they did not change throughout the era. They would be classified as classic incremental.

The provincial objectives set in the 1940's did not have a substantial impact in the first era but were to become very important in later decades. The Mineral Taxation Act, 1944 and the Mineral Resources Act, 1947 were key pieces of legislation that signaled to the federal government that Saskatchewan wanted to be a major actor in mineral development occurring within its jurisdiction. The province was responsible for mine safety, which was acknowledged by the federal government in their issuance of an operating permit by the Atomic Energy Control Board established under the Atomic Energy Control Act. The province, owning the land from which the uranium was extracted (some of the later major mine sites in Canada), exercised land tenure rights through the issuance of a permit. While many of these provincial mechanisms were not fully utilized in this first era, they were to become of major significance in the following decades. As such, provincial policy making would be classified as classic incremental per the policy objectives that they were able to implement to build a solid base from which they could build upon in subsequent decades.

3.10.3 Settings

In the formation of the uranium mining policy network, it was in the first decade that the most significant decisions were made and implemented. They were made in the

urgent period of the World War II without the benefit of broad discussions both across government(s) and the public.

Chronologically the first instrument that was utilized in the development of uranium policy was the establishment of a joint Canadian/British nuclear research facility in Montreal in 1942. The facility was established primarily at the urging of the British who wanted closer working ties with the U.S. nuclear research facilities. This facility was an important policy instrument in that it provided the means for the Allies to share nuclear research results and led to other joint initiatives such as the Combined Policy Committee established in 1943 to discuss nuclear program issues at senior levels of government. It was within this committee that regular policy discussions of uranium supply and shipments were made.

An instrument amendment was made in 1943 that was only in place for five years yet had one of the greatest impacts on the uranium policy area. That was the amendment to the Quartz Mining Regulations which reserved the rights for all radioactive substances to the federal Crown. Over the next five years Eldorado Nuclear Limited was nationalized, the Atomic Energy Control Act (AECA) was passed and the Atomic Energy Control Board (AECB) was created under the AECA to regulate the industry. A monopoly with all the powers and backing of the federal government was created which was to be a major force in uranium policy. All sales of uranium had to be made through Eldorado (Bothwell 1983, 1984). It was in this time of war, national security and secrecy that the closed sub-government was formed and instruments developed to make uranium available to Canadian allies.

With the end of the war and increasing demand for uranium, and increased exploration and development capital, the Quartz Mining Regulations were once again amended allowing private companies and their capital to mine uranium. In concert with this amendment the federal government (following negotiations with the U.S. who were paying for the program through their purchase of the uranium) announced a five-year minimum price and purchase guarantee for uranium to encourage mining development. Over the next three years, these prices were calibrated. Prices were raised a number of times and based on individual mine development costs, prices rose from \$2.50 in 1948 to \$12.50 in 1954 in an effort to encourage uranium mining development. In 1953, these guaranteed prices had been adjusted upward to ensure full recovery of investments, plus profit to develop the mine, in a five year period. The program outcomes and impacts were very successful with 19 Canadian mines in production by 1958. With the re-calibration of the pricing allowing full cost recovery, mining contracts covering 70,000 tons worth \$1.5 billion had been signed by the end of 1957. The development and calibration of these instruments resulted in uranium comprising the largest Canadian export in 1959 (Sims 1980). The well-focused and integrated uranium policies created successful outcomes and impacts.

Eldorado was the principle player in developing the Canadian uranium policy system while operating as a mining company and as an agent for the federal government to purchase uranium from private companies and sell it to the U.S. Eldorado reported directly to Minister C.D. Howe and was involved in all parts of the uranium industry including policy development. Eldorado sat on the AECB board and had an open hand in policy development:

Eldorado was, at one and the same time, a mining company endeavoring to survive on a commercial basis by selling its product at a profit, and an agency of the government with responsibility for shaping and implementing a national uranium policy. (Bothwell 1984, p 269).

The AECEB, AECL and National Research Council were all under the same leadership. The president of AECEB, Dr. MacKenzie, became the first president of AECL and also held the same position at NRC. According to Finch (1987, p. 28), this typified the “incestuous nature of the Canadian nuclear establishment”. The guaranteed prices program was again re-calibrated in 1955 amidst concerns whether the increasing supply could continue to be purchased by the U.S. There were numerous discussions between the U.S. and Canada and in 1955 it was announced that the final five year guaranteed contracts would be signed in 1956 with no guaranteed purchase by the U.S. after 1962. As a policy calibration tool, this announcement was a signal to the producers to allow production adjustments to be made over the longer term. In 1959 the uranium boom ended. Eldorado continued to purchase and stockpile uranium to ease the transition, with exports to the U.S. for weapons use officially ending in 1966. The number of uranium mines that had peaked at 19 in 1958 was reduced to 8 in 1961 and 3 in 1965 (Sims 1980). This instrument re-calibration was successful in reducing the supply of uranium.

Under the federal export and foreign ownership policies, a nuclear safeguard agreement instrument was developed which was designed to restrict access to uranium by other countries for military purposes. Uranium companies also had an AECEB permit, requiring restricted public reporting of uranium production, quality and other characteristics considered secret. An additional policy was created in 1970 for the export/international area that limited foreign ownership of uranium producing companies

to 33% for companies and 10% for single investors (Ontario 1981). This instrument was calibrated in later years to allow for greater international participation.

As discussed previously, provincial involvement was limited during this period of uranium policy formation. In 1964, the province announced a mine development program with a three year royalty free period and sliding scale royalty based on net profits. The Prospectors Assistance program was amended in 1969 to subsidize drilling in the Athabasca basin (more expensive drilling required) and to provide large blocks of land to larger companies for exploration (Murray 1978). Companies continued to conduct exploration during the 1960's but new uranium mines were not developed and the uranium industry did not revive until the 1970's OPEC oil crisis.

The requirements of the federal policy goals, objectives and settings all focused on supply and security of uranium. The use of the instruments was consistent with calibrations applied as required. Every policy instrument that was developed was used successfully for a specific purpose. There were no significant changes in the settings except for the move to open the system for private industry which was done for a specific purpose and was successful. The calibrations built on existing tools and were re-calibrated relatively frequently. This area of the policy system should be classified as classic incremental.

The province as previously discussed was not a major player in the early development of uranium policy but made steady progress and had staked their own policy claim. As a result they continue to be classified as classic incremental. Table 3.4 provides a summary of the policy development followed by Table 3.5 which shows the pattern of policy change.

Table 3.4
Summary of policy development – 1942 – 1970

Policy Content			
Policy Goals	<p>Broad Ideas that Govern Policy Development</p> <p><u>Federal Gov't</u> Federal gov't directly intervenes and gains control of industry</p> <p><u>Prov. Gov't</u> Attempt to exert Prov. control</p>	<p>Specific Requirements of Policy/Operational Policy Objectives</p> <p><u>Federal Gov't</u> National security drives gov't control and development of uranium</p> <p><u>Prov. Gov't</u> Wants to control economic resource development. Puts legislation in place</p>	<p>Specific on-the-ground Policy Targets Specific Policy Targets</p> <p><u>Federal Gov't</u> Ensure supply of uranium, information control and export controls</p> <p><u>Prov. Gov't</u> Resource control for revenue generation and land protection</p>
Policy Focus			
Policy Means	<p>General Policy Implementation Preferences (organizational devices)</p> <p><u>Federal Gov't</u> Developed legislative tools and policies to control all major aspects of uranium industry</p> <p><u>Prov. Gov't</u> Developed legislative tools and used land ownership tenure to exert small level of control over mine sites</p>	<p>Specific Types of Instruments or Policy Tools</p> <p><u>Federal Gov't</u> Passed key pieces of legislation to control resource – Eldorado - federal crown; Atomic Energy Control Act and created Atomic Energy of Canada Limited</p> <p><u>Prov. Gov't</u> Built legislative base and land rent permit system</p>	<p>Specific way Instrument is Used (Tool Calibrations)</p> <p><u>Federal Gov't</u> Supply incentives; AECB creation; controlled access to uranium; tool calibration (prices)</p> <p><u>Prov. Gov't</u> Regulations for control of uranium; conditions for land tenure permit; incentives for uranium development</p>

Adapted from Howlett 2009 and Cashore and Howlett 2007

Table 3.5
Pattern of policy development and change – 1942 – 1970

Policy Content			
Policy Goals	Broad Ideas that Govern Policy Development	Specific Requirements of Policy Operational Policy Objectives	Specific on-the-ground Policy Targets Specific Policy Targets
	Federal Government - Classic Incremental		
	Provincial Government - Classic Incremental		
Policy Focus			
Policy Means	General Policy Implementation Preferences (organizational devices)	Specific Types of Instruments or Policy Tools	Specific way Instrument is Used (Tool Calibrations)
	Federal Government – Classic Incremental		
	Provincial Government – Classic Incremental		

Adapted from Howlett 2009 and Cashore and Howlett 2007

The policy tempo and direction in this first era by both the federal and provincial governments is classic incremental. The policy goals, objectives and targets were relatively simple and clear. The policy instruments that were created were new and required regular calibrations to ensure that they were working to meet the policy goals and objectives.

3.11 Findings and Summary

Almost all of these policy goals, objectives and instruments were developed through World War and Cold War lens which had the benefit of being focused on very specific goals. The policy network that was forming was a closed sub-government. This closed policy system was formed as a result of the need to support the war and post war efforts with Canadian allies. The policy goals, objectives and instruments were tightly aligned and successful in achieving desired goals and objectives during this era. The needed supply of uranium was made to the Allies into the mid 1960's. When that large supply was no longer needed, instrument re-calibrations were made and the industry supplies were diminished. A federally controlled effective regulatory framework was developed to ensure national and international security objectives were met, which they were.

The goals, objectives and settings in both the policy means and policy ends were integrated and consistent. This should not be a surprise as the framework was put together in a relatively quick time period – the essential elements were put in place between 1942 starting with the secret purchase of shares in Eldorado and culminated in 1952 with the creation of AECL. The rest of the policy activity while important was more supportive and peripheral to these essential elements. The policy actors that put this

framework in place did not change in the first 15 years and were in place for much of the era.

There is, however, one gaping misalignment that runs across goals, objectives and settings. That is the regulatory overlap that was created between the federal and provincial governments. Both levels of governments' key goal was based on the desire to control and manage the industry and both implemented legislation to create regulatory frameworks as the main policy means to accomplish this. Still federal legislation took precedence, and the province lacked any significant influence in the first era. However, the province as the landowner developed and applied instruments which will prove to be critical in determining their control over a developing uranium industry in the decades following this first era. This federal-provincial jurisdictional overlap that was created in this first era will become a significant issue in later years resulting in regulatory 'overdrive', impacting federal provincial relations and driving up industry costs (Doern et al. 2001).

What were some of the other impacts of the policy system and regime that was created? A closed sub-government policy network was created that met the goals of the policy makers at the time but would prove to be difficult to penetrate in future years. This type of closed system created significant public mistrust in later years especially as it relates to the perceptions of the nuclear/uranium industry, an issue discussed in the next chapter. The national, provincial and international scrutiny on the industry from its very inception resulted in strong regulatory framework, still operating at all three levels today.

One other significant impact from this era was the legacy contaminated mine sites that were left behind, many of which have not yet been remediated. The large and

sudden build-up of mines in the 1950's and the collapse of the markets in the 1960's resulted in mine sites that were basically shut down with no previous warnings and abandoned with little or no remediation. Contaminants from some of these sites continue to flow freely into local watersheds and threaten local fish and wildlife food chains. There were no environmental regulatory controls or awareness when these mines were developed, and the drive to supply uranium to the war effort would have resulted in mining that was anything but eco-friendly. The provincial and federal governments have taken actions to contain contaminants and remediate some of these sites (Peach and Hovdebo 2003) but much more remains to be done at a cost that far surpasses the initial monetary worth of the extracted uranium were they all to be fully remediated.

The province of Saskatchewan was less successful in achieving its goals during this era. It was clearly unable to exert control over the use of the uranium resource. The federal government allowed the province to manage the prospecting and staking portions only. Mine safety was under provincial jurisdiction and the AECB permits issued for mine operations contained a specific condition relating to the province. The province exercised its land tenure over the mine sites by issuing resource permits with some limited fire protection requirements and rent payment specifications. There was significant uranium exploration carried out based on provincial incentive programs that made important discoveries for future mine development pending market demand. The province of Saskatchewan, while not achieving all of its goals, established a regulatory framework with objectives and key instruments that staked out a provincial claim in the uranium policy area. In the decades following this first era, many of these tools proved to

be crucial in the development and implementation of policy for uranium in Saskatchewan.

In closing the discussions regarding this first era, it is important to end where the analysis started and that is with the connection between the policy network and the policy outputs, outcomes and impacts and associated patterns of policy change. The analysis shows that this era contains a closed system or sub-government comprised of a limited number of key actors. Closed systems tend to make incremental changes and use the same set of policy tools making calibrations as required. New actors are not introduced into the system. A policy network was formed during this era that was successful in its goals of providing a reliable and secure supply of uranium to Canadian and international allies. The classic incremental pattern of change is associated with the pace and direction of policy development in this first era.

CHAPTER FOUR: THE SECOND ERA - 1971-1981

4.1 Introduction

The second era of uranium policy development in Saskatchewan began with the entry of Allan Blakeney's NDP government in 1971. This was the beginning of the province becoming much more directly involved in the uranium industry and its policy development. This period marked significant changes to the policy network as it evolved from a closed structure with limited memberships to a more open policy system that welcomed new actors and new ideas. Speaking to a senior government official at the provincial level, it was not that the federal government vacated the policy field; it was that the province was trying to penetrate what had traditionally been a closed policy network: "I would say it was the Province trying to exert its control more than the federal government trying to leave a space (Federal jurisdictional space)" (Interviewee # 1, Sept. 9, 2014).

The federal Crown Eldorado was still a dominant industry player in this era but the policy regime was to change with the entry of new actors, new ideas and resulting institutional change. The need for uranium exports for Allied weapons and research development was no longer the driving force behind policy development. While the federal government's original policy goals regarding the control and development of nuclear energy did not change during this era, the policy network in which they operated did transform resulting in causal policy changes. The membership of the interest network expanded and the boundary between the discourse community and interest network became porous with actors moving more freely from community to network. The

discourse community also grew with more anti-nuclear and anti-uranium mining activists entering the discussions, some of whom became part of the interest network. This anti-nuclear movement was impacted by the growing Canadian peace movement that was rallying against any placement of nuclear weapons in Canada (Douville 2015). The environmental movement was also growing and these interests entered the network; the local northern residents had interests in the new mining proposals and they became part of the discussions. With this movement of actors and ideas, the symmetry between discourse community and interest network was also reduced. The province and the newly elected government's provincial building initiative became the key driver behind policy changes that were to occur. As new actors were brought into the policy regime, new ideas and interests had a direct effect on what had previously been a stable closed policy network.

During this era markets became an influence as well with an increased demand for uranium. A number of global events were affecting the domestic sector, impacting policy decision processes. The OPEC oil crisis of 1973 drove up the market price of uranium amid increasing pressure to meet the expanding nuclear energy demand. The OPEC crisis resulted in higher than expected uranium prices which in turn drove new mine development. Canada reacted to this exogenous event by supporting new mine development as well as developing 'made-in-Canada' nuclear technology such as the CANDU reactor. The development of this technology, which was exported to countries around the world, also drove policy decisions around uranium exports and the need to ensure a domestic supply for the Canadian nuclear energy industry.

In 1971 the Canadian government, in response to the U.S. restricting the importing of uranium, participated in the formation of a ‘uranium cartel’ comprised primarily of the Australian, French, South African and Canadian governments. The cartel’s purpose was to establish a minimum price schedule for the sale of uranium. This cartel secured and stabilized the world market for uranium. Fearful of U.S. anti-trust legislation, the Canadian government in September of 1976 passed an Order-in-Council forbidding any Canadian from sharing any documents concerning the cartel with the U.S. The establishment of this cartel did result in higher world prices, which also impacted the Canadian domestic market (Ontario 1981; Finch 1986).

A dominant feature of this era was the impact of outside influences (markets, new federal actors, and new provincial actors) on the nature of the uranium policy network that had traditionally been closed and largely insular. These external pressures originated from a variety of sources, as discussed below and resulted in a significant reconfiguration of the network structure and its preferred policy instrumentation. This section provides an analysis of this period starting with a discussion on the nature of the policy network during this decade. Policy successes and failures are discussed, as are the types of policy changes that occurred. The same analytical tools used in chapter three will be applied to this era to provide a consistent analytical framework through the entire 65 year case study period.

4.2 1971-1981: Network type

The election of the Allan Blakeney government in 1971 signaled a change in Saskatchewan’s approach to resource development. The Blakeney government introduced a uranium development strategy within a broader provincial building initiative

designed to expand and broaden exports, diversify the agriculturally based economy, create jobs, and grow incomes. A significant number of provincial Crown corporations were established to generate revenues for government and create employment. From 1973 to 1975 six new commercial Crowns were created including the Saskatchewan Mining Development Corporation (SMDC). By 1980, there were 17 commercial crowns with assets of four billion dollars, net earnings of \$181 million and employing 12,000 people (Gullickson 1992). In addition, royalty and taxation structures were put in place to capture oil, potash and uranium resource revenues. This action signaled an important turn in provincial resource management, introducing new actors to the traditionally closed uranium sub-government policy system.

The Provincial uranium development strategy was centered on increasing government capacity to participate in, and benefit from, the expansion of the uranium industry. The intent was to pursue private capital investment in Saskatchewan, create SMDC, appoint two boards of inquiry for the Cluff Lake and Key Lake mine development proposals, and create comprehensive provincial lease agreements with companies. Some of the anti-nuclear interests in the NDP stated that the Cluff Lake inquiry was held to avoid an internal backlash within the party and “the public perception of a serious fracture within the party” (Harding 2007, p. 25).

SMDC was formed in 1974 and formalized through the *Saskatchewan Mining Development Act, 1977*. The province owned both the uranium resource and the Crown land on which it was located, and with the implementation of these different policy instruments, the province was becoming a major actor in the Saskatchewan uranium policy network. As a provincial civil servant commented:

The federal government was trying to capture what the province felt was its share of resource revenues back in the 70's ... the only way it appeared that the province would be able to protect what it felt was its share ... trying to exert its authority over the mineral resources during that time period. (Interviewee # 1, Sept. 9, 2014).

Commenting on the formation of the Saskatchewan Mining Development Corporation, the same official said:

There was a sense that if the government owned it the federal government wouldn't be able to tax it in the same way they taxed private companies and that is why I believe SMDC Corporation was created in 1974. (Interviewee # 1, Sept. 9, 2014).

During the Cluff Lake uranium mine inquiry, discussed below, the issue of environmental protection was raised. As a result, a new Branch of the provincial Environment department was created with the mandate to license and inspect uranium mines. The first provincial environmental operating license was issued to Eldorado Nuclear Limited for their Beaverlodge mining facility in Northern Saskatchewan in July 1980 (Barsi and Ashbrook 1992). As a result provincial government environmental management actors became part of the interest network. Environmental interests from both public and government environmental perspectives were brought into the policy network introducing new ideas and competing views. In addition, mine worker safety was emerging as a high priority, furthering opening up the network to provincial safety officials. As safety was a provincial responsibility it was commonly highlighted as an important issue during the inquiry processes and ultimately provided space for the entrance of new actors and ideas in the policy network.

Another factor shaping the character of the policy network during this time were the provincial inquiry processes that were developed and implemented for the Cluff Lake and Key Lake mine proposals. The Bayda Commission Cluff Lake Board of Inquiry was held in 1977-78 and the Key Lake Board of Inquiry was held in 1979. The Bayda Commission was particularly significant because it was the first provincial uranium mine inquiry that included a number of activities including extensive public meetings, research data collection, and the provision of public information and education sessions. The Bayda Commission's mandate extended the inquiry process to include all aspects of nuclear energy including a review of worker health and safety, impacts on northern communities, nuclear waste management issues, arms proliferation, and moral and ethical considerations.

Both commissions were created by a provincial Order-in-Council appointing commissioners to undertake the inquiries. These inquiries were constituted to conduct research, call witnesses and receive written and oral briefs from interested parties. They conducted multiple public meetings all over the province and were directed to examine environmental, social, economic, health and safety considerations. The boards were mandated to not only review all available information but also to deliver a public information and education component. These commission reports were voluminous and made public as was the government's response to them (Saskatchewan 1978; Saskatchewan 1981). The Key Lake inquiry was held from December 1979 to January 1981 to review the "probable environmental, health, safety, social and economic affects in the Province of Saskatchewan of the proposed uranium mine and mill at Key Lake" (Saskatchewan, 1981, p.1). This board was not mandated to look at the broader issues

related to moral and ethical considerations because the Bayda Commission had already done so. The board members for the Key Lake inquiry included a lawyer and former Deputy Minister from Saskatchewan government, a Regina business woman, a geologist from Central Saskatchewan, a First Nation Counsellor from Lac La Ronge Indian Band and business man who had resided in northern Saskatchewan since 1949. The previous Bayda commission inquiry had three commissioners all from Regina and Saskatoon. The change in membership of Commissioners on the Key Lake inquiry to a more northern resident representation signals the growing influence some network actors has gained compared to the first inquiry.

This type of process brought a number of new actors and ideas into the policy arena including the anti-mining/militarization of uranium interests. The anti-nuclear activists were not in favour of uranium mining based on the potential use of uranium for the development of nuclear weapons. They felt that the existing export restrictions still allowed uranium to be exported to countries that could use Saskatchewan uranium for weapons development as the U.S. had done during the war years. One of the anti-nuclear activists commented on this issue:

As the Cluff Lake Board of Inquiry process proceeded, my views on uranium mining were shaped and by the time Cluff Lake was over, I was much more convinced that we shouldn't open new uranium mines in the province and I was also convinced that we couldn't separate the civilian and military uses of uranium...I mean this is no longer the case obviously. France has (since) signed a Non-Proliferation Treaty but in those days they weren't signatory to it you have to bear in mind and they were like I said they made no bones about the fact that they didn't separate their civilian and military uses of uranium... Separation is a bit of a mirage. I mean in the case of India for instance. I don't believe that any uranium that India sells received from Canada will actually be used to build

nuclear weapons. I just believe it will displace domestic uranium from India which will be used to build nuclear weapons so the Canadian government has signed an agreement with India that I don't believe they will violate that says don't use our uranium in your weapons program but and I believe that it will also be used for nuclear reactors. It is just that India was having to use its own uranium for its nuclear reactor program and now we have freed it up to expand its military program. (Interviewee #4, Sept. 12, 2014).

The northern residents that were to be directly impacted from an environmental and socio-economic perspective had a major influence on the inquiries findings. More than half (57%) of the participation at the twenty three inquiry hearings across the Province were attended by northern Aboriginal people (Harding 2007). Their ability to continue to be able to access the land for traditional uses was an important component of the hearings. Training and employment for northerners was a common theme throughout these and subsequent hearing processes. One of the provincial senior officials interviewed commented on the need to ensure that northerners' interests were included in any policy decisions:

...government you must do everything possible to make sure that northerners have a window into the industry, that they can have their questions asked and answered in timely and fulsome manner, okay. And you must there must be clear benefits for northerners themselves because northerners perceive themselves to be bearing the greater or greatest proportion of the risk in supporting these operations these proposed developments....northerners derive an appropriate range of benefits from uranium mine development in the north. (Interviewee # 5, Sept. 12, 2014).

The environmental interests also became engaged during this era and were active in the panel deliberations. The Saskatchewan Environmental Society directly participated in the panel hearings and linked their environmental interests directly with

the anti-nuclear interests. In answer to a question on whether the environmental and anti-nuclear movements were linked and both represented through the Saskatchewan Environmental Society, an interviewee who had participated in almost all of the entire panel hearings that were held in the province stated:

I was involved in both groups here in Saskatoon... the Saskatchewan Environmental Society was concerned about both. I mean we appeared before all these hearings, Joe, and spent a lot of time looking at potential local environmental impacts and how they might be mitigated, you know, and we are still doing that work today. It is just that we wanted to have a discussion about the broader issues too, especially the military issue. (Interviewee # 4, September 12, 2014).

Actors that engaged in the process also learned about the other interests that were being brought forward, in particular the northern interests through the dialogue and public information and education component.

The panel processes extended over months for each mine proposal and the network actors that attended each of these panel hearings became familiar with all of the issues and developed relationships specific to uranium mining that lasted for years. A government official commented on these relationships around the panel processes:

It's almost like it's a relationship, the panel process is a relationship in its own rights, just not a matter of the moment, especially when it stretches...there's marriages don't last that long so it very much was a relationship of people, some fairly regular attendees, coming together to discuss and debate uranium mining development...it was a wide open process and a pretty cordial one too for a tribunal. (Interviewee # 5, Sept. 12, 2014).

This comment included the inquiries during this era and stretching into the inquiry processes that occurred in the 1990's (to be discussed in chapter five). As this point Saskatchewan had a provincial policy network representing multiple interests that would, over time, constitute the core interest network actors. These relationships and the learning and exchange of information that occurred in the network first became evident with the Cluff Lake inquiry process.

The Cluff Lake inquiry report concluded that uranium mining and milling should proceed in Saskatchewan subject to increased regulation and conditions provided under environmental approval. The board also recommended that the federal and provincial jurisdictions work to better coordinate and clarify their regulatory frameworks. The provincial government accepted the recommendation of the Commission that the Cluff Lake mine proceed subject to increased environmental regulations, health and safety worker standard improvements, expanded environmental monitoring and a redistribution of economic benefits to Northern residents (Saskatchewan 1978; Saskatchewan 1978a).

There was one other major inquiry process that occurred during this era that would shape the policy network throughout the remainder of the 65 year case study. That was the Warman inquiry. The Cluff Lake inquiry was the first uranium public inquiry for a mine located in northern Saskatchewan. The Warman inquiry reviewed a uranium processing plant proposal that was to be located in a community on the northern edge of Saskatoon, and as such garnered much more attention from the broader interests in Central and Southern Saskatchewan. This process attracted actors from the discourse community seeking to enter the uranium policy debate. Many of these actors returned to the discourse community once this particular process was completed.

Those that had attended and participated in the Cluff Lake inquiry had learned from the process and were eager to continue their participation in the sector. One of the interviewees who participated in the Cluff Lake and Warman inquiry remarked that Warman “laid the foundation” for the anti-uranium movement in Saskatchewan and that there was a good deal of learning that occurred as the inquiry processes proceeded (Interviewee # 2, Sept. 11, 2014). An anti-nuclear activist remarked: “they became a lightning rod for the frustrated and evermore cynical non-nuclear movement in Saskatchewan.” (Harding 2007).

4.3 Warman inquiry – impact on policy network

In July 1979, Eldorado Nuclear Ltd., the federal Crown corporation (formed during the war years), submitted a formal proposal under the environmental review process to build a processing plant near Warman, Saskatchewan, twenty-three kilometers northeast of Saskatoon. The first company-delivered message to the public in October 1979 resulted in a substantial backlash from many residents. Eldorado had previously engaged consultants in August 1975 to investigate potential locations for two refineries, one in Saskatchewan and one in Ontario. Eldorado has also undertaken detailed environmental studies and began implementation, before any public consultation or any facility approvals were provided. Eldorado had engaged the Saskatchewan Economic Development Corporation (SEDCO) to acquire purchase options on a property near Warman. This was completed in September 1976 before the proposed facility location was widely publicized. This was justified as being necessary to avoid land speculation, as described by Eldorado in the Environmental Impact Statement documents. In mid-October 1976, Eldorado announced its intention to conduct detailed studies to determine

the suitability of the Warman property as a site for a uranium refinery.

It appeared that Eldorado, a large federal Crown corporation, had already pre-selected Warman for the refinery site and had not communicated with the community in advance. The acquisition of the purchase options was done with the involvement of only a few citizens. The local community was not given the opportunity to engage in the initial decision-making process, damaging the company's credibility and giving ammunition to those morally opposed to the industry. In working with a provincial Crown such as SMDC, another inherent message delivered to the local community was that business and government were trying to push the project on a local community without sufficient front-end consultation.

A federally appointed panel was announced in October 1979 as part of the federal environmental assessment review process. Members of the panel were, regularly interviewed by radio, television and the newspaper media. The panel met with local groups to explain the review process and gather information. Because the majority of people in the immediate locale of the refinery were Mennonite, the panel invited a Mennonite theologian to address the panel and local citizen groups on Mennonite life and culture. The pacifist Mennonite influence prevalent in the Warman area was mentioned by several interviewees as a key component of the inquiry testimony.

Beginning in January 1980, public hearings under the federal assessment process began. Twelve days of hearings were conducted. The panel heard from 336 people and 201 written presentations were made, in addition to a substantial number of technical and background reports. Seven federal (including AECEB) and eight provincial agencies participated in the review. This is mentioned to provide the wide array of inputs from

local interests that were engaged in the process. On August 6, 1980, the federal Environment Minister announced the decision of the environmental assessment panel stating that they could not endorse “in its present form” the proposal by Eldorado. He indicated that the refinery concept and proposed operating procedures would have minimal environmental impacts but that due to “the uncertainty about social effects on nearby residents it could not give support to the proposal at the present time” (Environment Canada 1980, p. 1).

A member of the public succinctly summed up the conclusion at the panel hearings with respect to the social impacts of the proposed refinery location with the following comment, “If one had to choose the worst possible location in this province for the site of a uranium refinery, having regard to its social impact, one could hardly have chosen better” (Federal Environmental Assessment Review Office 1980, p. 39). Eldorado withdrew its application and built the processing facility in Blind River, Ontario.

Eldorado was still operating as if within a closed sub-government system but Saskatchewan’s uranium mining policy network was shifting to a new type of policy network due to the entry of new actors and ideas. This shift resulted from the new policy instruments introduced by the province such as the inquiries processes and the entry of new provincial government interests. Eldorado had no direct involvement with the Cluff Lake or Key Lake inquiries and did not appear to understand that there were now multiple interests that had access to the policy network. Some of the interests and processes are provided below to show the level of local involvement and the creation of a ‘movement’ within Saskatchewan that would have impacts on the sector for years to

come. Almost all of the interviewees that were in Saskatchewan at this time remarked on the impact that the Warman inquiry had on the development of uranium industry and associated policy actors' contributions and influence on decision making processes for decades to come. Some of the interviewees also suggested that the Warman inquiry was the impetus for the creation of the anti-mining interest within the Province and in particular within the NDP party:

“as far as I’m concerned that coalesced the anti-nuclear, its close, its easy to, its close to Saskatoon. If you look at it the anti-nuclear activity organizations activity in Saskatchewan, it has always been centered around Saskatoon... I’m convinced the combination of the Warman refinery you know the whole debate coalesced into a group” (Interviewee # 2, Sept. 11, 2014).

A former politician also shared that some of the people who participated at the Warman inquiry (1980) were the same people that spoke at an NDP convention in 1992 during a party debate regarding the future of uranium mining in Saskatchewan. He also commented on the emotional aspect of this type of debate:

The same people who were for or against the development with a bunch of terms and conditions were the same people who were later on at the convention resolution in 1991 and earlier during the moratorium period in 1982. In other words the players had not changed...this is an issue which really engenders very firmly held beliefs very strongly for a very long time but the I would say one other thing I do remember about Warman is you know you talk about uranium you think about the 3 Mile Island or whatever that episode is and you hint of a dangerous substance, there is no doubt about that. There is an old saying in political life somebody was asked at a convention that I attended... Pollster was asked what drives the political parties in the development of their programs other than their ideology, the public sentiment and Pollster said there are 3 things. He said the first thing is emotion, the second thing is emotion and the third thing is emotion. This is a hugely emotional issue. It is near Saskatoon. No one knew the size of

the refinery which I guess was rather small. No one understood the safety precautions. If they did, they didn't accept them. Maybe with good merit, I don't know, I don't know the details of it. But man oh man that was a tough one to sell because you are right next door to the City of Saskatoon which was either the largest or very close to being the largest city even then in the province and so this was a losing battle to begin with. You could argue all you could about secondary development and the natural spinoff effects of scientists and science and benefits of that nature but it didn't matter because emotion took over. (Interviewee # 3, Sept. 12, 2014).

A different interviewee, also a former politician, observed that the Warman inquiry drove the debate about whether Saskatchewan should be mining uranium pushing the uranium mining question high on the provincial political agenda:

“...you see when we got looking at the uranium refinery issue, those of us who were looking at it realized that although public interest in Saskatoon was primarily around the safety issues around the refinery. The bigger issue was really the question of whether we should be mining the uranium in the first place you know. Because there was logic to the argument that if we mined it we you know the next logical step would be refining you know what I mean but we began to as we looked at the issue I mean this is after many meetings and much discussion, we realized that the real issue was whether we should be engaged in the mining of uranium so the whole debate about the uranium refinery in Saskatoon in some degree took on a larger context and that was of great interest to the community in the Warman area because they have a strong Mennonite tradition and a strong pacifist tradition and they were very concerned about the potential military uses of the uranium that might be refined. They were also concerned about local environmental impacts because they would have the refinery in their community you know and they were dairy farmers. They didn't want any risks associated with radioactive leaks or anything like that but they were very concerned about the end uses of the uranium if they were going to be in any way military in nature. (Interviewee # 4, Sept. 12, 2014).

Eldorado, the principle proponent of the Warman refinery site development, had

not previously participated with many of the other network actors except within the context of the Warman federal inquiry process. Ironically their unchanged closed network approach to the Warman proposal had a significant impact on the creation and evolution of some key interests (anti-mining) that would have significant influence on not only the outcome of the Warman inquiry, but future mining developments as well. Some of the dominant actors in the anti-mining interest were, or later became, deeply involved in the NDP party. Indeed some held provincial political office for a number of terms wielding substantial influence on party policy and government policy decision making over several decades.

For example, in 1982 a resolution was brought to the annual NDP convention for a “no new uranium mines policy” which included a phasing out of existing mines. This resolution brought forward by some of the same actors who had participated at the Warman inquiry was passed and stayed in place until 1992. While governments are not bound to their party policies this issue was derisive within the NDP party and remained so for not only this era but throughout the entire case study period (Interviewees # 2, 3, 4, Sept. 11, 12, 2014). The controversial cancellation of this policy at the 1992 NDP convention will be discussed in the analysis of the next era. One of the interviewees commented:

To me the driver of public policy on uranium in Northern Saskatchewan is a step wise process from Warman up ... it is the key because it as I say it educated and brought people to the forefront... Interviewee # 2, Sept. 11, 2014).

Chapter three concluded that the network type that entered the 1970's was a closed network or sub-government (Table 3.1). In a closed network there are no new

actors or ideas that are able to penetrate the network. During the 1971-81 era there were a number of new actors that entered policy discussions with the province becoming directly involved with the development of policy goals, objectives and instruments, while at the same time encouraging new actors to participate in the network. The inquiry process, an important policy instrument developed by the province, provided the means to introduce provincial actors that then had the opportunity to learn about all aspects of the industry. These actors were able to provide input into network through their participation in the process. Examples of these new actor interests included environmental, labour, industry, provincial government, safety, anti-mining, Aboriginal and northern residents.

Another criterion to be examined is whether new actors brought new ideas into the policy network. Many new ideas were introduced into the system during this era including the introduction of a new public inquiry process and the creation of a provincial department dedicated to Northern Saskatchewan mandated to integrate delivery of provincial programs across the north. Furthermore, the province exerted control over the mining industry through the use of integrated comprehensive leases that included socio-economic initiatives. A new provincial crown corporation was created that required up to 50% provincial ownership of all major uranium developments and provincial environmental controls were put in place for mines. These were all new ideas/policy initiatives that were developed and implemented in many cases as a direct result of these inquiry recommendations that emanated from the new participant actors.

To determine the type of policy network that operating during this era (see Table 1.3, page 19) we can eliminate those networks that do not fit based on new ideas entering

the policy regime. New ideas entering a system are associated with a contested network and an open network. The contested and closed networks are far less receptive to the entrance of new actors. As the network that existed during this era included both new actors and new ideas it would be categorized as an open network. In order to confirm whether this is the case we should discuss the extent of symmetry and insulation between the discourse community and interest network. The level of change that occurred in this era will also serve as a final check on the type of network in place during the 1971 -1981 era.

Let's first examine the relationship between the discourse community and interest network during this era. There were a number of new actors that came into the network during this era. They had their own distinct interests and these interests were in some cases polar opposites. Most of the northern residents, Chambers of Commerce and trade unions were in favour of uranium development. The Saskatchewan Environmental Society (SES) had amalgamated the environmental and anti-mining interests as evidenced above and were not supportive of any new mine development. The interests of the mine workers and residents in the north were very different from other interests that were more southern based. There was some degree of overlap between the interest network and the discourse community but there were also polarized actors and their views. The members of the discourse community and the interest network did not all share the same views regarding the policy direction of uranium mining in Saskatchewan. The interests were different and the extent of symmetry was low. With respect to degree of insulation, actors from the discourse community had only to appear in front of the inquiries and if they had a credible brief and presentation they were taken very seriously by the inquiry

commissioners (Interviewee # 6, Sept. 12, 2014). This 'low' degree of insulation would move the network type into the two right quadrants (Table 4.1). Given this analysis of actors' relationships between discourse community and interest network, the policy network would be classified as an 'open' policy network.

As a final check an examination of the changes in the various policy taxonomies is required as these can also be associated with the different types of networks. The closed network tend towards changes in instrument calibrations only because there are no new actors, no new ideas and the network is comfortable with the instruments that have been employed in the past. An open network has new actors and as a result new ideas are introduced into the policy system. This type of network tends towards changes in policy goals and means. The province building initiative was a major change in policy. The governments while still interventionist, were also influenced by exogenous events such as the OPEC crisis and its impact on the uranium market. While the federal and provincial governments did exercise control over the industry, the urgency of the war and Cold War era was diminished. The policy objectives were broadened in particular for the provincial government. The settings had changed to economic development and maximization of benefits for northern residents. The provincial and federal review processes brought many new policy actors and instruments into the policy system with major changes in all of the taxonomic policy classifications. As a result the policy network in this era has clearly moved from a closed network to an open network. See Table 4.1 below for the network classification and Tables 4.2 and 4.3 for the taxonomic classifications for the 1971-1981 era.

Table 4.1
Network configurations and policy actor/idea interactions
1971-1981

Extent of Symmetry between Discourse Community and Interest Network	Interest Network's Degree of Insulation from Discourse Community	
	High	Low
High	Closed Network No new actors/no new ideas Tends towards change in Instrument Calibrations	Resistant Network New actors/no new ideas Tends towards change in Specific Policy Targets, Instrument Types/Tools and Calibrations
Low	Contested Network No new actors/some new ideas Tends towards change in Instrument Types/Tools and Calibrations	Open Network New actors/new ideas Tends towards change in Policy Goals and Means <u>Conclusion:</u> <u>1971-1981</u> <u>Uranium Mining Policy</u>

Howlett 2002

Table 4.2
Policy goals – 1971 - 1981
Saskatchewan’s uranium policy

GOALS <i>What General Types of Ideas Govern Policy Development?</i>	OBJECTIVES <i>What does Policy Formally Aim to Address?</i>	SETTINGS <i>What are the Specific On-the-ground Requirements of Policy</i>
<p>Planned and controlled expansion of Saskatchewan resource sector</p> <p>Interventionist/State approach – market influence</p>	<p>Expand and broaden exports</p> <p>Diversification of economy</p> <p>Job creation</p> <p>Environmental protection</p> <p>Income growth</p> <p>Uranium Development Strategy</p> <p>Government direct participation in resource development</p> <p>Control and development of nuclear energy, national security</p>	<p>Maximize Benefits for Saskatchewan residents</p> <p>Economic development in Northern Saskatchewan</p> <p>Royalty and Taxation Structures to capture revenues and incent development</p>

Table 4.3
Policy means – 1971 - 1981
Saskatchewan's Uranium Policy

LOGIC <i>What General Norms guide Implementation Preferences?</i>	OBJECTIVES <i>What Specific Types of Instruments are Utilized?</i>	SETTINGS <i>What are the Specific Ways in Which the Instrument is used?</i>
Federal/Provincial jurisdiction	AECB Permit	AECB discussion with province
Broaden membership in policy network	Prov. Boards of Inquiry - independent officials to review, collect information and make recommendations to Prov. government regarding uranium mine developments	Review information on probable environmental, health, safety, social and economic effects Facilitate provision of information to public Review proponent information to ensure proposals meet Canadian and Saskatchewan law. Receive written and oral briefs from individuals and organizations Hearings to be recorded, transcribed and reported
Direct government involvement in mining industry	1974 - Creation of Provincial Crown - Saskatchewan Mining Development Corporation	50% ownership by Saskatchewan Mining Development Corporation in all major uranium mining project Joint Ventures with private business Provincial investment and marketing
Control foreign investment in resources	<i>Foreign Investment Review Act, 1973</i>	Creation of Foreign Investment Review Agency (FIRA) Approval by federal Cabinet only if of benefit to Canada

<p style="text-align: center;">LOGIC <i>What General Norms guide Implementation Preferences?</i></p>	<p style="text-align: center;">OBJECTIVES <i>What Specific Types of Instruments are Utilized?</i></p>	<p style="text-align: center;">SETTINGS <i>What are the Specific Ways in Which the Instrument is used?</i></p>
		<p>Provides for consultation with provinces 1982 calibration – short form applications threshold increased from \$2M to \$5M (200 employees); further calibrations in 1987 – from 33% to 49% foreign ownership</p>
<p>Uranium value added initiative</p>	<p>1974 - New Minerals policy encouraging development of uranium value added facilities</p>	<p>SMDC discussions with and land purchase on behalf of Eldorado for location of refining plant in Saskatchewan</p>
<p>Federal Assessment review processes for federal led projects</p>	<p>1979-80 Federal review panel regarding location of uranium refining mill in Warman</p>	<p>Public meetings, review of oral and written briefs and decision</p>
<p>Strategic uranium development incentive and revenue generation</p>	<p>1976 - Profit sensitive royalty structures</p>	<p>Capital cost recovery for development costs of property before graduated royalty scheme is applied</p> <p>After tax internal rate of return allowed before royalty structure applied</p>
<p>Institutional structure change - to integrate government services delivery in northern Saskatchewan</p>	<p>Creation of Provincial Department of Northern Saskatchewan (DNS) (1972-1984)</p>	<p>Departments of Natural Resources, Mineral Resources, Education, Social Services, Co-operatives, Public Health, Agriculture and Government Services delivered through DNS</p> <p>Economic and resource development initiatives, project management, social services development and support services programs tailored for the north</p>

<p align="center">LOGIC <i>What General Norms guide Implementation Preferences?</i></p>	<p align="center">OBJECTIVES <i>What Specific Types of Instruments are Utilized?</i></p>	<p align="center">SETTINGS <i>What are the Specific Ways in Which the Instrument is used?</i></p>
		<p>Responsible for development and delivery of comprehensive leases for uranium mining companies Creation of Mines Pollution Control Branch within Saskatchewan Environment with mandate to license and inspect uranium mines</p>
<p>Federal/Provincial Jurisdiction</p>	<p>AECB Permit condition – compliance with Prov. safety and mining statutes</p>	<p>AECB discussions with provinces</p>
<p>Provincial Crown land management policy tool - integrate mining development with environmental, health and socioeconomic goals</p>	<p>1978 - Integrated, comprehensive lease from Department of Northern Affairs specifying rent payment, fire protection procedures, hiring and training practices, local contracting and purchasing practices</p>	<p>Quotas for minimum number of “northern” workers with timelines and distribution of workers across job categories expressed in percentages.</p> <p>Requirements for recruiting (northern recruiting office), training and promoting northern workers</p> <p>Companies to provide transportation of workers to mine sites, provision of detailed training plans to government</p> <p>Companies to provide preference to local businesses up to 10% higher northern prices allowed as equivalent to non-northern bidders (Key Lake)</p>

LOGIC <i>What General Norms guide Implementation Preferences?</i>	OBJECTIVES <i>What Specific Types of Instruments are Utilized?</i>	SETTINGS <i>What are the Specific Ways in Which the Instrument is used?</i>
		<p>Companies required to file employment plans</p> <p>Creation of Monitoring Committee comprised of northerners, company and government to advise Minister of compliance regarding employment and business development lease requirements</p>

In this second era within the open policy network, the policy goals, objectives and settings had expanded in particular from a provincial perspective. This resulted in a number of new policy instruments such as the Board of Inquiry processes, creation of a provincial Crown and a new minerals policy. Existing instruments such as the provincial lease instrument was expanded to be a much more comprehensive and integrated policy tool. The integration of these instruments at the provincial level ensured that the policy mix was consistent and integrated. There was not the same level of integration between the federal and provincial governments. There were specific policy areas however that were clearly under one or the other's jurisdiction such as the export policy being under federal jurisdiction and the lease instrument being under provincial control.

4.4 1971 - 1981: Policy regime and patterns of policy change/development

It is clear that the network changed substantially during this era. It moved from a closed sub-government to an open policy network due largely to the wide array of new network actors and new ideas that were introduced. The next question is how did the change occur? Was the tempo slow or fast and was the change sustainable or did it revert back to its original state? As in the last era, the policy changes will be analyzed by the six taxonomic classifications separated into three categories: goals and logic; objectives; and settings.

4.4.1 Goals and Logic

During this era the federal government shifted their uranium mining goals to include safety and environment but continued to address uranium security through export and foreign ownership controls. A federal civil servant spoke to the shift to safety and environment:

Security is another one that has always been central to the CNSC...shifted from maintaining a security situation in the 60's...to economic where we were pushing an energy policy for nuclear power within Canada and certainly since the 70's economic globally...but overall our interest has always been safety and the environment from the 70's on... (Interviewee # 7, Sept. 23, 2014).

The federal goals were impacted by the development of an international market for uranium. This international (and small national) market developed to supply uranium to the nuclear power industry resulted in a market influence on the policy development of the industry that was not present in the first era. This resulted in a greater market influence, international in particular, that caused subsequent policy changes to federal uranium export and Canadian uranium industry ownership policy. Foreign investment in Canadian uranium industry was controlled by the federal government in addition to the continuation and enhancement of export management. Following the Indian nuclear weapons development tests using Canadian technology the Canadian uranium export policy was strengthened. In 1956, Canada agreed to supply a research reactor to India as part of a technical assistance program. This reactor became operational in 1960 and a CANDU unit was sold to India in 1963. In 1974, following India's explosion of a nuclear weapon from technology gained from Canadian nuclear export of a CANDU reactor and technology in 1956, Canada's export policy focused on issues of non-proliferation (Morrison and Wonder 1978).

The federal government's role in uranium mine development was altered with the creation and evolution of the federal environmental assessment process as well. This process captured the federal crown Eldorado's proposal to develop a processing plant in Warman which, in addition to the provincial public inquiries processes changed the

network membership in the Saskatchewan uranium mining network regime. This federal process resulted in a number of interests becoming active in both the discourse community and the interest network. As evidenced above, this inquiry process coalesced interests in the Saskatchewan uranium policy area that remained active for decades. The federal environmental assessment mechanisms were to also have an impact on the uranium policy system in the next era as it evolved into a major joint federal/provincial review process.

Policy change at the federal government was relatively slow and did not proceed in any one definitive direction. Their overall goals and logic did not change in any substantive way. The market influence was exactly that – a development of an international market unaided by federal policy incentives but responded to by instrument calibrations. The federal government responded to the market influence by calibrating foreign investment and export policies. The federal government policy change in this era would therefore be categorized as classic incremental.

In the last era there was no analytical separation between the federal and provincial governments in defining the tempo and directionality of change because the provincial role in uranium mining policy in the first era was relatively small. In the first era, the provincial government had laid the policy groundwork but was unable to penetrate the existing policy network dominated by federal players and was therefore unable to effect any real change. In the second era, the two governments will be separated for purposes of this analysis because they operated independently in most policy areas during this era. For example, during the Warman inquiry the federal panel operated independently of the provincial government; the federal AECEB permits continued to be

issued independent of the provincial government in the same manner that the provincial leases were issued and managed by the Saskatchewan government; and the province developed and implemented their own uranium development incentive programs.

The provincial government's role in the uranium industry also changed during this era. The election of Allan Blakeney's government spawned a major province building initiative to expand the economy beyond its dependence on agriculture with a major focus on resource development. There was a planned intent to have the government directly involved in the uranium mining industry. These goals were developed early in the era and implemented throughout the ten year span of this study period. The most significant change that had the greatest impact was the involvement of provincial actors in the planning and review of new uranium mines through the public inquiry process. As discussed earlier, this brought new actors into the existing policy network with new ideas that brought substantial change to the policy regime. The inquiry process brought new actors into the network that could not be ignored by the existing players both federal and provincial. The previously closed network was opening up.

The goal to bring training and economic benefits to northern residents from the uranium mining developments occurring in their backyards improved the socio-economic landscape in northern Saskatchewan. The use of crown land ownership to exert provincial legislative control over the uranium mines is another example of a substantial policy change emanating from the provincial goal of direct government involvement in the uranium mining industry. Uranium value added and development incentive goals were also set and pursued.

In a relatively short ten-year period, the policy landscape for uranium mining had changed. Market demand had created the need to open new mines. The province had altered their policy program to penetrate what had been a closed network by bringing new provincial actors into the policy network. These changes were fast and cumulative. The policy base that was set during this era still exists today with many of the same instruments (provincial leases, socio-economic programs, royalty programs) all undergoing some level of calibrations. The directionality of change was cumulative and the tempo was fast. The provincial government during this era underwent a classic paradigmatic change in policy.

4.4.2 Objectives

In this second era the federal government objectives retained their basic goal of national security but without the urgency that was evident during the war and Cold War years. Export permits and foreign ownership concerns continued to be important. Security was expressed through export permit controls and ensuring an adequate long term supply of uranium for Canadian reactors. This was a different approach from the information control and secrecy that was paramount in the first era. The supply of uranium to Canadian reactors which began commercial operation in 1971 was and is important but the energy wealth and mix in Canada makes it a lower concern than in other countries such as France. The federal government continued to exert control over the industry through the Atomic Energy Control Act, AECB and Eldorado the federal crown (Doern and Morrison 1980). Eldorado continued to be involved in uranium mining in Saskatchewan and Ontario but it no longer held the monopoly on sales of uranium. Foreign investment legislation was developed to ensure that Canadian interests

retained control of uranium mines. The federal environmental assessment process came into effect during this era but did not dramatically alter the policy landscape. As mentioned earlier, the Warman inquiry did have a significant effect on the actors within the network but that change was not triggered by the process itself. Had there not been a federal Warman inquiry, the approach that Eldorado took in purchasing land in advance of any local communication would have provoked some level of local review and engagement that may have resulted in similar outcomes. The pace of policy change by the federal government was slow throughout this era with very little change. The level of change would not be considered sufficient to categorize as 'real change' and would therefore be referred to as classic incremental.

The objective of economic resource development in the first era was shared by both governments but was driven primarily by the federal government with the province's involvement limited to staking and exploration. In the second era this objective was adopted by the province and enhanced with a comprehensive Uranium Development Strategy (UDS). As this point the province became the major economic driver reacting to the market potential with a receptive but carefully planned policy framework in place for uranium mine development.

The UDS set objectives to expand and broaden exports, diversify the economy, create jobs specifically in northern Saskatchewan and position the province to participate directly in the industry. A provincial crown, the Saskatchewan Mining Development Corporation (SMDC) was created to achieve these goals through direct joint ownership and management of uranium mining projects. SMDC was mandated to guide uranium

industry development, attract capital, generate revenues for the province, create employment and maintain links to the market (Gullickson 1992).

Two provincial Boards of Inquiry were set up to review proposals for two new mines (Cluff Lake and Key Lake) during this era. Both mines were recommended to government for approval and government accepted these recommendations with the Cluff Lake mine opening in 1980 and the Key Lake mine in 1983. These inquiry processes were significant in that the government implemented an open public process for full review of all aspects of uranium mining. This dramatically changed the uranium policy landscape in Saskatchewan with the introduction and education of new actors and associated ideas.

A new minerals policy (1974) was developed by the province to encourage the development of uranium mining facilities in Saskatchewan. A provincial profit sensitive royalty (Saskatchewan Uranium Royalty 1976) was developed to generate provincial revenues yet still providing profit sensitive incentives for development of mines (Anderson and Barnett 1983).

A Department of Northern Affairs (DNS) was created and located in northern Saskatchewan with a mandate to integrate provincial services for delivery to northern residents (Murray 1978). This department also delivered a number of programs specific to the uranium industry to northern residents which provided socio-economic opportunities and direct involvement in the monitoring of environmental effects from mining activities. DNS was responsible for the creation and management of an integrated comprehensive land lease issued to mining companies that required rent payment, fire

protection requirements, hiring and training procedures as well as local contracting and purchasing practices.

The institutional changes were made quickly in the first five years of the era. The Department of Northern Affairs and SMDC were created in 1972 and 1974 respectively. The Cluff Lake inquiry began in 1977 and ended in 1978. The Key Lake inquiry started in 1979 and finished in 1981. The first comprehensive lease was issued for Cluff Lake mine in 1978. All of these processes continue today with the exception of DNS which was shut down in 1984. The provincial inquiry process has been replaced with a federal/provincial environmental review process. These changes were cumulative in nature. This policy change would be classified as classic paradigmatic.

4.4.3 Settings

The policy settings in this era were very different from the first era. The policy settings in the first era were focused on supply and security. Any other policy initiative was secondary or served those primary goals. In the second era, while security remained important the economy became the most important provincial priority. The federal government as described in the goals and objectives continued to deliver what had been mandated with the passage of the key federal legislation in the 1940's. The federal environmental review process that was in the development stages introduced a public consultation component that included written and oral submissions. Eldorado was subjected to this process for the Warman facility review. The environmental assessment process and the foreign ownership legislation were two of the most significant policy changes for the federal government. A Foreign Investment Review Agency (FIRA) was created that required federal Cabinet approval for purchase of uranium mining

components by non-residents (Ontario 1981). This policy has been and continues to be calibrated to deal with changing market conditions as has the environmental assessment policy and legislation.

One of the questions to ponder is whether the federal government vacated any policy areas thus taking these actors out of the policy network or the province brought new policy actors and ideas into the regime in the 1970's. The federal government retained their policy area interests of regulating the uranium industry and the province brought their economic development and provincial jurisdictional interests into the policy network. These interests existed in the first era but had not been implemented because the right policy instrument(s) had not been developed to bring them forward. (i.e. comprehensive lease). A federal civil servant made the following statements regarding federal regulatory authority in the 1970's and Saskatchewan's interest in uranium mine regulation:

The AECB had implicit authority to license uranium mining... but the agency in its infancy acted more as a safety advisory committee more than it did a regulator and it wasn't until industry started expanding...coming out of the 60s and into the 70s and sort of what we will call the environmental awakening of the first world and we had a lot of public and public awareness we had a much better educated public we had much broader communication ability globally...around the early 70s a lot of jurisdictions brought in environmental legislation and in the middle of that awareness that awakening you know worker safety became more important as well because the source of a lot of contaminants was the factories so if it polluting the environment than clearly the source is more polluted, at least in people's minds, and so human safety became a real issue... Suddenly the AECB had to really step up to the plate and start to do more than just sort of monitor and issue the odd permit and you know cajole things along and they started acting more like a regulator. And it was in the mid-70s that we got our first sort of human health regulations

through and we started looking at mining as one of those industries that needed to be regulated and we started treating mines differently. So you will see our first real mine licenses came in in the 70s.

The same interviewee commented on Saskatchewan's desire to regulate its own mines:

I have dealt with five different provinces as a regulator and Saskatchewan has always been the most fiercely independent province that I have had to deal with...want to control the licensing and want to exert their provincial authority over things as opposed to Ontario...Manitoba and even in Alberta. They don't have the same level of activity. There are no operating uranium mines in any of the other places for instance so the tax base is not affected by decisions I make as a federal regulator. (Interviewee # 7, Sept. 23, 2014).

The federal policy approach did not change during this era. Their policy adjustments could be considered slow and continued to be in equilibrium consistent with a classic incremental policy progression. No new actors of any significance were brought into the policy network.

The province's policy picture had become much more complex. Maximizing benefits for Saskatchewan residents was a specific requirement of the policy framework. The importance of economic development in northern Saskatchewan was a policy tenet that resulted in a number of policy instruments being utilized. Provincial royalty and taxation structures were created to derive specific uranium revenues for Saskatchewan.

The first inquiry held to review the Cluff Lake mine was mandated to independently review all aspects of uranium mining, hear from all interested parties regarding the development, communicate with and educate the Saskatchewan public. The Commissioners were to review all information on potential environmental, health,

safety, social and economic effects of the development and make public recommendations to the provincial government. These recommendations were reviewed by Cabinet and a public response from the provincial government was provided.

The Saskatchewan Mining Development Corporation required 50% ownership in all major uranium mining projects (Murray 1978). The creation of DNS enabled the provincial government to deliver programs and supports to enable northern participation in the uranium industry development and operations. The integrated lease required the uranium mining companies to: meet quotas for minimum number of northern resident workers in the mines; training and promotion campaigns; transportation of workers to and from mine sites to avoid communities established that depend on a specific mine; local contracting requirements; and the creation of local monitoring committees to monitor success of the policy initiatives (McArthur 1983). The province introduced a number of new actors into the policy network as a result of the inquiries process, the provincial crown and provincial regulatory system.

These settings were implemented at the pace to match the goals and objectives and should be classified as classic paradigmatic. Please see Table 4.4 for a summary of the federal and provincial policy development and Table 4.5 for a summary of the patterns of policy change.

Table 4.4
Summary of policy development – 1971-1981

Policy Content			
Policy Goals	<p>Broad Ideas that Govern Policy Development</p> <p><u>Federal Gov't</u> Federal gov't continues to regulate; reduced direct control</p> <p><u>Prov. Gov't</u> Provincial gov't directly intervenes in uranium industry; province building initiative; expands policy network</p>	<p>Specific Requirements of Policy/Operational Policy Objectives</p> <p><u>Federal Gov't</u> The level of national security concern decreases; ensure Canadian uranium supply</p> <p><u>Prov. Gov't</u> Specific Uranium Development Strategy; direct participation in industry; socio-economic and environmental requirements</p>	<p>Specific on-the-ground Policy Targets</p> <p>Specific Policy Targets</p> <p><u>Federal Gov't</u> Export and foreign ownership requirements</p> <p><u>Prov. Gov't</u> Maximize benefits for Saskatchewan and northern residents; royalty and taxation revenues and incentives</p>
Policy Focus			
Policy Means	<p>General Policy Implementation Preferences (organizational devices)</p> <p><u>Federal Gov't</u> Environmental Assessment process begins; controls foreign ownership and export</p> <p><u>Prov. Gov't</u> Used land ownership tenure to exert ownership on uranium resource and Implemented legislative tools</p>	<p>Specific Types of Instruments or Policy Tools</p> <p><u>Federal Gov't</u> Export and foreign investment controls; review of Warman processing facility;</p> <p><u>Prov. Gov't</u> Creation of provincial institutions SMDC, DNS; provincial boards of inquiry for proposed mines; comprehensive lease for uranium mines with environmental and socio-economic conditions; new royalty structure for provincial revenues</p>	<p>Specific way Instrument is Used (Tool Calibrations)</p> <p><u>Federal Gov't</u> Creation of Foreign Investment Review Agency; federal EA process begins</p> <p><u>Prov. Gov't</u> Industry requirements for northern socio-economic development as part of lease; partial provincial ownership of uranium industry; capital cost recovery program based on rate of return</p>

Adapted from Howlett 2009 and Cashore and Howlett 2007

Table 4.5
Pattern of policy development and change – 1971 – 1981

Policy Content			
Policy Goals	Broad Ideas that Govern Policy Development	Specific Requirements of Policy Operational Policy Objectives	Specific on-the-ground Policy Targets Specific Policy Targets
	Federal Government - Classic Incremental		
	Provincial Government - Classic Paradigmatic		
Policy Focus			
Policy Means	General Policy Implementation Preferences (organizational devices)	Specific Types of Instruments or Policy Tools	Specific way Instrument is Used (Tool Calibrations)
	Federal Government – Classic Incremental		
	Provincial Government – Classic Paradigmatic		

Adapted from Howlett 2009; Cashore and Howlett 2007

With both federal and provincial governments very actively involved in the policy sector during this era Table 4.4 shows the much more balanced policy activity that occurred. The provincial government by bringing in a number of new actors into the policy network underwent a classic paradigmatic policy change. The federal government whose foundation was laid in the first era continued to implement classic incremental change.

4.5 Findings and Summary

The policy development in this era centered on province building, the inclusion of new provincial actors from non-government sectors in the policy network and the exertion of provincial jurisdiction over the uranium mining. The war requirement for uranium was no longer the dominate policy driver. The economy, environmental issues and worker safety were also becoming important. This was the era where the province of Saskatchewan truly entered the uranium mining policy arena and became a major actor. This provincial policy initiative opened up the closed network with the entrance of new actors and ideas. The federal government did not relinquish its regulatory role. In fact, as evidenced in an earlier quote from one of the federal regulators the federal government built on its existing regulatory base as the issues became more complex. Its federal crown Eldorado which had a monopoly in most of the first era no longer held the same power it once had. In 1981 Eldorado was one of the industry signatories to the Key Lake comprehensive lease agreement with the provincial government. Early in the next era, Eldorado was to be issued a provincial lease for its part ownership of the Rabbit Lake mine and for decommissioning some of its Beaverlodge properties in northern Saskatchewan that it had mined since the mid 1950's. Eldorado had shifted from being

“an agency of the government... shaping and implementing a national uranium policy” (Bothwell 1984) during the war years to a federal Crown now being regulated by the province.

How tightly aligned were the policy goals, objectives and settings? The province building policies were very well coordinated and captured many of the objectives and settings that characterized the era. Economic growth, job creation, benefits flowing to northerners was all captured in the policy means. The creation of the provincial Crown SMDC ensured direct provincial participation in the industry. The provincial boards of inquiry and the comprehensive lease agreements wove the policies and actors into an integrated policy framework that connected the actors with the design and delivery of the instruments in a fashion that ensured alignment.

The federal government policy goals, objectives and settings were aligned in this era as in the last. AECB continued to issue permits for licensing activities, develop and calibrate policy instruments controlling the export of uranium. Foreign ownership policies were developed and calibrated. The federal environmental assessment process was introduced to the Saskatchewan uranium industry with the Warman inquiry. The policies were coordinated. Later in the decade the AECB licenses were enhanced to reflect environmental and heightened safety concerns (Duncan 1977).

In the analysis of both eras, the federal and provincial governments have been separated. This was not of concern in the first era because the provincial government was only peripherally involved in the policy derivation and implementation. In this second era, the provincial government utilized Crown land ownership, the public inquiry process and a number of institutional changes as levers to exert considerable policy control over

the uranium industry. This was not done in coordination with the federal government. In 1946 the province had met with AECB and indicated that they had the policy framework to control uranium mining development and operations. They were told that provincial jurisdiction would be restricted to prospecting and staking. In this next era, the policy framework changed. There were now two regulators with the creation of the Saskatchewan Environment Mines Pollution Control Branch and requirements under the comprehensive lease agreement policy instrument. Mine safety was also being delivered by both agencies. One of the interviewees commented that with Saskatchewan ownership of the resources and Crown land combined with federal regulation the result is “a bad recipe for cooperation.” (Interviewee # 6, Sept. 12, 2014).

During this era, the creation of these provincial policy instruments combined with the existing federal policy framework did not result in a policy alignment issue. These instruments were in the development stage and occurred in the latter half of the era. As these instruments matured and came into regular use (during the next era) alignment issues were to occur. This federal/provincial overlap will be further examined in chapter six.

The federal government had an established policy framework and did not make any significant change in policy. The *Foreign Investment Review Act 1973* and the federal assessment process were enacted during this era. The federal government restricted its activities to its own policy area. AECB made a presentation to the Cluff Lake inquiry but the federal government was not directly involved with the provincial policy initiatives. A federal government interviewee commented that the federal government left the “northern social and economic initiatives” to the provincial

government as it was not within their jurisdiction (Interviewee # 7, Sept. 23, 2014). They had an established policy framework within which they were operating and the classic incremental pattern of policy change fits their policy changes in this second era.

The provincial government underwent significant policy change by expanding and realizing their goals of building the uranium industry within Saskatchewan and participating directly in it. A policy framework was set up to exert provincial jurisdiction. Benefits and programs were created for northern residents. Paradigmatic change occurred and it was not linked with the federal government's policy framework.

There were significant network changes that occurred in this era. At the 1976 NDP convention, a resolution was passed calling for an inquiry into the mining of uranium in Saskatchewan. This resolution was led by one of the actors that participated at the Cluff Lake inquiry and most of the following inquiries (Interviewee # 4, Sept. 12, 2014). All of the political and civil servant interviewees indicated that the policies coming from these new instruments were better integrated and addressed more interests and issues. One former provincial politician/interviewee commented that Blakeney's strategy was:

...social development coupled with economic development, job creation and killing two (birds) stones with one (stone) bird, getting the economic employment and social standards of people elevated through this industry and at the same time enriching the coffers of the provincial treasury. (Interviewee # 3, Sept. 12, 2014).

These integrated strategies resulted in having multiple interests participate to learn and provide their opinions on what were the best policy decisions.

The anti-uranium mining interest indicated that he “was shocked” at the outcome of the Cluff Lake inquiry based on the premise that the vast bulk of input was raising concerns (Interviewee # 4, Sept. 12, 2014). Other provincial civil servants cited the Aboriginal employment, multiple northern programs as a major success (Interviewees # 1, 2, 5, Sept. 9, 11, 12, 2014). These program initiatives were seeded in the second era and were calibrated in the last era to be studied and will be discussed in chapter five. Cluff Lake mine was opened in 1980 and mined until the ore body was depleted in 2002. Cluff Lake mine was de-commissioned and is currently under a long term monitoring program. It was opened with the input of many actors and was closed with the same open processes (federal/provincial environmental review process). The change in network and the increase in actors with diverse interests had an impact on the way that policy was derived and applied during this era. The same actor who “was shocked” at the outcome of Cluff Lake remarked that they had only modest successes with respect to mine approvals but there was “vigorous public debate” around the uranium mining issue which he considered to be a good thing (Interviewee # 4, Sept. 12, 2014). When people with varied interests in a polarized policy agenda area can have open and honest discussion, the process can be considered a success in and of itself irrespective of the outcome.

CHAPTER FIVE: THE THIRD ERA - 1982-2007

5.1 Introduction

The third and final era of this case study begins with the election of Grant Devine's Progressive Conservative party in Saskatchewan and ends with Romanow/Calvert's NDP government. All of the remaining mines that are currently operating or are scheduled to begin operations in Saskatchewan were approved during this era. There was an open network entering this era where multiple actors had many interests, many of which overlapped or were supported peripherally by more than one actor. For example, most of the actors were supportive of ensuring that reasonable benefits from the mine were made available to the northern residents (if mines were to be approved). There remained the polarized views of some who opposed the operation of uranium mines due to the potential use of uranium for military purposes and others who supported them based on the socio-economic benefits. External impacts such as global concerns over environmental issues became more prominent during this era and are examined in relation to the evolution of the environmental movement. The analysis of network type and change in this era will show that this final era contained neither an open nor closed network both of which occurred in previous eras examined as part of this case study.

The political dynamics changed from direct government intervention to more of a market driven governance. Uranium prices rose in the latter portion of this era to a high of \$137.00 US in 2007 with 2014 prices in the \$35.00 US range (see Figure 5.1). Throughout this era the uranium industry was driven by international markets.

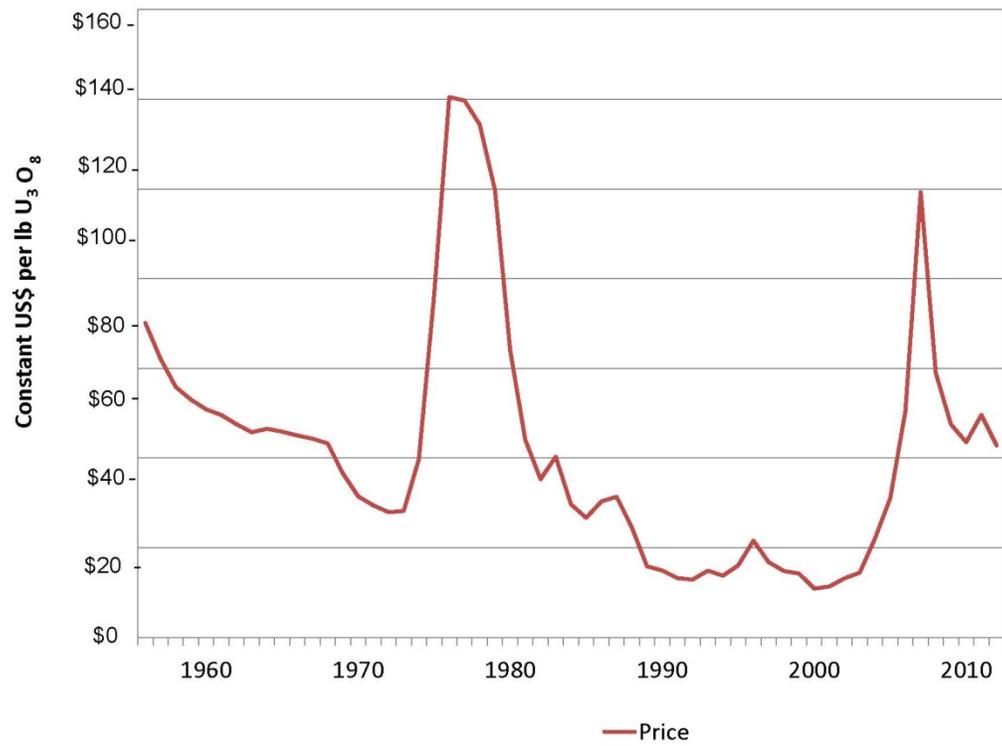


Figure 5.1 Historical uranium prices (taken from IAEA, 2013)

In the period moving up to and following the high price of uranium, the market drive to increase the supply of uranium would rise significantly. Chapter three's analysis showed that there was a drive to increase the supply of uranium then; however, the driving factor in the first era was motivated by the needs of Canadian Allies for increased supplies of uranium as part of the war effort as opposed to market prices. In the second era, market forces came into play in the late 1970's but did not directly drive the industry as it did during this third era.

There was some level of institutional change in this 25 year study period with changes made to the Saskatchewan Mining Development Corporation and the Department of Northern Affairs. These changes will be examined and analyzed for significance and impact on the policy system throughout the era.

Federal/provincial relations also become more complex during this era with the federal environmental assessment process maturing and joint federal/provincial panels created to review uranium mine proposals. The regulatory application of federal legislation becomes more focused with the creation of the *Nuclear Safety and Control Act* in 1997 and the creation of the Canadian Nuclear Safety Commission (CNSC) in 2000 which replaced the original *Atomic Energy Control Act* (Doern et al. 2001). The CNSC also developed a regulatory cost recovery model which impacted the industry financially and removed any fiscal constraints to an otherwise fiscally constrained civil service. To this day federal/provincial overlap and duplication in the policy area of uranium mining continues to involve complex decision making and negotiation processes.

The provincial jurisdiction is also well established with regulatory controls, provincial mine inspectors and a number of other regulatory and incentive based

instruments. The review of a number of new uranium mine site applications and expansions of existing mine sites becomes an established process in the 1990's. The task of remediating legacy mine sites from the Cold War era in northern Saskatchewan is addressed with such policy instruments as federal/provincial cost sharing agreements and the incentive based legislation that was the objective around the Saskatchewan Institutional Control Program.

This era is marked by a policy network that participated in multiple inquiry processes which impacted the policy outcomes as well as a shift in policy network type. The anti-mining interests are observed to move out of the interest network and into the discourse community. This period also witnesses increasing federal/provincial jurisdictional challenges, large build-up in uranium mining capacity with approval of new mines, the introduction of new policy instruments and the calibration of existing instruments.

In this chapter, the policy network will be analyzed examining the changes in the actors, institutional structures and ideas. The policy taxonomies will be identified and policy change will be measured using the Cashore and Howlett 2007 model. Policy outputs, outcomes and impacts will be examined; and a findings and summary section will close the chapter.

5.2 1982-2007: Network Type

As with the beginning of the last era there was a change in government to mark the beginning of this study period. There was not, however, the same degree of network change during this era as compared to the previous study period. A uranium policy

framework was firmly in place entering this era. Non-government network actors did not change in any significant way. Influences on the actors did change, however, with national and international influences coming to bear on the environmental and anti-nuclear movements in Saskatchewan. One interviewee commented that the influence of the International Atomic Energy Agency (IAEA) became more important in driving policy decisions from AECB and the Canadian Nuclear Safety Commission: “late 80’s and beginning of the 90’s ... more focus by IAEA and the United Nations on radionuclides and the safety” (Interviewee # 2, Sept. 11, 2014). The electronic age had come and communications and access to information was greatly improved and utilized.

5.3 Federal/Provincial Relationship

There was an evolution in the federal/provincial relationship during this era as new actors entered the network and brought overlapping, and in some cases competing interests to the table. A federal review panel was used in the last era to review the Warman processing plant proposal; however, this was not the formal federal/provincial environmental panel review process that was introduced during the 1990’s.

The federal environmental process changed in the late 1980’s and early 1990’s based on a court challenge in Saskatchewan. A federal cabinet decision in 1973 had established the original environmental assessment (EA) process and designated the federal Minister of Environment to issue guidelines for participation in the process. These guidelines were not supported by legislation. A 1989 federal court challenge on the Saskatchewan Rafferty Dam development confirmed that EA guidelines could be subject to the courts. This decision resulted in the creation of the federal *Canadian Environmental Assessment Act* which came into effect in 1995. However, following the

Rafferty court challenge in 1989, the federal government became much more assertive in its environmental review processes and participated in a number of joint federal/provincial uranium mine reviews before the federal EA act became law. With direct federal participation on these panels, new federal actors such as the Department of Fisheries and Oceans and Environment Canada were brought into the mine review processes. The provincial actors who had participated in the earlier provincially led panels now participated in these federal/provincial joint reviews.

The *Nuclear Safety and Control Act* was created in 1997 to replace the *Atomic Energy Control Act* of 1946. This legislation contained more explicit language and established the Canadian Nuclear Safety Commission as an arm's length regulatory agency to regulate the activities of the Canadian nuclear industry. The CNSC replaced the Atomic Energy Control Board (Doern et al. 2001). A very important component of CNSC's legislative framework (not available to the previous AECB) is the ability to recover all costs associated with regulating the uranium industry from the licensees through a cost recovery program. This prevents CNSC from being subjected to any fiscal constraint programs to which other federal regulators would be subjected. One interviewee remarked:

...Canadian Nuclear Safety Control Act in the early 2000's, it really made them (CNSC) powerful mainly because of their cost recovery...when you are funded by who you regulate...you don't have to fight for every dollar in your budget to be a regulator. (Interviewee #7, Sept. 11, 2014).

The federal government with a newly mandated CNSC asserted their federal jurisdiction in a more dominant fashion within the policy network. Regulatory functions were being

delivered by both governments which resulted in greater overlap and duplication (Sigurdson, Moulding and Nagy 2004).

In a 1998 mining development policy decision, the provincial government committed to work with the federal government to streamline the regulatory processes. Industry had expressed concerns regarding the overlap and duplication in the federal/provincial regulatory systems. The seamless delivery of federal/provincial regulatory control is a key factor in attracting long-term business interests. The uranium industry wanted regulatory certainty and project review time-frames that did not unduly delay projects. Examples of overlap included: separate inspections by both federal and provincial agencies; both federal and provincial license requirements; and similar reporting requirements but different formats being required by the two agencies. These overlapping requirements can cause unnecessary delays and conflicting requirements being placed on the companies resulting in significant costs to companies and governments, all without additional benefits to the company, the workers or the environment (Sigurdson, Moulding and Nagy 2004).

In February of 2003, the Canadian Nuclear Safety Commission, Saskatchewan Labour, and Saskatchewan Environment signed an administrative agreement to harmonize regulation of health, safety and environmental inspections at the uranium mine sites. The language in this agreement was vague regarding specific commitments for harmonization and, as a result agreement goals were not reached (Saskatchewan 2003). In discussions with a provincial official it was confirmed that the administration agreement was never renewed. Multiple inspections from both agencies are still occurring. The provincial official commented:

The working relationship on the ground level is reasonably good...we will do joint inspections when the logistics work out...you might get one or two joint inspections a year...out of 20 or 25. (Personal interview, Saskatchewan Environment, September 30, 2014).

The agreement also stated that the parties would enter into discussions regarding harmonization of the assessment and licensing regimes at the completion of the three-year agreement period; however, this was never accomplished (Personal Interview, Saskatchewan Environment, September 30, 2014). Another irritant in the federal/provincial policy network relations was that of federal equalization payments to provinces and how resource extraction impacted these payments. In the equalization formula there are rules concerning the extraction of non-renewable resources (i.e. uranium) which allow a 'claw back' of federal payments to 'have-not' provinces of up to \$.85 cents on the dollar dependent on the mineral being extracted. One provincial civil servant commented:

There was one other dimension that influences policy making in the province...the equalization formula...while we were a have not province, essentially a province that did not sustain itself and was receiving equalization there were rules around non-renewable resource revenues and depending on the resource revenue that we received...if we received a royalty on a non-renewable resource it (federal government) might claw back the equalization payment by 80 cents or 85 cents. So you think we made a dollar on a royalty on one of our non-renewable resources but then we lost \$.85 cents on equalization so the scramble to get to a 'have' province from a 'have not' province was really difficult and for a very long time the province argued that a non-renewable resource should not be clawed back in an equalization formula since you are selling an asset only one time and you can't reuse it once you have sold it. It was gone...so you can see how it influences your policies when you are a province that is receiving equalization... (Interview # 1, Sept. 9, 2014).

A former provincial politician commented on the same issue:

The most important principle bone of contention between Ottawa and the province and that is always the issue of what are the factors that enter into equalization payments and the like and the resources issue keeps popping up. (Interview # 3, Sept. 12, 2014).

This federal/provincial jurisdictional dispute impacted the policy network because it created jurisdictional tensions between the two principle interests/actors in the policy system. The industry actors were unhappy due to the duplication in regulatory implementation (inspections, follow-up conditions, understanding how to navigate the review processes). This type of conflict within the interest network was not productive and required time and efforts to resolve, resulting in negative opportunity costs.

One of the federal government interviewees talked about overlap that was occurring between the federal governmental departments involved with the uranium industry in Saskatchewan. He commented about the duplication between the Canadian Nuclear Safety Commission who regulated the uranium industry but did not take the federal lead in environmental review processes. The federal review process was led by the Canadian Environmental Assessment Agency (CEAA). He also remarked that this overlap did result in lots of opportunities for participation:

CEAA became a whole little empire process in itself that overlapped and, in fact, within our organization we would stop our process in order to allow CEAA to finish and then we would start our process again and it was a lot of duplication so there was a doubling of the amount of consultative opportunities. (Interview # 7, Sept. 23, 2014).

In 2012 the federal government made an internal decision to designate the CNSC as the federal lead in all future environmental assessment processes that fell within their

mandate which has addressed some of the federal overlap issues. The same interviewee indicated that the federal/provincial relationship depended to large degree on how the regulatory players interacted:

Personality really plays a big role in all of these things...we have got these policies but policies always have to be interpreted by the human beings...how do you interpret and how do you motivate...the legislation is a part of the puzzle but it becomes a tool and if you have the wrong person wielding the tool it can be just as damaging as beneficial...people that are motivated either as a regulator or as a municipal council or as a public NGO and if these people are focused, they can really effect change and that change can exist long enough to get a job done...personal energy is what makes things successful not legislation...that is something that I have observed over my 40 years...if the personalities of the people that are responsible for the programs, if you have the right personalities things will get done and if you don't then they won't... (Interview # 7, Sept. 23, 2014).

These observations highlight the importance of the relationships between the federal and provincial actors. These federal/provincial actors interacting on a professional basis, in many cases delivering the same regulatory services, either found tools such as the administrative agreement referenced earlier or depended on personal relationships to develop and implement overlapping policy decisions.

5.4 The Evolution of the Environmental Movement

In the last era, the closed network formed in the 1940's was opened up with the arrival of new actors and ideas that were successful in entering the policy space. One of the interest groups that had an impact on the development of uranium mining policy in Saskatchewan was the anti-mining and environmental interests that had been combined within the Saskatchewan Environmental Society. An interviewee commented on the

impact that some of these anti-mining/environmental interests had on the policy process: “it’s the public pressure or the public notice that is taken by people opposed to things that makes government do good things or not do bad things ” (Interviewee # 2, Sept. 11, 2014). A review of how environmental actors evolved and how global influences impacted the policy sector in nuclear energy and uranium mining segment is directly linked to the development of uranium policy in Saskatchewan.

The environmental movement which began in the 19th century is one of the most successful social movements in the last half of the 20th century (Mertig and Dunlap 2001) and has exerted a very strong influence on the nuclear energy industry including the uranium mining component.

The literature describes a series of waves or stages to explain the evolution of the environmental movement. Hoberg (1993) describes two waves as does Paehlke (2000) while Taylor (1990) outlines three stages. Hoberg’s first wave started in the 1960’s corresponding with Taylor’s second stage and Paehlke’s first stage (both described below). Hoberg’s first wave started with Rachel Carson’s book *Silent Spring* and the first Earth Day summit in 1970. It was driven by a need to respond primarily to the impacts of industrial pollutants and toxins. Hoberg’s second stage ran from 1987 to the 1990’s following environmental accidents such as the Bhopal Chemical disaster, Exxon Valdez oil spill and the Chernobyl nuclear accident. The U.S. responded to these issues with legislative changes that transformed this policy sector into an “open, adversarial and legalistic system” while the Canadian system, influenced by the concept of sustainable development took a different approach. Canada developed a “process-oriented” solution that required multi-stakeholder consultations and multipartite

bargaining to include labour, environmentalists, business and government. Hoberg argued that this environmental wave “crested” in the 1990’s with public concerns dominated by an economic downturn.

An alternative view of the environment movement’s evolution is provided by Taylor (1990). Taylor’s first stage (starting in the last century) or layer - conservationism - was focused on designating lands for public use to prevent the expanding railways, timber companies and mining companies from buying up all the public lands. As this environmental period matured it evolved to become more focused on preservation of public lands as concerns over the damming of rivers and other intrusive development approaches were raised by those wanting to ensure that these public lands were not over exploited and destroyed (Taylor 1990). This entire first conservation layer is characterized by a focus on the protection of land and the establishment of national parks and preservation areas. His next layer of environmentalism started in the 1960’s with Rachel Carson’s book denouncing the use of pesticides such as DDT. This stage was driven by society’s realization that toxic pollution and environmental degradation was having direct impacts on animals and plants. This movement was echoed in Canada with the establishment of Pollution Probe (1960’s), the Sierra Club of Canada (1970) and the Canadian Audubon Society (1971). This second stage resulted in the creation of pollution control laws that were developed to manage the increasing impacts of toxic substances whose affects were becoming obvious in the 1960’s and into the 1980’s. The third stage referred to as the Third Wave theory was process focused and centered on being ‘solution-oriented’ and involved mediation between industry and environmental interests that could lead to unconventional approaches.

Alternatively, Paehlke (1992; 2000) discusses two distinct waves of the environmental movement in North America. The first wave ran from 1968 through 1976 and was characterized similar to Taylor's second wave with the additional perspective that this wave was more 'apolitical' with environmentalists being much more aggressive in pursuing their interests. He suggests that in the second wave, occurring from 1986 to 1992, environmental issues were global in nature and included "climate change, ozone depletion, acid precipitation, and the threats to tropical (and temperate) rainforests ... resurgent concern with wilderness, nature, ecology and biodiversity" (Paehlke 2000, p. 171).

This analysis hypothesizes the concept of a modified three-stage description of the environmental movement pulling concepts from all three authors cited above. These three stages overlap or build in 'layers' and each stage progresses. As each new stage develops the last stage is not lost. The cumulating stages are 'layered' one on top of another. For example, the preservation of land which dominated the Conservation Layer did not disappear during the 1960's and 1970's. It remained a sub-layer of the next Anti-Pollution Layer.

Since the 1960 -1980's, the major environmental stresses of those decades have shifted from a local to global scale. Many pollutants that were identified then have been reduced or eliminated by the deployment of technology and source reductions. Today, science has shown that pollutants of concern are carried globally, are bio-accumulative and have chronic impacts that are more subtle and difficult to assess and mitigate (Parson 2000). This has resulted in society, and by extension the environmental movement, having to respond in ways that may still be local or regional in scale but

must also contain a global dynamic. The anti-nuclear movement today has a greater emphasis on environmental impacts of uranium mining as evidenced by the combination of these issues by some of the provincial actors and is mirrored by environmental regulation of provincial, federal and international governments.

One of the interviewees was asked about the combination of nuclear weapons issues with environmental:

No, it was all together... the Saskatchewan Environmental Society was concerned about both. I mean we appeared before all these hearings, Joe, and spent a lot of time looking at potential local environmental impacts and how they might be mitigated, you know, and we are still doing that work today. It is just that we wanted to have a discussion about the broader issues too, especially the military issue... Surely one of the things you are going to ask is how's this uranium actually going to be used. (Interviewee # 4, Sept. 12, 2014).

Paehlke's two waves can be integrated with the earlier conservation stage that started in the late 1800's. Within this context, the environmental movement has entered a third stage or layer as we moved from the 1990's into the 21st century. In the early 1990's environmental concerns formed an important component of the mine hearings that took place in Saskatchewan in the 1990's. Climate change and nuclear energy are two examples of globalized environmental issues. The Chernobyl and Fukushima events are examples of exogenous events that have both local and global impacts. While countries can still implement their policy through their own environmental framework, they are now under the influence of global pressures surrounding environment protection. Policy actors may directly participate in local policy networks but global influences are at play. The anti-nuclear and anti-mining actors are influenced by these global events and bring these influences into the policy network.

Table 5.1 provides a summary of the environmental movement stages. The arrows show how the movement evolved from local to regional to global. The arrows are overlapping to demonstrate the layering affect.

Table 5.1
Layers of environmental movement

Layers of Environmental Movement	Conservation Layer 1870's -1960's	Anti-Pollution Layer 1960's – 1990's	Global Layer Late 1990's - present
Advocacy Groups	<p>Local </p> <p>i.e. Sierra Club Fish and Game Associations</p>	<p>to National </p> <p>i.e. Environmental Defense Fund, Green Peace, Pollution Probe</p> <p>Issue based interest groups – mix of national and international issues</p>	<p>to Global</p> <p>i.e. International and global environmental groups, Business, General Public</p>
Policy Tools and comments	<p>Local </p> <p>Preservation of land and inhabitants; as advocates became global issues move to global scale</p>	<p>To National </p> <p>Locally based regulations air/water/land controls and preservation, specific targets, leads to national and international agreements</p>	<p>to Global</p> <p>International treaties, protocols that feed National/Global targets; business develops innovative solutions – trading, technology dev., internalization of costs</p>

Many environmental policy discussions now occur on the global stage where solutions require international commitments and cooperation. Parson (2000) writes: “Because environmental issues are a complex mixture of local, regional, and global-scale dynamics, one cannot simply match the primary scale of a problem with the primary scale of authority to manage it” (p. 130). While the current layer of the environmental movement is focused on global issues such as climate change and nuclear energy, the earlier two layers have not been lost or ignored. Each successive stage or layer has built on the previous. Conservation of land, approaches to pollution and remediation of mine sites still remain a component of the present layer but steps taken locally are now part of the national and international agenda with national and international protocols. When we entered the second layer of environmentalism, the conservation needs continued to be a component of the anti-pollution stage. The standards for nuclear worker safety and levels of contaminants in waters released to the environment remain an issue but are more geared to international controls. As the environmental movement evolved each successive layer has presented new policy challenges and expanded the environmental movement from the locally based stage to a global approach.

Public policy discussions and decisions on nuclear energy that are made in Saskatchewan now have national and international effects in the same manner that national and international environmental policies and agreements/protocols impact Saskatchewan. The anti-nuclear/environmental policy network actors have an international policy network from which to draw expertise and support that was not available in earlier eras.

The globalization affect that is occurring and impacting almost every major policy area has also impacted the Saskatchewan uranium mining policy sector. As with most new developments there are positive, negative and unknown affects. Greater complexities are introduced into policy derivation and implementation. Decision making can become more challenging and difficult. However this can be balanced by benefits such as the introduction of leading edge technologies and regulatory processes resulting in a better run and regulated industry.

5.5 Saskatchewan's 'No New Mines' Policy and Network Impacts

As was briefly mentioned in chapter three, the Saskatchewan NDP party had passed a resolution at their 1982 convention (following Blakeney's NDP's election defeat to Grant Devine) formulating a 'no new mines party policy' and a phasing out of existing uranium mines in Saskatchewan. This NDP policy stayed in place throughout the rest of the 1980's. No new mine developments were brought forward by industry during this decade. Devine's government had established a joint federal/provincial environmental panel in August of 1991, prior to the fall election, to review an extension proposal to the existing Cluff Lake mine and two new mines (McClellan Lake and Midwest Joint Venture). In October of 1991 Romanow's NDP government was elected and the NDP's 'no new mine' party policy became an issue within the NDP party. A provincial politician who had been directly involved in the issue describes the situation:

At the first convention after winning the government the question of this resolution ('no new mine' resolution) which had been passed in the mid 80's was now an issue again. It was more than just an issue at the party level. It was also an issue at the international economic level. Now you have to understand that our province was on the verge of bankruptcy ...we were flat dead broke...what the uranium industry had

indicated to me quite clearly was that they couldn't live with this resolution which had been passed in the mid 80's. You could assure them that it was just a resolution that the government was free to reject it but I don't think they were convinced and in any event they were using it for sure as a bargaining chip...it was quite clear...they would not invest...clearly the jurisdiction (Saskatchewan) had to be somewhat welcoming...there was an exploding demand for this energy source (uranium) and we had gone through the OPEC crisis on oil and gas...it was quite clear...they would not invest...I think without a doubt if we hadn't changed the resolution I don't think they (new uranium investment) would have come in. (Interviewee # 3, Sept. 12, 2014).

The debate occurred at the 1992 fall NDP convention: “on the convention floor there was a heated debate...I would say 2000 delegates.” (Interview # 3, Sept. 12, 2014). There were a number of policy actors at play around this issue. There was the international investment players; some of the anti-mining contingent – local, national and international; the local unionists vying for the new and existing jobs tied to the uranium industry; the existing mining industry within the province; northern residents for and against the developments; and government actors who were tied to the mandates of their various departments within the existing policy regime. This convention was covered by local media that ensured the provincial residents were aware of the issues. This ‘public’ debate within the governing party was to impact how uranium mines would be regulated. The anti-uranium mining interests within the NDP were also actors within the policy network and had both mining and environmental interests, contributing to the policy discourse. However the ‘no new mines’ resolution was rescinded at the 1992 convention. An interviewee commented on the value of public discourse and diverse interests within a policy network:

It was a good thing that the government or governments would have this kind of a sharp voice (anti-mining/environmental interests) because it forced us to rethink issues. It forced us to make changes of improvement...it forced us to look a little more skeptically at the industry while being for it...we are better off with having had this kind of a debate but easy for me to say because so far the winners of the debate have been those who are for pro development. (Interviewee #3, Sept. 12, 2014).

It was clear that the anti-mining interests lost their battle with the rescinding of the no new mines resolution. However they were still able to advocate specific interests around environmental, safety and socio-economic goals. One of the interviewees who held anti-mining interests commented on outcomes:

I would say we had only modest impact in terms of the hearing outcomes. I don't want to say we had no influence because I certainly in the 1990s and I think we had a fairly significant influence in some of those reports and when you read them you'll see numerous references to the Saskatchewan Environmental Society but we certainly had some impact in terms of modestly improving environmental policy at the local impacts level but I would say it was just modest. (Interviewee # 4, Sept. 12, 2014).

This quote speaks to the unsuccessful attempts to have the mine reviews decline new mines but also to the ability of getting recognition regarding environmental impacts. At this point the anti-mining interests were no longer a viable voice in the policy network.

5.6 Network Analysis

The network at the beginning of this era was open after the stable closed network that characterized the first era. Some new actors entered the network during this era. The federal environmental process resulted in some actors given the flurry of new mine proposals and mine extensions that occurred in the 1990's. However, these federal actors would have been introduced (in a more limited fashion) into the Saskatchewan uranium

mining policy network during the Warman inquiry in the last era. As one politician interviewed remarked:

The actors change a little bit, not sure. The arguments, fundamentally are the same pro and con and it sort of in my experience, Joe, it sort of ebbs and flows and so 3 mile island happened somewhere again and it will erupt again if we have some proposal for storage for waste in northern Saskatchewan, it will erupt again. (Interviewee # 3, Sept. 12, 2014).

In the discussion regarding the evolution of the environmental movement it was clear that global interests could be brought into domestic policy discussions. These global actors did not participate directly in the policy network, however, but access to their opinions and influence through the web, conferences, public debates and similar media brings their influence to the local policy network.

The provincial actors remained basically the same with the exception of the anti-nuclear/mining interests having no influence within the interest network. The Saskatchewan Mining Development Corporation was shut down but those actors became part of the new company CAMECO. The Department of Northern Affairs was shut down and programs were re-centralized but a new department (Northern Affairs) was created that delivered the same programs (with the same actors) plus a number of new programs that were initiated following some of the federal/provincial mine reviews in the 1990's. There were some new actors that came into the policy network during this period but they served more as replacements for existing members and as such would not be considered 'new actors' for purposes of policy network typology analysis.

There was, however, a movement of actors. With the rescinding of the 'no new mines' resolution at the 1992 NDP convention and the zero success in preventing any

new mines from developing it became clear that the anti-mining actors no longer shared the same policy objectives as the other actors within the policy network and were no longer members of the policy network. They (their anti-mining interests) would have been moved from the interest network to the discourse community. Because these specific actors also possessed environmental interests and represented the Saskatchewan Environmental Society they still interacted within the policy network but the anti-mining interest was no longer considered a viable argument. Thus the discourse community still contained anti-mining interests but these were not considered key members of the policy network.

Global influences had grown given the preponderance of communication mechanisms that became available during this era. These new ideas would have been made available via the electronic media, conferences and meetings and would have been accepted by the existing actors within the network and used in the policy discourse. External events, such as the Chernobyl nuclear reactor accident, impacted the nuclear industry around the world with greater levels of scrutiny and oversight resulting. New ideas regarding worker safety and site safety were regularly introduced.

The rescinding of the 'no new mines' resolution at the 1992 convention would be considered a new idea that had a very significant influence on the continued growth of the Saskatchewan mining industry. The interviewee's quote regarding the investors not wishing to invest in Saskatchewan unless this resolution was removed is testimony to its impact. There were multiple mining developments that occurred during the 1990's that were fueled by market prices and the policy framework operating in Saskatchewan. This would be considered a new idea because when the resolution was rescinded it was clear

that new mines (after appropriate approvals) would go forward. When the resolution was passed in 1982, there were no formal mine proposals that were to come forward in the immediate future.

There were also new ideas in the legislative area such as the newly formed CNSC, the requirements for industry financial assurances (a multi-million dollar requirement for industry to guarantee environmental and site clean-up in the event of a company collapse). The institutional controls program was introduced making Saskatchewan the first jurisdiction in the world to have this type of long term remediated land management program. It is clear that new ideas did flow into the network. The financial assurances program and the institutional controls program were new policy initiatives that had not been used in any sectors in the Province. The institutional controls program is the only formalized program in Canada.

Analysis has shown that during this era there were new ideas but no new actors participating in the network. The new ideas were utilized by the existing actors who were participating in the policy network and formed the new policy that was derived and implemented during this era. Using Howlett's table identifying relationships between network configurations and policy output changes this era's network could be categorized as a contested network. This network is characterized by no new actors and some new ideas. Resistant networks contain new actors but no new ideas. To confirm the type of network we need to examine the extent of symmetry and the degree of insulation between the discourse community and the interest network.

During this era the discourse community and the interest network did not share similar approaches to solving policy issues and would have a low level of cohesiveness or

symmetry within the policy network. There continued to be polarized views. But can we distinguish between polarized parties agreeing to disagree or the parties whose main interests are not captured in the policy outputs and those whose views and interests form part of the policy decisions? If they 'agree to disagree' are they in symmetry? Did the 'losing' actors continue to participate or were they really part of the interest network? If their anti-mining views were not accepted throughout the era they could be considered (from the anti-mining interest perspective to no longer be part of the interest network. The anti-nuclear/mining actors had different policy objectives than those from the rest of the policy network. The attendance and briefs submitted to the panel hearings in the 1990's demonstrates that the same actors were still active participants in the processes hearings. However, the anti-mining interests were not successful. All new mine developments were approved. Some were delayed and further information requested but eventually all the mine proposals that came forward during these hearings were approved. The anti-mining specific actor interest shifted to the discourse community. This conclusion would support the network category to be 'contested'.

The degree of insulation between the interest network and discourse community changed during this period. In the previous era, the degree of insulation was low with movement back and forth occurring easily. The interest network with the same actors had been attending formal hearings and other public process with the multiple mine developments that had occurred during this era. As discussed above the anti-mining interest was shifted outside the network into the discourse community. The degree of insulation between the network and the discourse community was much higher than that experienced in the last era. Movement of actors from the discourse community into the

interest policy network did not occur. Views were becoming more polarized with exogenous events such as Chernobyl. The policy network type had shifted to a contested network for this era.

As the federal/provincial processes drew to a close in the late 1990's and the CNSC was created, the opportunities for the discourse community to directly engage in the policy network were greatly reduced. This is supported by an interviewee who participated in both types of processes and offered the following commentary. He suggested that the panel hearings in the 90's were much more open than what is occurring through the CNSC processes:

Today we are operating in a different regulatory environment...the environment was so much better in the 90's than it is today. I mean today an environmental group goes before the Canadian Nuclear Safety Commission and has no prospect of having any of their advice being actually you know implemented...I really feel the process in the 90's...appearing before those panels was so much better than the current process in which we appear before CNSC and honestly you know regardless of how reasonable the argument you are making...the role of the CNSC is to weigh the evidence but...not a single one of them (their proposals) has been adopted by CNSC...whereas in the 90's...we would make recommendations. I'm not talking now about to stop uranium mining but just about how it could be done better and the panels would seriously weigh those recommendations and you would see some of them appear in their final report and government would actually act on some of them...so you know there would be an improved regulatory process by virtue of that happening whereas today if we appear before the Canadian Nuclear Safety Commission we do it out of a sense of responsibility but I don't, I haven't seen any evidence that any of our suggestions are going to be implemented and I sense very strongly that the uranium industry knows that. You know so it influences the whole hearing process because there is just a sense in the room that you (nuclear industry) really don't have to worry anyway... It is not that the CNSC is not respectful...you don't see any evidence of anything you say

actually being taken up so industry just basically gets almost automatic approval. (Interview # 4, September 12, 2014).

This is a very interesting commentary on the degree of insulation between the policy network and the discourse community. It also shows a shift from a more open network to a more closed network – contested network. This will be further examined as part of the general discussion section at the end of the analysis of these three eras.

The shift of actors between interest network and discourse community was made more complicated by the mixing of anti-nuclear and environmental interests.

Saskatchewan is a relatively, small uranium mining policy sector and it would seem possible that environmental concerns could be linked with anti-mining interests and supported by the same actors. A quote earlier in this document from an anti-mining actor suggested they did not succeed when it came to mine reviews but did have some level of success with environmental interests. The Saskatchewan Environmental Society when represented at the mine inquiry hearings had the same actors supporting both anti-mining and environmental interests. One of the federal civil servants interviewed commented that the anti-nuclear interests seemed to have moved more towards the environmental issues:

I don't think it is as big a deal anymore as it used to be...environment has always been a big thing for the nuclear industry and for regulators of course it is part of our mandate but from the perspective of society fewer people are associating nuclear with war and more and more with power and environmental issues so I do see that shift. I have seen it in the last especially ten years but certainly in the last twenty where a lot of times it was probably 50:50 over you know nuclear war, nuclear bombs...and weaponized uses of nuclear as opposed to nowadays I'd say that it comes up about maybe 1/50th of the time. It is really significantly reduced and it is

really seriously much more an environmental issue (Interview # 7, September 23, 2014).

The same actors whose anti-mining interests have shifted outside the interest network to the discourse community still have environmental interests which they continue to pursue inside the interest network.

As a final check on network type, let us examine the changes in the policy taxonomic categories before arriving at any final conclusions regarding the network type. A contested network tends toward taxonomic changes in instrument types, tools and calibrations. It does not exhibit changes in policy goals or policy targets. A resistant network shows changes in specific policy targets, instrument types/tools and calibrations. The policy targets had not changed from the previous era. There was perhaps a greater emphasis on environmental concerns but this target was also present in the 1971-1981 eras. The parameters for surface water quality objectives (and other similar environmental and safety parameters) would have become more stringent (through policy instrument calibration) but the target to meet these objectives would not have changed. Federal/provincial panels were used much more extensively in this era, triggered by a new federal binding legislative instrument the *Canadian Environmental Assessment Act, 1992*. The federal assessment act was a piece of legislation used much more directly by the federal government for projects that now extended beyond federally funded projects. As discussed earlier, previous to this new act federal environmental assessment requirements were driven by Cabinet approved guidelines that had no statutory basis. The federal *Environmental Assessment Act* would therefore be considered a new policy instrument. The creation of the *Nuclear Safety and Control Act* clearly distinguished the

new regulatory agency as totally separate from industry (as opposed to the previous AECB where board members from AECB also sat on the Eldorado board (Sims 1980) and could also be considered a much improved tool as it created a wholly independent agency that did not have any nuclear industry connections. The regulatory changes require financial assurances and the institutional control program were new policy instruments. The introduction of a number of new northern programs some of which were new ideas and others having been suggested in the last era but not implemented until the 1990's hearings can be considered calibrations. Based on these policy changes as well as the introduction of new ideas with the same actors the network type can be classified as a contested network. See Tables 5.2, 5.3 and 5.4 for the network type and the taxonomic classifications for the 1982-2007 era.

Table 5.2
Network configurations and policy actor/idea interactions
1982-2007

Extent of Symmetry between Discourse Community and Interest Network	Interest Network's Degree of Insulation from Discourse Community	
	High	Low
High	Closed Network No new actors/no new ideas Tends towards change in Instrument Calibrations	Resistant Network New actors/no new ideas Tends towards change in Specific Policy Targets, Instrument Types/Tools and Calibrations
Low	Contested Network No new actors/some new ideas Tends towards change in Instrument Types/Tools and Calibrations <u>Conclusion:</u> <u>1982-2007</u> <u>Uranium Mining Policy</u>	Open Network New actors/new ideas Tends towards change in Policy Goals and Means

Howlett 2002

Table 5.3
Policy goals – 1982 - 2007
Saskatchewan’s uranium policy

GOALS <i>What General Types of Ideas Govern Policy Development?</i>	OBJECTIVES <i>What does Policy Formally Aim to Address?</i>	SETTINGS <i>What are the Specific On-the-ground Requirements of Policy</i>
Incremental shift to market governance	Remove level of direct government intervention but maintain integrated northern policies with incremental improvements Expand and broaden exports Diversification of economy Job creation Environmental protection Income growth	Economic development in Northern Saskatchewan Expansion of industry Royalty and Taxation Structures to capture revenues and incent development

Table 5.4
Policy means – 1982 - 2007
Saskatchewan’s uranium policy

<p style="text-align: center;">LOGIC <i>What General Norms guide Implementation Preferences?</i></p>	<p style="text-align: center;">OBJECTIVES <i>What Specific Types of Instruments are Utilized?</i></p>	<p style="text-align: center;">SETTINGS <i>What are the Specific Ways in Which the Instrument is used?</i></p>
<p>Federal/Provincial Review Panels, Legislation and Agreements</p>	<p>Environmental Assessment Acts and Provincial Public Inquiries Act</p> <p><i>Nuclear Safety and Control Act 1997</i></p> <p>Administrative Agreement 2003</p>	<p>Review information on probable health, safety, social and economic effects</p> <p>Facilitate provision of information to public</p> <p>Review proponent information to ensure proposals meet all requirements of Canadian and Saskatchewan law.</p> <p>Receive written and oral briefs from individuals and organizations</p> <p>Hearings to be recorded, transcribed and reported</p> <p>Legislation to create regulatory focused body with ability to fully recover regulatory costs</p> <p>Joint inspection and training agreement to reduce overlap and duplication</p>
<p>Institutional structure change to re-centralize northern government services</p>	<p>Department of Northern Saskatchewan disestablished and Northern Affairs created to deliver specific northern based programs.</p>	<p>Responsible for development and delivery of comprehensive leases for mining companies</p> <p>Creation of Northern Development Fund to provide financial assistance for economic development</p>

<p align="center">LOGIC <i>What General Norms guide Implementation Preferences?</i></p>	<p align="center">OBJECTIVES <i>What Specific Types of Instruments are Utilized?</i></p>	<p align="center">SETTINGS <i>What are the Specific Ways in Which the Instrument is used?</i></p>
		<p>Creation of Northern Revenue Sharing Trust Account to transfer revenues to northern municipalities</p> <p>Creation of Cumulative Effects Monitoring program and local environmental quality committees to participate in cumulative effects monitoring programs.</p> <p>Creation of a multi-year Fed/Prov. training and employment initiative</p> <p>Creation of Northern Mines Monitoring Secretariat to collect and disseminate environmental monitoring, worker health and safety and socio-economic information and provide support to and receive information from community committees and northern public</p> <p>Government commitment to prepare comprehensive summary and review of policy outcomes by 2009</p>
<p>Privatization</p>	<p>Merge Eldorado Nuclear Limited and Saskatchewan Mining Development Corporation (CAMECO)</p>	<p>Partial shares initially retained by government and later sold (shares sold in 1996 and 2002 for \$793 M and 226M consecutively)</p>

LOGIC <i>What General Norms guide Implementation Preferences?</i>	OBJECTIVES <i>What Specific Types of Instruments are Utilized?</i>	SETTINGS <i>What are the Specific Ways in Which the Instrument is used?</i>
Abandoned mine site elimination	Regulatory change - Saskatchewan Mineral Industry Environmental Protection Regulations, 1996 Federal/provincial agreement to clean up 36 abandoned northern mine sites, 2006	Uranium industry to provide financial assurances for mine clean-up during operations Saskatchewan Research Council contracted as provincial agent and licensee to clean up two major mine sites and 34 satellite mine operations
Industry market incentive to remediate	Legislative change - the Reclaimed Industrial Sites Act and the Reclaimed Industrial Sites Regulations, 2007	Industry allowed to move remediated sites into Institutional Control Program based on specific criteria and payment of long term maintenance and contingency costs

This last era with its contested policy network type saw a stabilizing of policy change following the paradigmatic changes in the last era. Instrument changes and calibrations took place. The entry and evolution of the anti-mining and environmental interests and their struggles with and within the governing party were prevalent. The sector shifted to a market governance and developed a number of new programs as part of the extensive mine development that occurred.

5.7 1982 - 2007: Policy Regime and Patterns of Policy Change/Development

The network analysis showed that the open network had shifted to a contested network moving from low to high in the degree of insulation between the discourse community and interest network. New ideas were brought into the network but these ideas were implemented by existing actors. This shift was not as significant as the change in the last era from a closed to an open network. Nonetheless, policy changes did occur during this era. This next section will examine the type of change that occurred in each of the various policy areas as described in their six classifications separated into three categories: goals and logic; objectives; and settings.

5.7.1 Goals and Logic

There was some level of change in the goals and logic with a shift to market based governance. The global markets for uranium were well established and with the newly elected Progressive Conservative (PC) government there was a shift to privatize some of the provincial crowns impacting the uranium policy area (i.e. Saskatchewan Mining Development Corporation). Blakeney's government had wanted direct involvement in the industry. The PC philosophy was to allow private enterprise a greater role and limit government's intervention allowing the market forces to influence the uranium industry

and its policy framework. The NDP came back into power in 1992 but the shift to markets had already occurred and as indicated above, the province was under severe economic constraints and was focused on growing the industry to bring in much needed revenues.

There were several institutional adjustments as well during the 1980's. The Department of Northern Affairs that had been created during the previous era to provide integrated services to northern residents was dis-established and the programs recentralized. The department of Northern Affairs was created to continue to deliver the programs specifically for the north and as a result there were minor impacts to the uranium policy area. During this era, as will be discussed below, there was growth in specific northern programs tailored to assist residents to participate in the uranium industry.

The maturation of the federal/provincial environmental review panels occurred during this era. The successful court challenge on the Rafferty Alameda dam and Oldman River projects resulted in the federal government becoming much more active in the environmental review process across the country (author's perspective). The *Canadian Environmental Assessment Act, 1992* (CEAA) was passed which gave the federal government clear legislated authority. This combined with the newly minted *Nuclear Safety and Control Act, 1997* allowed for increased federal/provincial overlap in the uranium mining policy arena. One federal civil servant remarked that the new assessment legislation resulted in federal duplication in public participation: "with the introduction of CEAA it (participation) changed radically...CEAA became a whole empire of its own" (Interviewee 7, Sept. 23, 2014).

The other goal/logic that was added during this era was the intent to deal with the issue of legacy mines that were created during the Cold War years in Saskatchewan. These contaminated sites had not been cleaned up, which was raised as an issue during the hearings in the 1990's. It was difficult to credibly approve new mines when some of these old sites had not yet been restored. Legislation was passed that required industry to put aside guaranteed finances for mine clean up and the province put a program in place to allow the properly remediated land to be returned to the province and managed in the longer term.

For both the province and the federal government the policy change that occurred during this era would be considered slow. Most of these changes occurred over the first 20 years in a 25 year study period. All of these policies were building on the existing policy base. The federal/provincial panels were building on the provincial processes created for review of the first two mines in the late 70's and the federal panel established for the Warman process plant proposal. The move to a more market based uranium economy was also occurring in the last era but was shaped by previous direct government intervention in the uranium industry. The Department of Northern Saskatchewan was shut down but the programs were delivered by a replacement department. New policies were put in place to deal with remediation of legacy and future mine sites whose resources have been exhausted but these were more incremental than new. The pattern of change for both governments should be categorized as classic incremental.

5.7.2 Objectives

In this final era, the federal government increased its environmental protection oversight with the stricter application of environmental assessment processes and the

passage of the new federal environmental assessment act. It also passes the updated *Nuclear Safety and Control Act 1997* which establishes an arms-length regulatory body to regulate the nuclear industry. The federal government is part of a number of federal/provincial panels that review new mine proposals and mine extensions through the 1990's. These reviews resulted in a number of new uranium mines in Saskatchewan. The federal government also participates in a process with the province to reduce overlap and duplication in the regulation of Saskatchewan uranium mines. The federal government worked with the province to merge Eldorado Nuclear Limited with the Saskatchewan Mining Development Corporation (SMDC) to form a new private company called CAMECO. All of these federal policy adjustments and initiatives were implemented throughout the era and the tempo of change would be considered slow. These policy 'changes' are considered to result in no substantial change in the policy framework and would be classified as classic incremental.

The provincial government shift towards a market economy with the creation of CAMECO and the disestablishment of SMDC moved the government further away from direct intervention in the uranium mining sector. The actors from SMDC and Eldorado, having come from Crown corporations, carried a level of bias towards a market economy into CAMECO but with the establishment of this private company their interests would have shifted more significantly towards a market driven approach. The provincially based inquiry process that was used for Cluff Lake and Key Lake mines was replaced with a federal/provincial panel. The economy and its diversification and growth remain a priority with new mines reviews and approvals. Many of the joint federal/provincial processes resulted in regulatory overlap and with steps taken to try and address this issue.

Addressing this overlap and the associated issues became a topic of the late 1990's panel review where the government committed to focusing on the problem. The remediation of abandoned legacy mine sites is addressed by a joint federal/provincial agreement to clean up two major mine sites in northern Saskatchewan along with 34 satellite sites.

Legislation is also passed to require industry guaranteed funding to clean up their operating mines (if they become insolvent) and a program instituted to allow for the long term care and management of remediated mine sites. While some of these changes to the provincial policy objectives are new, they build on an existing policy base from the previous era. The changes were brought in throughout the era. The tempo would be considered slow and the direction in equilibrium with the existing policy framework. Therefore the type of policy change would be classic incremental.

5.7.3 Settings

The policy settings in this era are not substantially different from the previous period. Economic growth and diversification continue to be an important policy setting. The mine review process evolved to a more complex federal/provincial panel that was received well by the participants as evidenced by the informants' comments. There were some new policy instruments that were introduced during this period and instrument calibration that also occurred.

The federal government participated directly in all mine reviews that would be considered a 'project' under the federal legislation. They brought more actors into the network as discussed earlier. These actors brought the strength of multiple federal mandates into the process with actors from the Department of Fisheries and Oceans (federal *Fisheries Act*) and Environment Canada (*Endangered Species Act* and *Canadian*

Environmental Protection Act) as well as federal mine safety legislation. The creation of the Canadian Nuclear Safety Commission and its cost recovery abilities, as discussed earlier created an agency fully dedicated to the management and control of nuclear substances including the regulation and licensing of uranium mining.

The provincial government continued to exert its jurisdictional rights in controlling the uranium mining industry as well. It oversaw a more than doubling of the industry in this era and continued to calibrate the comprehensive lease policy instrument by expanding its northern resident package of programs designed to enable direct participation of northern residents in the industry. The northern programs included the creation of the Northern Development Fund (\$2.5 million per year, still in existence) providing loans for economic development, and offering financial and professional assistance in marketing, promotion, and research and product development. The Northern Revenue Sharing Trust Account was continued where a portion of the revenues from property taxes, surface leases and other revenues are distributed to northern municipalities for operating and capital purposes. The Cumulative Effects Monitoring program was created to monitor the cumulative effects of mining and local Environmental Quality Committees (EQC's), comprised of members from local communities were established to liaise with the industry and participate in the cumulative effects monitoring program. There was a commitment to increase northern business opportunities from \$18.7 million in 1991 to \$64.5 million in 1996 and announcement of a multi-year training and employment initiative to target the filling of northern jobs with northerners (\$10.5 million). The Northern Mines Monitoring Secretariat was established to provide a coordination role in monitoring and principle support for the EQC's. The

government also committed to preparing a comprehensive summary and review of the outcomes of these policy decisions and make it available to the public in 2009 (Saskatchewan 1993). This document has not been prepared to date (personal communication, Saskatchewan Economy, September, 2014).

The province also required each mine owner to financially guarantee the funds required to clean up their mine sites in the event that they became non-viable. The province created an institutional control program to allow for the long term care and maintenance of remediated mine sites that would be paid by industry in the form of a trust once the site was/is remediated to the required standards.

While there was a level of policy calibration at the provincial level these policy changes also built on existing programs in a similar fashion to the federal government. They would also be classified as classic incremental. See Tables 5.5 and 5.6 for a summary of the policy development and the patterns of change.

Table 5.5
Summary of policy development – 1982-2007

Policy Content			
Policy Goals	<p>Broad Ideas that Govern Policy Development</p> <p><u>Federal Gov't</u> Federal gov't strengthens regulatory emphasis</p> <p><u>Prov. Gov't</u> Provincial gov't shifts to market driven policy</p>	<p>Specific Requirements of Policy/Operational Policy Objectives</p> <p><u>Federal Gov't</u> Creates Nuclear Safety and Control Act and CEAA;</p> <p><u>Prov. Gov't</u> Provincial gov't shifts mine reviews to federal/provincial panel; removes direct intervention</p>	<p>Specific on-the-ground Policy Targets</p> <p>Specific Policy Targets</p> <p><u>Federal Gov't</u> Focus on safety and environmental controls</p> <p><u>Prov. Gov't</u> Expand the industry</p>
Policy Focus			
Policy Means	<p>General Policy Implementation Preferences (organizational devices)</p> <p><u>Federal Gov't</u> Formal Environmental Assessment process begins</p> <p><u>Prov. Gov't</u> Removes gov't intervention Continues to use land ownership tenure to exert ownership on uranium resource; mine clean-up initiatives</p>	<p>Specific Types of Instruments or Policy Tools</p> <p><u>Federal Gov't</u> Merges Eldorado into CAMECO; new nuclear control and environmental assessment acts</p> <p><u>Prov. Gov't</u> Merges SMDC into CAMECO; addresses legacy mine sites and future remediation requirements</p>	<p>Specific way Instrument is Used (Tool Calibrations)</p> <p><u>Federal Gov't</u> Panel participation to review mine development and expansion proposals</p> <p><u>Prov. Gov't</u> Panel participation to review mine development and expansion proposal; creation of new northern socio-economic programs; mine remediation programs</p>

Adapted from Howlett 2009 and Cashore and Howlett 2007

Table 5.6
Pattern of policy development and change – 1982 – 2007

Policy Content			
Policy Goals	Broad Ideas that Govern Policy Development	Specific Requirements of Policy Operational Policy Objectives	Specific on-the-ground Policy Targets Specific Policy Targets
	Federal Government - Classic Incremental		
	Provincial Government - Classic Incremental		
Policy Focus			
Policy Means	General Policy Implementation Preferences (organizational devices)	Specific Types of Instruments or Policy Tools	Specific way Instrument is Used (Tool Calibrations)
	Federal Government – Classic Incremental		
	Provincial Government – Classic Incremental		

Adapted from Howlett 2009 and Cashore and Howlett 2007

During this era both the federal and provincial governments made improvements and adjustments to their policy areas of responsibility adjusting programs with exogenous events such as changing markets and government changes. The tempo and direction of policy change was classic incremental.

5.8 Findings and Summary

The policy development in this final period was built on the policy base that had been largely institutionalized set in the last era. The market played an increasingly larger role in driving the development of the uranium industry amid speculation of rising uranium demand. Both the federal and provincial crowns that had been directly involved in the uranium industry were privatized and amalgamated into one private entity.

The policy network entering this era was open with many policy interests at play. The primary actors in the policy network were industry, provincial and federal governments, anti-nuclear/uranium mining, environmental and northern residents. The discourse community was comprised of these same listed interests at a broader level who were not directly involved in the interest network discussions. There was a shift in this era to more focus on environmental issues once it was clear that new mines were going to be built. Drawing from the comments of the interviews some of the anti-nuclear interests shifted some attention to environmental issues once it was clear that the uranium mines were likely to be approved. There were no new actors that entered this policy network but some new ideas were introduced into the network based on inputs from the panel hearings, other public processes and existing policy actors. The network changed from an open network to a contested network over the course of this era.

The federal/provincial roles were enhanced by the build-up of new mines and the increased review and regulatory processes that preceded and followed these mine reviews and approvals. Both governments increased their regulatory controls and further duplication and overlap followed. While the federal government brought in new regulatory legislation, the province participated in joint review processes and introduced new legislation to ensure proper mine clean-up as well as addressing legacy sites. This joint increase in regulatory structures resulted in an increased misalignment of policy between the two governments. The panel process recognized the issue and recommended that the two governments address the issue. A joint inspection and training program (as part of a broader administrative agreement) was put in place but only lasted from 2004 to 2009 when the parties reverted back to individual inspections with a few exceptions.

If the federal/provincial regulatory programs were examined separately, they were in alignment with their individual policy goals and objectives. The federal government strengthened its regulatory authority and the province evolved its inquiry process into the joint panel, continued to utilize its lease policy instrument to set socio-economic and environmental requirements for the industry, and introduced an enhanced array of northern development programs. All of these northern development programs were aligned with provincial policy goals and objectives. Many of these programs could be clearly separated into the two mandates of the both governments. However, multiple inspections and requirements by both federal and provincial regulations still occurred. An analysis of the patterns of policy change was completed separately for the federal and provincial governments but the conclusions regarding the policy change in this era were the same. The policy change during this era was slow, built upon the existing policy base

and did not proceed in any one direction. Policy change occurred in both directions with new policy changes made with respect to updated legislation, legacy mine sites and remediation requirements for existing industry. The privatization of the crown corporations and the disestablishment of the Department of Northern Affairs were reversions to previous institutional structures. As such the patterns of change were categorized as classic incremental.

Could the policy outcomes, outputs and impacts be considered successful in this era? The anti-uranium mining interests suggest that the new mines were approved and therefore they were not successful in that respect. However, as the quotes from one of the same parties suggest the federal/provincial panels were “so much better than the current process” and government took some of their suggestions and made the appropriate policy adjustments.

Many of the policy instruments such as the provincial lease requirements have been very successful and built upon the relationships that developed during participation at the federal/provincial panels in the 90’s and the follow-up processes that emanated from these reviews. One of the provincial civil servants remarked: “Countries from around the world come to see the surface lease approach used in Saskatchewan”. He went on to comment on the success of some of the provincial northern programs connected to the provincial crown land leases and the importance of relationships in these processes:

...earliest tool that we developed was again one which its importance is steeped and is grounded in the need for relationship of all the critical parties in one room at one table so we created a Northern Labour Market Committee. It still operates today after...36 years largely and still in its original format...it is industry people, government people, northern community service organization and community development

organization...its creation and its purpose was to act as a clearing house and to bring together those critical interests and those critical parties who need the relationship with one another and want the relationship with one another to work out deals and address the training that is needed to support the labour requirements of the mining...and that tool continues today...there is a whole cascade and a whole stream of tools and techniques that we have developed...those tools have really well stood the test of time. They are still in use today and still being copied and adapted by other jurisdictions...based on one central thesis and that is the criticality of relationship...we have happened upon a very well-reasoned and reasonable successful approach to the concomitant development of an industry in our north together with the people in whose backyard that industry is developing – northerners. It's been because we have put together a slew of instruments and tools and protocols that are all focused every time on relationship. (Interviewee # 5, Sept. 12, 2014).

This type of policy instrument and its calibrations would be considered successes.

We have seen a shift from the first era in which a closed policy network was replaced with the polar opposite – an open network. This third and final era under study moved to a contested network. The discussion in chapter six will examine this trend and discuss the causal factors and interrelationships responsible for these policy changes.

CHAPTER SIX: SUMMARY AND DISCUSSION

6.1 Review of Case Study Analytical Tools

Policy making is often a complex processes, and the policy regime under investigation here characterized by over 65 years of activity and involving multiple jurisdictions is no exception. Actors in this regime represent a diverse array and cover a broad spectrum of interests including NGO's, private business (local, national and international), federal and provincial levels of government, Aboriginal people, private citizens, environmental and health groups as well as the anti-nuclear components. In order to undertake a policy analysis of a complex policy regime as described above, appropriate analytical tools must be utilized.

Dowding's (1995) critique of the policy network approach speaks to the need to relate policy network structures to changes in policy outcomes and impacts. A policy analytical tool that can track changes in the relationship structures of the network type continuum provides insight into the nature of change and the impact on the sector in terms of new ideas, influential actors, and policy preferences. Having a tool to identify the network type allows for greater clarity when studying a complex policy system in an organized and analytical fashion. Over the time frame of the case study three out of the four network types originally discussed were identified including – closed/sub-government, open network and contested network.

The analytical tools used in this case study were very effective in firstly classifying the policy components into the various policy goals and means. This enabled the analysis of complex policy change occurring through decades. The ability to study

the movements of actors and their ideas within the policy network allowed the network types to be determined. Howlett's model was able to link the type of policy change with network type. All of these relational conceptual approaches allowed the analyst to link exogenous and endogenous events to policy change. The model tools also allowed the pace and direction of policy change to be measured and compared across the study periods. This tool was valuable in discerning whether policy changes were moving in one direction and how fast they occurred.

While the analytical tools were very powerful in their ability to track these types of policy changes (network type and relational policy components, actor and ideas movements and pace and direction of changes), they still require qualitative judgments regarding degrees of movement and change. The model is based on a continuum of change. This is not necessarily a negative critique but it does need to be recognized however, to ensure that results are viewed from this perspective. This is less of an issue when the model is dealing with the extreme ranges, i.e. very open or closed networks. However, as the analysis moves into the middle areas of the continuum there is more of a qualitative requirement to arrive at final conclusions. This case study showed the qualitative judgment that is also required to arrive at final conclusions regarding network type. Networks can be placed on a continuum but the model cannot be used in a mathematical sense. Balance and judgment is required. This can be seen as a weakness in the model from a quantitative perspective but valuable if used within the context of broader contextual data.

The strength of the model is with the detailed analysis that can be completed in studying complex policy change over a long period of time. Recognizing that the

classifications and model distinctions are all situated on a change continuum and that some level of qualitative judgment is required maintains the strength and credibility of the model.

There are, however, qualitative changes that the model would not be able to pick up. Changes in the power dynamics of the policy network cannot be measured yet there were significant changes. The power dynamic changed in all three eras but in particular between the first and second eras. In the second era, the province of Saskatchewan became a major player in the network and multiple other actors became network participants as well. The strong policies introduced by the provincial government altered the power dynamic that was primarily in the federal government's hands to more of a shared power dynamic in the second era. In the third era the power dynamic became more balanced with the passage of the federal Nuclear Safety and Control Act and environmental assessment legislation. The changes in power dynamics in this case study were primarily related to federal/provincial relations. The types of policy outlined under the six taxonomic categories can show the basis for the jurisdictional disputes or overlap but cannot measure this phenomenon. The model did measure the policy outputs changes and differentiated the change in network type (from closed to open network). These qualitative changes can also be shown, however, in the narrative and in the taxonomic tables.

The size of the bureaucracy associated with the policy sector increased significantly over the 65 year time span. This is a phenomenon that would not be able to be measured by the model other than possibly by the identification of specific actors associated with the changing policy networks. As mentioned above, any of the

qualitative changes that occur and require study would have to be tracked in the narrative or by utilizing other tools.

6.2 Changes/Evolution of Policy Network Types

The analysis in all three eras began with an examination of the type of network that was operating within each time period. The type of network was determined based on the changes in actors and ideas flowing into or out of the policy network and the relationship between the discourse community and the interest network. This relationship centered on the extent of agreement those members of the discourse community shared with the interest network and the extent to which the boundary between the discourse community and the interest network was open or closed. As a final check, Howlett's model was used to determine if the policy outputs did change in the way that the model predicted for each of the four network types. This summary discussion will track the changing network types and resultant policy changes that occurred and how these policies impacted the eras that followed. This discussion will begin with the formative policy era.

The formative policy era (1942-1970) was shaped by the secrecy and urgency surrounding the Second World War and the Cold War years. Uranium was required for weapons research and build-up. All policy decisions during this first era were centered on the use of uranium to produce nuclear weapons. This was a national issue and the policy network was developed and led by the federal government. There were very few actors involved and the term 'closed sub-government' was applied to the policy network during this era.

The primary causal factor resulting in the formation of the closed sub-government kind of policy network was an exogenous event – the Second World War and the resultant Cold War that followed. During this period, secrecy was critical, urgency of actions was required and the federal government, at a senior Cabinet level was involved from the onset. The industry was in its infancy and had evolved from pitchblende mining that produced radium for cancer treatment to uranium production for nuclear weapons. Uranium had been a byproduct of the radium mining process. The federal government with a very few industry players in addition to international allies controlled all aspects of the uranium policy framework during this era. The provincial government was on the periphery of the network controlling prospecting and staking. Policy decisions made during this era were largely shaped by world events.

The extent of symmetry between the discourse community and the interest network during the first era was high resulting in an integrated discourse community and interest network that was closed. No new actors and no new ideas flowed into this closed system. This closed sub-government had policy impacts that impacted the second era. One example is the lack of communication to the broader public regarding the use of uranium that was exported for nuclear weapons build-up. One interviewee commented:

...but when uranium was being mined in the 50's and 60's in Saskatchewan there doesn't appear to have been a lot of public discussion about the fact that we were selling it for military purposes...I've talked to so many people who were growing up during that era who said that they had no idea any of this was going on until the late 70's when discussion...that uranium had been used for military purposes and then of course those contracts had come to an end by the mid 1960's but of course in 1976 that was only 11 years ago and so we had begun to look at who we had been selling to since that time and so we had concerns about the weapons connection and bear in mind

that the company that wanted to develop Cluff Lake uranium mine was owned by the Government of France and the Government of France in those days was testing weapons in the Pacific and making no bones about it and also making no bones about the fact that they did not separate the civilian and military uses of uranium. (Interviewee #4, Sept. 12, 2014).

The second era began with an exogenous event, the election of a new government in Saskatchewan. This government wanted to grow and diversify the economy utilizing mineral resources including uranium to meet market trends. They also wanted to have a direct central government role in its development. The provincial government had been a peripheral player in the existing sub-government. The province needed a way to exert its influence in the uranium policy area. It accomplished this by bringing new policy actors into the mix. These new actors pried open the closed sub-government that had been in place since the Second World War. The previous era's central policy goal of developing a uranium supply for use by Canada's allies was no longer a policy driver.

With the introduction of these new actors the symmetry and insulation between the discourse community and network changed. The degree of insulation was lowered allowing new actors and ideas to flow freely into the interest network. An unanticipated consequence also occurred. That was the change in the extent of symmetry from high to low that was driven by the disagreements amongst some of the new actors that entered the policy network. This change in symmetry suggests that there was not agreement in policy approaches between the discourse community and interest network. Conflicts occurred which resulted in political challenges for this government and governments to come.

Also during this era environmental and anti-mining interests entered the interest network through the public inquiries process. Many of these interests were in the formative stages in the 1970's and evolved along with the processes. One anti-mining interviewee remarked on how their positions were formed in the 1970's through a series of events:

...in 1976 no one had asked up until then no one in Saskatchewan that I've been able to identify had ever asked serious questions about whether we should be mining uranium or not because it simply hadn't been on the radar screen and in fairness to the Blakeney government of the day I think they just didn't see this wasn't an issue they expected to arise. There just hadn't been any fundamental questions asked about it so when a group of us did start asking fundamental questions about it you know of course it took a few years for this public discussion to begin to really get going...I attended a habitat conference and...went to a 2-day symposium on nuclear power at that habitat conference that was very interesting and a lot of the leading thinkers in the world who were there...raised important questions about nuclear power and whether this was really the direction we wanted to go in the world and talked about military issues...India had just exploded a nuclear weapon using Canadian technology in part so of course that had also influenced by thinking. (Interviewee 4, Sept. 12, 2014).

It is important to note that the provincial government, who had opened up the network by virtue of calling for the public inquiry processes, could not have anticipated the extent of the polarized views that were introduced into the policy network as evidenced by the comment above. The open network, containing these conflicting interests, proved to be a very controversial outcome of this policy decision. This conflict troubled the NDP party through the last two eras (25 years of the 36 year period when they held power) and impacted the uranium mining policy sector. While the controversy was primarily centered on the anti-mining component, the developing interests and

requirements for acceptable environmental and management approaches was also a significant effect of the entry of new policy actors during this era which reverberated through the following decades.

The third era witnessed a flurry of mine development proposals and approvals. The actors, however, remained basically the same. The federal and provincial actors did not change but the federal actors became more directly involved with new mine developments as a result of the new *Canadian Environmental Assessment Act 1992* and the *Nuclear Safety and Control Act 1997*. The federal/provincial panel process was used extensively during the 1990's to review a number of new uranium mine development proposals. A federal review panel had operated in a similar fashion in the last era.

The provincial actors remained essentially the same during this era but there were changes in the governing NDP's policy that came to power in 1991 which impacted the uranium mining policy in Saskatchewan. This was the rescinding of the 'no new mines' resolution which had been passed by the NDP party as part of their party policy in 1982. The 'no new mines' policy resolution called for the banning of all new uranium mines and a phase out of existing mines. In the late 1980's and 1990's industry expressed a strong interest in building new mines in Saskatchewan; however, investors would not come into Saskatchewan to build new mines with the NDP policy in place. Amidst raucous debate at the 1992 NDP convention the 'no new mines' policy was dropped. This change in a party policy (that was not part of the governing party's policy framework) provided a signal to the uranium investment community that new uranium mines would be given serious consideration. This visible demonstration by the governing NDP that they were open to new uranium mine development was an important policy

turning point for the uranium industry in Saskatchewan during this period. The issue of uranium mining continued to be a controversial subject within the governing party. However, all new mine developments were approved after significant review processes were conducted by federal/provincial panels. This controversy within the NDP resulted in major policy oversight of the industry from senior levels of government throughout the rest of this era. This level of oversight led to a senior level Integrated Committee Core group comprised of all impacted provincial government departments and led by Executive Council. This core group discussed and coordinated all policy issues related to uranium mining with Cabinet approval required for all uranium policy decisions. This type of senior government involvement ensured that policy derivation and implementation was integrated, and implementation supported by all levels and mandates found within the provincial government:

“one of the things that we did create early in the 90s was what referred to as the core group so you had relatively senior members of 7 different departments that met on a regular basis, chaired by Executive Council. So you had municipal government, Environment and the Assessment Branch and Energy Mines and Northern Affairs...government’s decisions considered all of the issues related to it, you know, if you’re going to approve you know 2 new mines, then there’s no way the Mines Branch, Labour and the Radiation Protection Branch, they’ve got to have more money, do you know what I mean? So you’ve got to, you were able to much better explore the implications of a decision on everybody...going to need 2 more, at least 2 more inspectors, the Minerals Industry Branch was going to need more people and have that discussion very early on...they also have implications for staffing levels, resources to regulatory agencies and those types of things. (Interviewee 2, Sept. 11, 2014).

Harding (2007) also referred to a Uranium Secretariat that was created by the Blakeney government from 1979-1982. The Secretariat was created within Executive

Council to coordinate efforts amongst the Provincial Crowns and the regulatory agencies, monitor the inquiry processes, carried out surveys, helped with the NDP convention discussions and monitored the anti-nuclear groups.

During this last era under study there were no new actors but some new ideas brought into the network and actioned by the existing actors. The symmetry and degree of insulation going into this era was low. In the previous decade the inquiries processes and their affects had driven the symmetry between the discourse community and interest network to a low setting by bringing in new actors some of which had polarized views. These anti-mining views were on a collision course with the multiple new mine proposals and extensions that came under review during the 1990's federal/provincial hearings. The province as evidenced by earlier quotes from interviewees was "flat dead broke" (Interviewee # 3, Sept. 12, 2014) and needed the uranium mining revenues. In order to secure these revenues the anti-mining interests could not be successful in bringing their ideas (to not allow any new mines) into the policy network. The panels recommended and the province accepted the recommendations to allow the mines to proceed subject to a myriad of conditions relating to mine safety, environmental and socio-economic improvements. The degree of insulation between the discourse community and the interest network had shifted to a high setting. The anti-mining actors having had no success within the interest network were considered to no longer be members of the interest network and were part of the discourse community. The pro-mining stance taken by the provincial government was demonstrated by the province not accepting one of the panel's recommendations to delay the McLean Lake mine development by five years as discussed by two interviewees below:

...the lead panel on McLean, Midwest Joint Venture and Dominique-Janine Extension...they recommended a five year delay...five years delay the money, the mining company will invest it somewhere else. But at the same time we looked at the recommendations like the environmental quality committee, like northern training so we collectively a few of us came up with the Environmental Quality Committee, the Northern Development Fund and the Multi-Party Training Program. We did consultations on that and said if we put these in and that was very rapid after the panel report like over that winter right up to having consultations in the north on how to do these things. So the government of the time said okay we won't give it a five year delay but we're implementing these programs. ... one of the reasons for the five year delay was to train northerners for the jobs that would be available once it was up and running so that's where the Multi-Party Training Program...the other discussion that was had within the political decision makers was it takes it five years to build it (the mine). So basically Premier Romanow and the Cabinet said okay we'll not have the 5 year delay but we better have these programs up and running by the time the mill turns on and we did. (Interview # 2, Sept. 11, 2014).

One of the anti-mining interests that participated in the panel hearings also spoke about the McLean Lake delay recommendation:

Not all the recommendations from these inquiries were actually followed and I think that was where the process was actually breaking down. You had very good environmental assessment review panels who did very thorough work in the 90s and one can certainly make a case that while many of their recommendations were followed, when the recommendations involved actually holding up the project, they tended not to be followed.... just as an example on McLean Lake tailings we don't think that this mine is ready to develop yet in terms of we're really concerned about tailings issues at the mine site and the panel agreed with us and actually recommended a five year moratorium because of the tailings issue and then the provincial and federal governments said we're not having a five year moratorium. Now there was a delay of a little while you know before the mine went ahead and in fact government sort of said some of those years have gone by anyway. I'm sure some of this work has been done but really that critical panel recommendation that we had pushed for was not implemented.

And when you read them the Lee panel you will see what I mean about the concern that they had about the tailings at the site and that very much reflected some of the evidence that we had presented so once that recommendation wasn't really adopted by the province, it meant that the influence that we might have had in the development of that mine was much more modest than it would have otherwise been.... I would say we had, you know, only modest impact in terms of the hearing outcomes. I would say that the I don't want to say we had no influence because I certainly in the 1990s and I think we had a fairly significant influence in some of those reports and when you read them you'll see numerous references to the Saskatchewan Environmental Society but and we certainly had some impact in terms of modestly improving environmental policy at the local impacts level but I would say it was just modest. (Interviewee # 4, Sept. 12, 2014).

The anti-mining actors were now located in the discourse community. Any successes that they enjoyed within the interest network were related to environmental and socioeconomic inputs. The degree of insulation between the interest network and discourse community was high which was due to the limited number of ideas moving between the discourse community and interest network. The extent of symmetry remained at a low level signifying the continuing polarized views and the lack of actors moving between the discourse community and the interest network. The interest network did not allow the anti-mining interests to have any meaningful impact (new actors) within the interest network. These changes resulted in a network shift in this last era to a contested network type.

The movement of the anti-mining actors from the interest network to the discourse community for purposes of determining policy network type requires some further discussion. If an interest network actor still participates within the interest network at the major process meetings such as the panel meetings that occurred during

the 1990's and continued to take an anti-mining stance (along with an environmental interest perspective), would they still be considered an anti-mining actor within the interest network? It is clear from the interviewee comments and the mine approvals that were given for all of the new mine proposals that the anti-mining interests were not successful over decades of participation. Their input was limited to the panel hearings processes and there continued to be multiple meetings between government policy actors and industry and northern interests that did not include the anti-mining interests. These meetings were to discuss the socio-economic and environmental monitoring activities required under the comprehensive lease agreements. These meetings would occur on a regular basis as part of operationalizing many of the panel recommendations and approval requirements. The 'placement' of the anti-mining interests in the discourse community is consistent with shift to environmental considerations and lack of success in stopping any new developments.

The two policy programs that benefitted from the polarized views within the policy network during the case study period were the environmental and socioeconomic programs. With the abolition of the no new mines NDP party policy in 1992 there was a commitment to ensure environmental and socioeconomic considerations formed a key component of implementing any new uranium mine development. One of the interviewees' comments:

...because there was some conditions even in the party platform that said new mines only if they were recommended by the panel. If there was a positive recommendation from the panel and I can't remember the other words but there's got to be some significant socioeconomic advantages to doing this, particularly in the north so right off the bat the Cabinet and that's why there was such support from the Cabinet and the

caucus of the government for things like the Multi-Party Training Program and those types of things - EQCs (Environmental Quality Committees and) the Northern Development Fund...so if you look at the 107 total recommendations of the panel made, you know over its career, all the projects, the Province positively implemented government of Saskatchewan positively implemented 105 of them. The two it didn't do was the five year delay on McLean and direct revenue sharing... the surface lease it's almost a contractual arrangement to enforce occupational health and safety and the environment through the surface lease. (Interviewee# 2, Sept. 11, 2014).

An anti-mining interviewee spoke about how the safety, environmental and socioeconomic benefits were important topics for the review panels:

... I mean I've been obviously critical of the Cluff Lake Board of Inquiry up until now but you know in fairness to the inquiry there was also some very worthwhile things that came out of it. Presuming that one did mine uranium, certainly the recommendations that the inquiry made improved the framework both environmentally and from an occupational health and safety point of view for how uranium mining was conducted in the province. That was a very important result of Cluff Lake and where that is important in terms of federal provincial relations is the surface lease agreement emerged where we the surface lease agreement (act) as a vehicle by which to basically enforce better occupational health and safety standards than Ottawa was requiring at the time and also some improvements in environmental conditions and very importantly considerations with respect to socioeconomic development in the north and the need for maximizing opportunities for northern business and these were very important steps very worthwhile steps and the surface lease agreement was a very worthwhile instrument for achieving that... (Interviewee # 4, Sept. 12, 2014).

6.3 Network Shifts

The policy networks shifts during the case study period began with a closed sub-government during the Second World War. This closed network shifted to the polar opposite - an open network in the 1970's and then to a contested network in the last era.

The policy system creation in the first era was driven by a major exogenous event - the Second World War. The shift in the second era resulted from the provincial drive to increase provincial resource revenues and exert provincial control over the uranium resource. The third and final shift in this study period was driven by direct market influences (international investors) and the provincial drive to develop new uranium mines (based on a challenging provincial economy). This era saw a shift in insulation between the discourse community and interest network from low to high. The first era had no new actors and no new ideas (excepting those required in the formative policy creation). New actors with new ideas appeared in the second era resulting in a paradigmatic shift in policy. The third era was characterized by no new actors, some new ideas and incremental changes in policy. Please see a summary of the network classifications and the direction of the shifts of the three eras in Table 6.1.

Table 6.1
Network configurations and policy actor/idea interactions
1942-2007

Extent of Symmetry between Discourse Community Interest Network	Interest Network's Degree of Insulation Discourse Community	
	High	Low
High	<p align="center"><u>Closed Network</u> No new actors/no new ideas Tends towards change in Instrument Calibrations</p> <p align="center"><u>Conclusion</u> <u>1942-1970 Sub-Government Uranium Mining Policy</u></p>	<p align="center"><u>Resistant Network</u> New actors/no new ideas Tends towards change in Specific Policy Targets, Instrument Types/Tools and Calibrations</p>
Low	<p align="center"><u>Contested Network</u> No new actors/some new ideas Tends towards change in Instrument Types/Tools and Calibrations</p> <p align="center"><u>Conclusion:</u> <u>1982-2007 Uranium Mining Policy</u></p>	<p align="center"><u>Open Network</u> New actors/new ideas Tends towards change in Policy Goals and Means</p> <p align="center"><u>Conclusion</u> <u>1971-1981 Uranium Mining Policy</u></p>

Howlett 2002

After opening up in the 1970's the policy network becomes relatively stable in successive years, stabilizing the same choice of instruments over relatively long periods of time. During the second era the entry of new actors and new ideas created paradigmatic policy change. Paradigmatic change is normally associated with the influx of new actors who bring new energy and ideas to the policy network. A paradigmatic policy change rarely occurs over and over again with most policy change occurring in an incremental fashion.

A distinctive feature of this case study is the long term highly polarized views of the anti-nuclear/mining interests and their movement into the discourse community. In the second era the anti-mining interests were no longer active in the interest network given their lack of success in preventing the development of new mines and were shut out of the interest network – the degree of insulation becoming very high. They had more influence with their inputs/ideas regarding environmental impacts. They impacted policy surrounding the development of new mines in such areas as long-term planning for mitigation of impacts and remediation of mining activities.

No new interest coalitions entered the policy network for 55 of the 65 year study period. This ten year timeframe resulted in paradigmatic change. The importance of new policy actors and the impacts they can have on policy change is demonstrated in this case study by the policy change that occurred during this period. However, a consequence of the influx of new actors during the second era was the polarizing conflicts that ensued and the impacts that these conflicts had on the symmetry and degree of insulation between the discourse community and the interest network. Most of the new ideas introduced into this policy sector were brought into the network with the introduction of

new actors during the open network timeframe. There were no new ideas introduced during the first era and a limited number of new ideas introduced into the policy network during the final era. See Table 6.2 for a summary of changes to actors/ideas and degree of insulation and symmetry between the interest network and discourse community.

Table 6.2
Summary of change in actors, ideas and
policy actor/ideas interactions
1942-2007

Eras	1942-1970	1971-1981	1982-2007
Actors	No new actors	New actors	No new actors
Ideas	No new ideas	New ideas	Some new ideas
Extent of Symmetry	High	Low	Low
Degree of Insulation	High	Low	High

The level of policy agreement between the discourse community and the interest network was low for the last two eras. This was due to the highly polarized views within the policy network concerning whether uranium mines should be phased out in Saskatchewan. The level of actor movement between the discourse community and the interest network was low for only the middle era when the anti-mining contingent entered the interest network.

The Second World War and the need for a secure uranium supply drove much of the policy change that occurred in the first era. The final two eras and associated network changes were driven by provincial government changes, new mine proposals resulting from increasing international demand for uranium and the provincial goal to increase mining resource revenues. Most of the policy change that occurred was during the second era when the combination of several exogenous events and new actors resulted in the creation of a number of new policies and instruments most of which are still in existence decades later.

6.4 Policy Regime and Patterns of Policy Change/Development

The first era centered on the delivery of a secure supply of uranium to Canada's allies within a realm of secrecy. The policy framework was developed and implemented by a small group of actors in a short timeframe. The goals, objectives and settings were integrated and consistent. Much of the policy that was put in place is still found in the policy framework today. Many of the essential features of the *Atomic Energy Control Act 1946* are still found in the *Nuclear Safety and Control Act 1997*. The export controls and safeguards agreements are still working policies. The provincial policy intent contained in the *Mineral Resources Act* of 1948 is in place today as is the crown land

tenure instrument developed in the 1940's. While the policy intent was evident in this formative era, the policy changes did not occur until the second era when the provincial government became a much more dominant policy player with their specific interests in addition to the arrival of other policy actors forcing the closed network to open.

Uranium has remained a mineral of provincial, national and international significance as it was in the formative policy era during the war years. This era also saw the beginnings of a federal/provincial regulatory overlap that became a bigger issue as the policy framework further developed in later eras. Legacy mine sites were also the result from this era which are now scattered across Saskatchewan, Ontario and the North West Territories. These sites have undergone varying levels of remediation but continue to require regular monitoring with some sites requiring further work to meet regulatory requirements. Two abandoned legacy mine sites in Northern Saskatchewan are currently under remediation licenses and will require large expenditures (in the millions) to meet remediation standards. The remediation of these Saskatchewan sites is jointly funded by the federal and provincial government. The sites are being remediated by the Saskatchewan Research Council (under contract to the Provincial government). The pattern of growth for both the federal and provincial governments during this era was classic incremental.

The second era was marked by significant provincial involvement in the policy network. The province exerted its legislative authority and became directly involved through the use of a provincial crown that could demand up to 50% of ownership in all new uranium developments. The province created a mines pollution regulatory arm which was mandated to inspect and regulate the uranium mines. A provincial public

inquiries process was implemented for the two new uranium mines that were proposed during this period. This process allowed many new actors to enter the policy network and bring forward ideas that resulted in a plethora of new programs many of which were implemented through a comprehensive lease agreement program.

During this era, the province also introduced a very powerful tool with the creation of the public inquiry policy instrument. This policy instrument was used to review the Cluff Lake and Key Lake uranium mine proposals that came forward in the 1970's and was continued through a federal/provincial panel process in the 1990's. It allowed new policy actors to participate directly in new mine and existing mine extension proposal review processes. This inquiry process required public meetings, education sessions, technical reviews and inputs regarding all impacts and benefits that may occur as a result of the mine developments proceeding.

However, the public inquiry instrument on its own was not capable of implementing the breadth of policy change that occurred as a result of the new ideas that accompanied the influx of new actors. The comprehensive lease agreement was another key policy instrument that was able to deliver many of these new policy ideas. This instrument could set lease conditions that required the uranium industry to train and hire northern workers, meet environmental parameters, develop employment plans and involve northerners in monitoring activities. Most importantly these lease agreements thrust the province as a powerful actor directly into what had been a closed policy system. The province utilizing these two instruments was the major causal factor for the significant change in network type and the paradigmatic change in policy. There were, of course, other policies of importance that were put into place during this era but the two

instruments discussed above, wielded by the provincial government, were the primary tools used to drive in the dramatic changes in the Saskatchewan uranium policy framework.

Most of the policy changes that were made during this era were sustainable and remain in place to this day. The inquiry process has evolved to a federal/provincial assessment panel but is effectively the same instrument, the comprehensive leases are still used to ensure benefits are accrued in northern Saskatchewan and the uranium industry has evolved to a point where they are proactively working with northern communities to sponsor training, scholarships, benefit agreements and community development. Many of these models developed within the uranium industry are being used in other resource industries both within Saskatchewan and around the world. The provincial pattern of change was paradigmatic.

The federal government continued to incrementally build upon their existing policy base. Eldorado continued to be an industrial leader in uranium mining but it no longer held a monopoly. Its operations fell under provincial jurisdiction with respect to land access and it was subject to comprehensive lease agreements. Policy decisions to control international investments in uranium mines within Canada were put in place and the federal environmental assessment processes were strengthened.

With the number of new actors that came into the network during this second era there was considerable potential for conflicting goals or overlap. Conflicting policy goals did not occur. The policy goals and means were well aligned and resulted in positive policy outcomes and impacts. This alignment is due to a number of factors. Firstly, there was a solid policy base in place from the previous era which was functioning well.

Secondly, the international nature of nuclear energy would also provide international standards and an oversight that would provide stability. Thirdly, there were a few key, stable instruments used to deliver much of the policies such as the provincial inquiries process and the comprehensive lease agreements that were used successfully to both develop and deliver policy through most of the study period. The federal pattern of policy change was classic incremental during this period.

Policy overlap did occur with both the federal and provincial governments enacting and implementing legislation that resulted in overlapping regulatory controls. An administrative agreement was developed but was largely unsuccessful in reducing the dual mine inspections and requirements. This federal/provincial overlap is not restricted to the uranium mining sector. It occurs in most environmental legislation that affects other resource extraction industries such as oil and gas, education, health and social programs. As one interviewee remarked, many of the challenges can be overcome by good personal relationships between the parties. However, this is a policy challenge that remains and cannot be solved by interpersonal relationships alone. Better integrated policy would be a more consistent and durable solution. Better policy integration could be achieved by federal/provincial negotiations to determine the lead jurisdiction for various areas of policy. For example, the federal government takes the lead on all matters that are international in nature with the province leading in those that are socio-economic and local/environmental in nature. Of course resource revenues and historical jurisdictional history and legislation come into play and agreements can be difficult to reach as evidenced by the inability of the two parties to successfully implement a relatively simple administrative agreement.

The third era contained the most significant build-up of mines in the case study period. Four new uranium mines along with a number of extensions to existing mine sites were reviewed and approved during this era. All of these mine reviews fell under the federal/provincial assessment process. Most of the same actors attended these hearings. This resulted in a good alignment of the policy goals and means during this era as well. All of the policy changes were built upon the existing base and utilized the same instruments that had been developed in earlier eras thus ensuring policy alignment.

In this era, all of the change that had occurred with new actors coming into play in the previous era had been implemented and only instrument change and calibration occurred as a result. The province was intent on bringing new uranium mines into Saskatchewan as long as they met their environmental, safety and socioeconomic criteria. This focus and shift in networks from an open to a contested policy network resulted in instrument calibrations that made progress in the uranium mining policy framework.

This era was driven by global influences both at the market level and how the uranium mines were to be regulated. High uranium prices drove the demand for the new mines and the rescinding of the NDP 'no new mines' party resolution created a fertile policy environment for new mine development. Global influences came more into play with international investors interested in multiple mine sites as well as global influences on mine safety and environmental parameters. The pattern of change in this era for both levels of government was classic incremental.

Table 6.3
Patterns of policy development and change – 1942 - 2007

Policy Content			
Policy Goals	Broad Ideas that Govern Policy Development	Specific Requirements of Policy Operational Policy Objectives	Specific on-the-ground Policy Targets Specific Policy Targets
	Federal Government - Classic Incremental – 1942 - 2007		
	Provincial Government - Classic Incremental – 1942-1970 Provincial Government – Classic Paradigmatic – 1971-1981 Provincial Government – Classic Incremental – 1982-2007		
Policy Focus			
Policy Means	General Policy Implementation Preferences (organizational devices)	Specific Types of Instruments or Policy Tools	Specific way Instrument is Used (Tool Calibrations)
	Federal Government – Classic Incremental – 1942-2007		
	Provincial Government - Classic Incremental – 1942-1970 Provincial Government – Classic Paradigmatic – 1971-1981 Provincial Government – Classic Incremental – 1982-2007		

Adapted from Howlett 2009 and Cashore and Howlett 2007

Table 6.3 shows the pattern of change for the entire case study period. The formative policy was developed during the first era and was followed by a much more dramatic change in policy during the 1970's. In the last era, this pattern of change shifted back to an incremental tempo and the policy regime stabilized. The paradigmatic change was triggered by a shift in policy goals and objectives and the introduction of new policy actors to the open policy network.

CHAPTER SEVEN: CONCLUSION

Tracing three distinct changes in policy network configurations during this review demonstrates the benefits of having a relatively long timeframe associated with a case study. Being able to begin the analytical review with the formative policy era allowed the examination of the causal factors which drove the original policy goals and objectives. The 65 year study period showed the patterns of policy change that occurred and the different causal factors associated with each pattern of change.

7.1 Analytical Tools

The use of the three analytical tools provided a consistent approach to measure changes across a variety of policy networks as demonstrated in the presentation of this uranium mining case study. The study of the relationships between discourse communities, interest networks and subsequent policy network changes using detailed taxonomic classifications as a cross check provides a consistent analysis of policy evolution that can occur over decades. The speed and direction of policy change completes the analytical picture. These tools, along with the methods applied, provide reliable and valid instruments by which to measure policy change. As with any qualitative studies there are aspects of the analysis that require a level of judgment and some changes that the analytical tools may not be able to measure from a quantitative perspective.

Causal factors such as world events (war) and international market changes were identified and linked with policy outputs and outcomes using these conceptual tools. Policy impacts could be measured as change occurred. The use of these three analytical tools provides a full picture of the policy framework within each study period and how

and why it changed in subsequent eras. All the tools are linked together with no one tool able to operate independently providing an overall picture of the change and related causal factors.

These links/relationships were not made by mathematical formulas or a relational model determined by complex quantitative methodology. They were made through the study and analysis of a rich context of data gathered through a variety of sources and corroborated by in-depth interviews with policy actors that were directly involved as policy change agents through multiple years and decades of the study period. These tools allowed the policy mix that occurred under the various network typologies to be studied and related to policy outputs, outcomes and impacts. By separating the goals, objectives and settings into their six categories the level of integration across the policy mix can be studied which is directly linked to level of policy outcome success. Policy instruments that are closely linked with policy goals and objectives will be more successful than those that are not (Howlett and Rayner, 2007).

7.2 Policy Implications for Potential Network Management

The analysis of this case study demonstrated the impact that actors have within a policy network. Significant policy change is related to the impact of new actors and ideas entering a policy network. The policy changes that occurred throughout the study period were driven primarily by the policy actors involved with the policy sector. The paradigmatic change that occurred during the second era was driven by the influx of new actors and the ideas that they carried into and acted upon within the policy network. These actions resulted in a change in policy type from closed sub-government to an open policy network. In the last era the lack of new actors resulted in a shift towards a more

closed state on the network continuum of network status to a contested policy network. If this shift continues along this continuum Post 2007, the policy network could shift back to a closed policy network. This would require a change in the extent of symmetry between the discourse community and the interest network.

However, in addition to the impacts that policy actors and their ideas have on policy change, the impacts of exogenous events is also significant and in many cases drives the policy actor shifts. Exogenous events can result in changes in the policy sector goals which then drive further policy change. For example, the Second World War resulted in the creation of the policy sector and the requirement for secrecy and national security resulted in the limiting of policy actors in the policy network and the sharing of information from that closed network. Electoral changes also occurred in every era. During the second era, the electoral change led to a government that had very specific policy goals to expand the uranium industry in Saskatchewan, increase revenues and take a central role in the industry itself. These goals led to the development of policy instruments such as the inquiries process and the comprehensive lease agreement that brought many new actors and ideas to the policy network. An unanticipated consequence of these new actors was the lowering of symmetry between the discourse community and the interest network which created significant challenges and conflicts within and for the governing political party. In the third era, the international interests and demands for uranium coalesced with the provincial government's role to increase resource revenues and a number of new mines were approved.

Emerging policy discourse and learning by the network actors that were prevalent during the panel hearings in the second and third eras was a positive outcome of these

processes. As evidenced by the number of interviewee quotes regarding the hearings, the learning that occurred and the relationships that developed resulted in successful policy outcomes (according to the same interviewees success criteria). The anti-mining interests did not enjoy success in their primary endeavor but remarked on the excellence of the panel hearings processes. Some of the policy outputs, outcomes and impacts are being applied in other resource industries within Saskatchewan and countries from around the world have come to learn about some of these policy programs. Many of the interviewees commented on the relationships that developed over the longer term processes. One of the interviewees commented about the differences experienced during the CNSC hearings process versus the panel hearings conducted during the 1990's. He felt that his input was not heard during the latter processes as compared to his experiences during the federal/provincial hearings. The panel hearings were conducted over extended periods of time that allowed relationships to develop versus the much shorter review periods and public processes that are now available. The discourse did not solve the polarized views of the pro and anti-mining contingent but respect for and learning about each actor's interests was a successful outcome of these processes. The value of policy discourse processes was shown during the last two eras.

This case study showed the policy network move from a closed sub-government network to an open policy network that would evolve into a contested policy network. The policy actors having developed and becoming comfortable with the same policy instruments continued to use these instruments and moved from an open to a more closed policy network. The more closed policy systems are associated with incremental or status quo policy derivation (Rhodes and Marsh 1992; Howlett 2002).

A policy practitioner could use this model to examine the policy system with which they are involved and gain an understanding of the past and present relationships between the policy actors, the policy network in which they are found and the causal events and relationships that drove/drive policy change in outputs, outcomes and impacts. Being aware of what has happened in the past and present can inform what may happen in the future. If policy practitioners can understand the current and historical type of policy network and its associated causal relationships, they may be able to anticipate potential impacts of new actors, new ideas or some expected or current exogenous event thus allowing them to take a more strategic approach in planning potential policy changes. For example, if the policy sector is dependent on the regular influx of new ideas to keep the technology current then policy instruments or processes could be designed that allow new actors to bring new ideas into the network on a regular basis. If the interest network is dealing with information that cannot be shared with the discourse community and is operating in a more closed policy network, how can the policy practitioners ensure that public distrust does not occur? Using this type of analytical approach, the policy practitioner can move from a reactive policy mode to a more strategic approach that takes into account more than the specific details of any one policy and looks at the policy system and the interrelationships in a holistic manner. This level of analysis could also allow the policy actors to anticipate where the policy network may go and adjust their actions to maximize their interests which may result in more optimal policy derivation. The application of this model could therefore result in better overall policy decision making and societal outcomes.

7.3 Review of Research Questions

At the conclusion of this case study it would be appropriate to review the research questions and ensure that they have been addressed in the analysis. The intent of this quick review is not to rehash the findings already presented but more serves as a check-off and summary of the research objectives.

Firstly, what kind of policy networks were in place? Through the three eras of this case study there were three different policy networks. A closed sub-government was formed during the first era followed by an open policy network in the second era. In the third era the network type shifted to a contested policy system. There were a limited number of policy actors during the first era and all the policy ideas were contained within the sub-government. The discourse community and interest network were small and integrated and the degree of insulation was high. During the second era, several policy instruments such as the public inquiries processes and the comprehensive lease resulted in the introduction of new policy actors and ideas. The extent of symmetry was low and policy actors moved freely between discourse community and interest network. The degree of insulation was also low and new ideas flowed between the discourse community and the interest network. In the third era, the extent of symmetry was low and no new actor interests were introduced to the policy network but the degree of insulation shifted to a higher level and some new ideas were brought to the policy table. Network types and shifts analysis formed a central theme throughout this study.

What types of changes took place and what were the drivers of change? The policy changes are well documented in the case study results in the discussions and tables analyzing each era. Policy changes were maintained and policy evolution continued to

move forward in all eras in a cumulative or ‘classic’ fashion. The first and third eras were characterized by classic incremental policy change by both the federal and provincial policy actors. The second era saw dramatic change by the provincial actors in the form of paradigmatic policy change. The federal actors retained their incremental approach to policy change given their relatively consistent policy goals for this policy sector. The provincial policy goals and objectives were altered substantially during the second era which resulted in much of the policy change in that timeframe. The influxes of actors and ideas into the policy networks were also primary drivers of change.

What are the causal factors related to policy actors, their regimes and policy instruments? The causal factors were both exogenous and endogenous events. The Second World War and Cold War era generated the need for uranium to be used in research and weapons development. This was a major exogenous event that resulted in the creation of the uranium mining policy sector in Canada. The electoral changes that took place resulted in different political philosophies and changes in policy goals, objectives and settings all of which affected the policy sector and policy regimes that were in place. Several key instruments such as the public inquiries processes and the comprehensive lease instrument resulted in changes in policy actors and ideas and thus policy change.

Were the changes sustainable and why or why not? The policy sector continued to progress forward throughout the case study. Policy was developed and calibrated. Instruments that appeared to be effective were continued to be used many of which are still in use today. The policy changes were sustainable and continued to be in place throughout the case study period and still form part of today’s policy mix.

What were the successes and failures of the policy initiatives and reasons?

Successes and failures are most readily measured by a pre-determined set of criteria. As evidenced by the comments by interviewees throughout this case study report, the policy actors all commented on successes that they associated with this policy sector. Industries from around the world continue to come to Saskatchewan to review many of the policy approaches taken in this policy sector. Cluff Lake mine which was the subject of the first inquiry process has been successfully decommissioned by the industry that operated the mine site meeting all regulatory requirements. All of the mines approved during the last two eras have operated successfully or are under construction. With respect to failures, as evidenced by one of the anti-uranium mining interviewee's, if that interest group's measure of success is whether they were able to prevent new uranium mine development taking place they would deem their policy intent to be a failure. However, the same interviewee did say that they were able to influence the environmental regulators to improve this regulatory framework as it relates to uranium mines: "we certainly had some impact in terms of modestly improving environmental policy at the local impacts level but I would say it was just modest. He also spoke about the socio-economic successes: "...very importantly considerations with respect to socioeconomic development in the north and the need for maximizing opportunities for northern business and these were very important steps very worthwhile steps..." (Interviewee # 4, Sept. 12, 2014).

The overlap and duplication between the federal and provincial regulators was a less than desirable outcome. The industry as evidenced by the federal/provincial administrative agreement saw this overlap and wanted it addressed. The results of the administrative agreement were not successful. However, some of the environmental

interest groups are pleased to have both levels of government taking a regulatory role because it ensures an extra level of oversight. As stated earlier, the criteria for success or failure would ultimately dictate whether a policy was successful or not.

How effective are the analytical tools that were used? The review of the analytical tools or model is discussed at the beginning of this chapter and in chapter six.

7.4 Environmental Movement

This dissertation provided a review of the environmental movement because of its strong link with the nuclear energy discourse. A number of models were presented explaining the evolution of the movement. A three-stage model was hypothesized. This model builds or layers each evolutionary stage on top of the next stage as the influences and issues continue into the next layer. The strength of this model is found in the layering aspect and in the identification of the current layer being global in nature. This global effect not only speaks to the potential global impacts of the industry, including the uranium mining policy sector but also includes the global influences that impact the Saskatchewan uranium mining sector.

7.5 Future Studies

The results of this study provide analytical opportunities for both qualitative and quantitative approaches to be used to conduct further research into the cause and effect relationships between policy actors, outcomes, policy content and exogenous factors. As discussed in chapter two, a case study approach when combined with other data collection sources provides the opportunity to collect and analyze rich sources of data. A case study provides a set of data found within a historical context that allows for

interrelationships to be studied. Understanding these multiple relationships is a critical component in the study of network theory. Network theory is predicated on relationships between policy actors and the policy institutions and regimes within which they operate. Understanding how and why they interact and the causal factors that drive these interactions as well as the internal and exogenous events that occurred prior to, during and following these interactions provides is critical. Further case studies in this discipline provide the opportunity for a better understanding of the causal relationships between policy actors, policy type, exogenous events and policy change.

Applying Howlett's analytical tools in a case study that is rich in qualitative data and further development and understanding of the nuances of these tools as they relate to qualitative judgments will improve the model. Using the same analytical tools for analysis of other policy networks and their evolution will provide the opportunity to further understand and refine these analytical approaches. Meta-analysis allows the individual value of each case study to be consolidated into a broader analytical dimension increasing the qualitative value of any one case study. The research focus on the analytical tools utilized in this case study and their application to a wide range of policy sectors could provide additional value to the study of policy network theory. It is hoped that this case study, the resultant rich data and analytical tools will be used by other researchers to better understand the policy network relationships herein will provide the impetus and means to further pursue the findings presented above.

POST 2007

The third era under study in this dissertation ended in 2007 with a change in government and the Saskatchewan Party gaining power. The third era was considered to have ended in 2007 because it appeared to be too soon to provide a defensible analysis of policy changes in the uranium mining sector in the relatively short period of time between the election and the research on which this thesis is based. All previous Saskatchewan governments in power have supported uranium mining and that support continued post 2007 with the election of the Saskatchewan Party.

This section is provided at the end of this paper to serve as a brief review of the activities in the uranium sector that have occurred post 2007 to the end of 2013. This brief review will show that there were some policy calibration changes that occurred in the uranium mining policy sector but that most of the public policy discussion in this six year period was centered on value added activities surrounding uranium mining including the potential for nuclear power generation.

The primary driver for this discussion was the establishment of (and the provincial government's response to) the Uranium Development Partnership (UDP) tasked in October 2008 to make recommendations on value added opportunities associated with the uranium mining industry. The 12 representatives appointed by government were from the uranium industry, nuclear power industry, Universities of Saskatchewan and Regina, Saskatchewan Chamber of Commerce, SaskPower, Meadow Lake Tribal Council, TransCanada Corp., Saskatchewan Municipalities and Patrick Moore, co-founder of Greenpeace and nuclear power supporter.

The UDP took five months to conduct its own research, interviews and commissioning of third-party research before delivering its report “*Capturing the full potential of the uranium value chain in Saskatchewan*” to the provincial government in March of 2009. The report made 20 specific key findings and recommendations divided into five sections: exploration and mining, upgrading, power generation, used fuel management and research, development and training. The key findings and recommendations are listed in Appendix 5 (Uranium Development Partnership 2009). The exploration and mining section will be discussed in detail below with an overview of the other report components.

After the UDP report was released and in response to a strong public demand for consultation with a broader audience than the UDP members, the provincial government announced in April of 2009 a ‘Future of Uranium in Saskatchewan Public Consultation Process’ headed by Dan Perrins, a long-time civil servant and former Deputy Minister to the Premier in the previous NDP government. Mr. Perrins carried out a series of public consultation meetings that were held across the province and attended by a strong contingent of anti-nuclear interests. He submitted his report to government in September of 2009. This report was based strictly on the input gained from those who attended the public meetings. This report made seven recommendations to the provincial government, which are listed in Appendix 6 (Perrins 2009). None of Perrin recommendations were specific to uranium mining and they focused primarily on the value added component of the nuclear cycle.

In the exploration and mining section of the UDP report there were seven recommendations that were specific to the exploration and mining area. The report

recommended: to retain the current claim-staking program; establish clear ‘duty to consult’ parameters for the duty to consult with First Nations and Metis communities; expand incentive programs for exploration; undertake a review of the royalty structure to allow for real costs of mine versus fixed estimate; improve licensing efficiencies (federal/provincial overlap) with federal government; work with federal government to remove restricted foreign ownership requirements; and develop key northern infrastructure (UDP 2009).

The provincial government responded formally to the UDP report and follow-up consultations on December 17, 2009 (Response found in Appendix 7). The government accepted six of the seven recommendations made by the UDP concerning exploration and mining. They did not accept the recommendation regarding the maintenance of the claim-staking system as investments in an online staking system had already been made. The Mineral Registry Saskatchewan System (MARS) was formally launched in December of 2012 as a self-serve industry tool for mine staking. A duty to consult consultation policy framework was released by the provincial government in June of 2010 which replaced an interim guide for consultation released in 2008. In March 2013 the province announced an updated Saskatchewan Uranium Royalty program allowing actual capital expenditures by industry to be recognized for setting the tiered royalty rate versus the prior fixed estimate. This program was made retroactive to January 2013. As part of the Canada/European Union (EU) comprehensive trade agreement, the federal government indicated that it will no longer require the EU to seek a Canadian partner in acquiring Canadian mine assets. This intent to change the foreign ownership policy was announced in October of 2013 but the Canadian/EU trade agreement has not been

implemented at the time of writing. There have been no formal federal/provincial agreements or joint policy changes to address federal overlap concerns expressed in the UDP report.

With respect to the other recommendations regarding the value added components in the UDP report, the provincial government accepted all the recommendations with the exception of committing to building a new nuclear power plant. Nuclear power is still, however within the policy mix under consideration for future electrical power needs. In March of 2011, the provincial government announced an allocation of 30 million dollars over seven years for the operation of a nuclear research, development and training facility in Saskatchewan. The Sylvia Fedoruk Centre for Nuclear Innovation was established in 2011 reporting to an independent Board of Directors to create a climate in Saskatchewan to allow the nuclear industry to move beyond uranium mining into value added areas of nuclear innovation in medicine, materials research, power generation and environmental stewardship. This center is located at the University of Saskatchewan. The province was also successful in obtaining shared federal funding for the construction of a nuclear cyclotron that will produce radioisotopes for research and medical use. The province also agreed with the general recommendations from the Perrin report considering the need for future consultations should a decision be made to pursue nuclear power (Saskatchewan 2009).

With respect to policy changes in the Saskatchewan uranium mining sector made post 2007, the royalty program and the claim-staking program were adjusted or calibrated in this timeframe as evidenced above. Eight years into this fourth era, there has been significant policy discussion in the nuclear energy field. Much of the discussion

however, has centered on the value added aspects of the nuclear cycle, post uranium mining. The UDP report provided valuable recommendations for policy improvements to the uranium-mining component of the nuclear cycle that were all acted upon with the exception of the proposed changes to claim-staking. Uranium mining and its policy framework remain a key building stone to provide further growth in the mining sector as well as further nuclear innovation and development in Saskatchewan.

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- Interviewee # 2. September 11 2014, 2:00 pm.
- Interviewee # 3. September 12, 2014, 10:00 am.
- Interviewee # 4. September 12, 2014, 12:00 pm.
- Interviewee # 5. September 12, 2014, 2:00 pm.

Interviewee # 6. September 12, 2014, 4:00 pm.

Interviewee # 7. September 23, 2014, 11:30 am.

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APPENDICES

APPENDIX 1

SCRIPT FOR INITIAL CONTACT WITH POTENTIAL PARTICIPANTS

Script:

Hello, my name is Joe Muldoon. I am a graduate student with the University of Regina and I am conducting research into the policy development that has occurred over the past 60 years for the Saskatchewan uranium mining industry. I am phoning to see if you are interested in setting up a time to answer some questions regarding your experiences and involvement in the discussions that took place during the development of these policies.

If you are interested I can send you a list of questions that will be asked and a consent form that you must sign before we conduct the interview. Your interview will be held in confidence and no comments will be attributed directly to you. A copy of the transcript can be sent to you upon completion of the data collection process if you wish. The data collected from the interviews will only be held as long as it takes to complete and defend the thesis. At that point the data will be destroyed.

I will verbally go through the consent form with you now so that you can ask me any questions before you make any decision about moving forward. If you are interested and want more information, I would propose to send you the questions in advance along with the consent form. You can review them and let me know if you want to participate.

If you do want to participate we can conduct the interview by phone or in person, whatever you are most comfortable with. The interview will take approximately 1½-2 hours. May I go ahead and go through the consent form which explains any risks, the confidentiality of the data and the procedures for the interview?

If yes, proceed with reviewing the consent form, collecting contact information to which to send the consent form and questions. Set up a time to call them back to answer any further questions and determine if they want to proceed or set up a time for the interview if they want to proceed.

In advance of the actual interview process, go through the consent form once more and ensure that the participant understands what is being asked of him/her and wishes to proceed based on an up-to-date informed basis.

If no is indicated at any time during this initial contact: Thank you very much for your time. Good bye.

APPENDIX 2

CONSENT FORM FOR INTERVIEWS

Title: Qualitative Collection of Knowledge and Experiences of Policy Derivation and Implementation, Saskatchewan Uranium Mining – 1942-2007.

Researchers: Joseph Muldoon PhD Candidate and Kathleen McNutt PhD

Objectives: The goal of this project is to collect data on the evolution of policy development and implementation surrounding the historical build-up of the uranium mining industry in Northern Saskatchewan. The study timeframe spans from the late 1960's to 2000's. Of particular interest are the policy decisions and programs that came from the public inquiry processes for Cluff Lake and Key Lake mines in the late 1970's and the McClean, McArthur, Cigar Lake and Midwest projects from the 1990's. This research will assist in better understanding regarding policy development in these time periods to inform policy development and processes into the future.

Procedures: In the course of this interview, you will be asked a series of questions regarding your knowledge and personal experiences regarding the review processes, decisions and policy initiatives that resulted in the uranium mining industry build-up. Your responses will be recorded and transcribed. Your contribution will not be identifiable after this interview session. The study will consist of one interview session approximately 60 - 90 minutes in length. The interview process should take about one hour by telephone or in person.

Risks: The data from the interview process when used in this research will not be attributed to any individual. However, there may be a risk that someone reading the research document(s) may attribute the sources to your interest group or possibly to individual participants. As you are aware, there may social and political sensitivities associated with the development of the uranium nuclear industry in Saskatchewan and there may be associated risks. Risks will be addressed by ensuring that data presented from the interviews will be generalized. Each participant will also have the ability to not answer any questions that they are not comfortable with or to completely withdraw from the process at any time.

Right to Withdraw: During the interview process, the participant is free to refrain from answering any questions that may be sensitive. The participant is free to completely withdraw from the interview at any time and any prior contribution will be destroyed if the participant wishes. Your right to withdraw data from the study will apply until the data has been pooled (approximately 4 weeks after the interview). After this date, it is possible that some pooled data will have occurred and it may not be possible to withdraw your data.

Confidentiality: The interviews will be taped and the interviewer will be taking notes. If you wish to have a copy of the transcript it will be sent to you via mail or e-mail. None of the information that you provide will be attributed directly to you. The tapes and

transcripts will be held in confidence and stored in a secure facility. The tapes and data will be destroyed upon completion and defense of the dissertation.

Signed Consent:

I understand that this project was approved by the University of Regina Research Ethics Board. Any questions regarding my rights as a participant may be addressed to that committee through the Research Ethics Office research.ethics@uregina.ca. If I have any questions or concerns about my rights or treatment as a research participant, I may contact the Research Ethics Board (306) 585-4775. Out of town participants may call collect.

I, _____ have read the above protocol and voluntarily agree to participate. The procedure and goals of the study have been explained to me by the researcher and I understand them. I understand that I am free to withdraw from this study anytime without penalty. I also understand that although the data from the study may be published, my identity will be kept confidential.

To obtain results from the study, please contact: muldoonj@uregina.ca or muldoon@src.sk.ca

Your signature below indicates that you have read and understand the description provided; I have had an opportunity to ask questions and my questions have been answered. I consent to participate in the research project. A copy of this Consent Form has been given to me for my records.

Name of Participant Signature Date

Researcher's Signature Date

A copy of this consent will be sent to you, and a copy will be retained by the researcher

APPENDIX 3

INTERVIEW QUESTIONS - SASKATCHEWAN URANIUM MINING QUALITATIVE COLLECTION OF KNOWLEDGE AND EXPERIENCES OF POLICY DERIVATION AND IMPLEMENTATION

Interviewees Background

Can you tell me when you became involved with the uranium mining area and in which processes you were involved?

1. How long have you had an interest in and been involved with uranium mining in Saskatchewan?
2. Were you involved with the Cluff Lake and/or Key Lake inquiries? McClean Lake, Midwest, Dominique-Janine Extension – early 1990's? Midwest, Cigar – mid/late 1990's? If so, how were you involved?
3. What opportunities were available to you and/or the public for input into the approval process for the Rabbit Lake mine opened in 1975 versus Cluff, Key Lake and the others in the 1990's?

Interests

Why were you interested in participating? What were your primary interests and others?

4. Did/do you have a primary interest? If so, what was it?
5. Were the issues primarily weapons related (export of uranium for weapons and/or uncontrolled exports) or were they environmental and social? Was one more important than the other? Did the importance change from earlier panels to those in the 1990's? Did they become integrated? If so, when, why and how?
6. Who were the major interests that were involved? Did they change or membership or evolve? If so, how and why?
7. Was there an anti-nuclear/mining interest that took on and/or partnered with an environmental interest? If so, how did the integration occur? Were there any coalitions that

8. Were northern social and economic initiatives important? If so, why and how were they taken into account?
9. How significant was the government/Ministerial/Cabinet interest in the uranium mining policy area?
10. What group/interests had the most influence? Who was the most important? Can you rank them?

Federal/Provincial Relations

11. What has been your experience with the federal/provincial processes, relationship and policies regarding uranium mining?

Outcomes

Were the processes successful? Did/do you consider that your interests were heard and you/your group had an influence on the outcomes?

12. Do you think you had an influence? Did your influence increase or decrease or not change?
13. Did participation opportunities increase/ decrease or stay the same?
14. Did your level of understanding regarding the various issues increase as a result of the various panel hearings, public meetings and other participation methods utilized?
15. Did the panel members' understanding of issues increase as the panel process proceeded through the mine reviews? Did government's understanding increase?
16. Did the decisions (i.e. conditions of approval, northern program initiatives, targets) made by government get more complex in later years?
17. Were the policy decisions and outcomes more successful if/as they evolved?

Final

18. **What else can you tell me about the evolution of decision making on uranium mining from the 1970's to present? Are there pieces that I am missing?**

APPENDIX 4
RESEARCH ETHICS BOARD
CERTIFICATE OF APPROVAL

PRINCIPAL INVESTIGATOR Joseph Muldoon	DEPARTMENT Johnson-Shoyama Graduate School of Public Policy	REB# 2014-129
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SUPERVISOR
Dr. Kathy McNutt

FUNDER(S)
Unfunded

TITLE
Qualitative Collection of Knowledge and Experiences of Policy Derivation and Implementation – Saskatchewan Uranium Mining

APPROVAL OF Consent Form for Interviews Script for Initial Contact with Potential Participants Draft Interview Questions	APPROVED ON September 2, 2014	RENEWAL DATE September 2, 2015
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Full Board Meeting
Delegated Review

CERTIFICATION

The University of Regina Research Ethics Board has reviewed the above-named research project. The proposal was found to be acceptable on ethical grounds. The principal investigator has the responsibility for any other administrative or regulatory approvals that may pertain to this research project, and for ensuring that the authorized research is carried out according to the conditions outlined in the original protocol submitted for ethics review. This Certificate of Approval is valid for the above time period provided there is no change in experimental protocol, consent process or documents.

Any significant changes to your proposed method, or your consent and recruitment procedures should be reported to the Chair for Research Ethics Board consideration in advance of its implementation.

ONGOING REVIEW REQUIREMENTS

In order to receive annual renewal, a status report must be submitted to the REB Chair for Board consideration within one month of the current expiry date each year the study remains open, and upon study completion. Please refer to the following website for further instructions: <http://www.uregina.ca/research/REB/main.shtml>



Dr. Larena Hoerber, Chair
University of Regina
Research Ethics Board

Please send all correspondence to:

Office for Research, Innovation and Partnership
University of Regina
Research and Innovation Centre 109
Regina, SK S4S 0A2
Telephone: (306) 585-4775 Fax: (306) 585-4893 research.ethics@uregina.ca

APPENDIX 5

URANIUM DEVELOPMENT PARTNERSHIP 2009 RECOMMENDATIONS

Exploration and Mining

Key findings:

- a. Saskatchewan's leadership position in uranium mining is threatened by emerging players, such as Kazakhstan and Australia that are rapidly ramping up their production.
- b. World demand for primary uranium will grow substantially over the next 10 years, creating an opportunity for Saskatchewan to rapidly expand its mining sector and to maintain its position as a leader in uranium mining.
- c. To achieve this goal, Saskatchewan will need to renew its discovered resource base by maintaining the level of private exploration investment reached in recent years and investing in mine development.
- d. Exploration activity is cyclical. When the spot price of uranium is high, companies increase their exploration activities substantially. This trend is facilitated by the claim-staking system that creates an environment with low entry barriers.
- e. The process to fulfill the duty to consult with First Nations and Métis communities is not sufficiently defined. The lack of a clear process may create an impediment to further exploration and/or development in the Province.
- f. The basic royalty system in Saskatchewan appears competitive but, when the price of uranium is high, the tiered royalty structure creates a higher burden for mining operations based in Saskatchewan than for those in other jurisdictions.
- g. This tiered royalty structure risks impeding the competitiveness of newer mines given that: 1) mine operating costs have increased more rapidly than the inflation index used to adjust the royalty structure; and 2) the next generation of deposits to be mined may be of lower quality and, therefore, have higher operating costs.
- h. A strong and effective licensing and environmental assessment process is paramount to ensure the safety of workers and the public, as well as to protect the environment. However, the public is not well-served by lengthy delays in environment assessment approvals.
- i. The lack of basic infrastructure in the North, particularly roads and power, is likely to impede further mine developments.
- j. Federal restrictions on foreign ownership may limit the ability of the Province to attract capital for exploration and mining; the Competition Policy Review Panel formed by the Federal Government recommended in June 2008 that these restrictions be selectively removed on a bilateral basis. Sustaining Saskatchewan's leadership position in exploration and mining would have a significant impact on the Province's economy, contributing a total estimated GDP impact of \$4.2 billion over 15 years.

Recommendations

Saskatchewan should:

1. Maintain its current claim-staking system to provide a favorable environment for exploration.
2. Work with the Federal Government to establish clear parameters and accountabilities for the duty to consult with First Nations and Métis communities.
3. Examine the possibility of expanding its program incentives for exploration (e.g., flow-through shares, tax credits, and matching grants) to drive through-cycle investment decisions based on long-term uranium forecasts rather than spot prices.
4. Undertake a review of the competitiveness of the royalty system in relation to other jurisdictions, with a focus on whether:
 - The capital recovery bank correctly reflects the current cost of developing new projects in Saskatchewan.
 - The royalty rate is sufficiently competitive and reflects the costs of extracting the resource.
5. Work with the Federal Government to establish clearer timelines and guidelines for a thorough, consistent, and predictable review of license applications.
6. Work with the Federal Government to ensure the recommendations of the Competition Policy Review Panel are implemented.
7. Work with industry to prioritize and facilitate the development of key infrastructure to create an environment favourable to new mine development.

Upgrading

Key findings:

l. Anticipated growth in global demand for conversion will likely be met by expansions to existing facilities, most notably in the United States and France, with additional potential capacity planned in Kazakhstan.

m. The projected supply and demand balance in the enrichment sector indicates the need for additional capacity by 2020.

n. Entering the enrichment sector would present significant challenges for Saskatchewan: 1) a new facility in Saskatchewan would require significant capital expenditure but would compete against lower-cost and more flexible expansions of existing facilities; and 2) Canada would need the consent of the

Nuclear Suppliers Group to obtain a transfer of enrichment technology.

o. Over a longer time horizon, Saskatchewan may have an opportunity to enter the enrichment sector by partnering with a developer of the emerging laser enrichment technology and then, should the technology prove successful, setting up an early commercial-scale project in the Province.

p. Anticipated growth in global demand for fuel fabrication will likely be met by increasing utilization of existing plants and potential capacity addition in countries aggressive about nuclear power development.

Recommendations

Saskatchewan should

8. Work with the Federal Government to clarify the framework under which an enrichment facility could be established in the Province in accordance with all international non-proliferation agreements and obligations.

9. Target the next generation of enrichment technology (laser isotope separation) and enter into discussions with current technology developers to determine the conditions under which a commercial-scale facility could be attracted to the Province within 10 to 15 years.

10. Not proactively pursue the development of a conversion facility given current market conditions.

11. Not proactively pursue the development of a fuel fabrication facility given current market conditions.

Power Generation

Key findings:

- q. The growing demand for electricity and the planned decommissioning of existing generation facilities indicate that Saskatchewan will require 1,200 to 1,750 MW of new power generation capacity for its domestic use by 2020, growing to 2,200 to 3,000 MW by 2030.
- r. At a regional level, significant potential exists for exports - for example, Alberta could need between 4,000 and 5,000 MW of new power generation by 2020. Saskatchewan is well-positioned to provide low-carbon emission power to fill this looming supply gap.
- s. Given consensus estimates of long-term CO₂e (equivalent carbon dioxide) and natural gas pricing, nuclear is a cost-competitive and low-emission power generation option.
- t. Initial examination suggests that up to approximately 3,000 MW of nuclear capacity could be constructed to meet Saskatchewan's power needs and capture export opportunities.
- u. Given that a nuclear power plant has not been previously built in Saskatchewan, further work needs to be done to understand the social, environmental, and grid feasibility of adding nuclear power in the Province.
- v. Capital cost overruns and schedule delays are key risks in any nuclear new build project, and they would need to be carefully mitigated in the project development process. To date, the cumulative risks of nuclear new build have been too large for the private sector to bear alone and governments have played some form of facilitation in the implementation of nuclear power projects in all jurisdictions.
- w. Saskatchewan could reduce licensing and first-of- a-kind risks by drawing on the recent experiences of other Canadian provinces that have developed nuclear generation capacity.
- x. Transmission Infrastructure, reserves, and inertia investments would be required to support larger power generation units on the Saskatchewan grid, as well as to provide the capability to export additional power to Alberta. The detailed nature and cost of this infrastructure has yet to be determined.
- y. A new power plant would have a significant impact on Saskatchewan's economy, contributing approximately \$12 billion in discounted GDP to the Province over its life (\$1.2 billion during construction and \$10.6 billion during operation), as well as employing 3,000 people during construction and providing between 400 and 700 direct jobs during operation for every unit built.

Recommendations

Saskatchewan should

12. Include nuclear as part of the Province's long-range energy mix given its cost-competitiveness as a baseload power alternative and the economic value it would generate within the Province.

13. Begin this long-range planning process by:

- Laying out an overall process and timeline for new generation implementation.
- Considering the development, in coordination with Alberta, of a common power generation solution for the two Provinces by pooling their power needs and building stronger interties between the two provincial grids.
- Defining the role that the Provincial Government would play and developing a strategy to optimize the balance between expected power pricing and Saskatchewan ratepayers' exposure to cost overruns.
- Evaluating the type of grid, reserve, and inertia upgrades required under both a domestic and an export power generation scenario to meet growing electricity demand, independent of supply mix. Consider the implications of nuclear power generation on these infrastructure upgrades

Used fuel management

Key findings:

z. Reprocessing CANDU fuel based on current technology is commercially unattractive for private investment, given the high capital and operating costs that offset potential economic benefits from recycling plutonium and reducing the volume of high-level waste for disposal.

aa. In the longer term, if reprocessing becomes viable in Canada because of a step-change in reprocessing economics or, more likely, a change in Federal policy, a Saskatchewan- based reprocessing facility may have substantial local and regional economic benefits given the magnitude of expenditure and employment associated with the facility.

bb. Federal legislation ensures that the costs of long-term used fuel management will be fully funded by the industry.

cc. The Government of Canada has approved the Nuclear Waste Management Organization's Adaptive Phased Management approach incorporating the development of a centralized deep

geological repository in Canada for the long-term management of used fuel.

dd. The NWMO will be initiating a site selection process after 2009.

ee. Given its favourable geology and current participation in the nuclear fuel cycle, Saskatchewan is one of the four provinces the NWMO has identified as a potential host of the Canadian long-term repository.

ff. Past experience in other jurisdictions has shown that acceptance of a local host community is the most important factor for the successful siting of such a repository in a geologically suitable location.

gg. The potential benefits to that community and to the Province of hosting the facility would be significant, including early benefits from research and development, peak employment (4,000 to 6,000 direct and indirect jobs) during construction, sustained employment (~900 jobs) during operations and monitoring, and approximately \$2.4 billion in discounted cumulative GDP impact.

Recommendations

Saskatchewan should

14. Not proactively pursue the development of PUREX (plutonium and uranium recovery extraction) and MOX (mixed oxide fuel containing plutonium) reprocessing facilities in the short term. This position should be revisited if there is a significant change in Federal policy regarding long-term fuel storage or the full cycle economics of reprocessing.

15. Support the NWMO consultation and siting process, given the potential benefits of a geological repository, while maintaining flexibility with regard to its ultimate participation.

16. Support any willing host community that comes forward through this process and, as appropriate, support the development of the deep geological repository in the context of a broader nuclear development strategy

Research, development and training

Key findings:

hh. There is a shortage of specialists in the earth, environmental, and engineering sciences to support the activities of the uranium exploration and mining industry.

ii. If a nuclear power generation facility is built, Saskatchewan would also require that existing academic nuclear engineering and physics programs be expanded to support the training of nuclear specialists and operators.

jj. An academic centre of excellence should involve the social sciences and environmental disciplines to assist communities in assessing nuclear opportunities.

kk. Saskatchewan could play a role in a number of R&D opportunities with longer-term commercialization prospects, including small reactors and advanced fuel cycle technologies. A research reactor could serve as a catalyst for these activities.

ll. A research reactor is synergistic with existing research infrastructure and would provide Saskatchewan with significantly enhanced research capabilities, supporting innovation, competitiveness, and the Province's participation in the development of emerging technologies.

mm. A research reactor may also be used to produce medical isotopes to address the anticipated global deficit in isotope supply, providing an additional stream of revenue to partly offset the cost of developing and operating the reactor.

nn. Although medical isotope production provides an attractive source of revenue for a research reactor, the economics of a stand-alone isotope reactor are not attractive.

Recommendations

Saskatchewan should

17. Create and support a centre of excellence for nuclear research and training with a dual mission of: 1) supporting the existing nuclear industry in Saskatchewan; and 2) developing a nuclear R&D program to support emerging opportunities, with a few focused areas of research on longer-term commercialization prospects.

18. Under the first part of this mission, expand existing:

- Mining and exploration programs at universities, colleges, and training schools to train engineers, geoscientists, and other mining specialists and to develop innovation through research in the earth, environmental, engineering, and social sciences relevant to the exploration and mining sectors.
- Nuclear engineering and physics programs at universities and establish training facilities to help prepare students for the CNSC (Canadian Nuclear Safety Commission) nuclear operator examination.

19. Under the second part of this mission, form a group of experts to determine investment priorities in a few targeted areas of nuclear research. This group should review the most promising areas of research based on the type of skills and infrastructure required, the investment necessary to be competitive, the potential for private funding, and the prospect for

commercialization. Areas to be considered by this group include, but are not limited to, small reactors and advanced fuel cycle technologies.

20. Partner with the Federal Government to pursue the construction of a research reactor in the Province as a complement to synergies with existing research infrastructure and capabilities, and to better position the Province to participate in multiple areas of study. Pursue medical isotope production as part of the reactor's mandate.

APPENDIX 6

FUTURE OF URANIUM PUBLIC CONSULTATION PROCESS

DAN PERRINS, CHAIR

The Uranium Development Partnership (UDP) was mandated to identify, evaluate and make recommendations on Saskatchewan-based value added opportunities to further develop our uranium industry (Capturing the full potential of the uranium value chain in Saskatchewan, Uranium Development Partnership, March 31, 2009, p. i). As such, the UDP Report was limited to a discussion of the uranium value chain and did not explore power generation options beyond the potential for nuclear power.

Early in the consultation process, as the previous section of this report shows, it became clear that people are particularly interested in discussing the power needs of the province and options that respond to this need in a safe, cost-effective, environmentally sustainable way. Consequently, while all elements of the UDP report received comment, the report itself was not always the focus of discussion.

While my mandate does not include making recommendations about further action regarding uranium industry development, I am supposed to make recommendations regarding further public consultations and/or the provision of further information to the public. Consistent with what I heard, my recommendations speak to what I see as the primary information needs of the public, including mechanisms for ensuring public access to this information.

Power Generation

With some exceptions, those consulted express significant opposition to nuclear power generation primarily due to concerns about the environmental impacts, health and safety of the public, potential cost and management of waste. Furthermore, there is considerable interest in alternative energies, in particular, wind and solar. Renewable energy sources are seen as more financially feasible, with few health and safety risks, and of potential benefit to the economy in terms of job creation.

Many people express frustration with the UDP Report's limited mandate and wonder why Government started with a nuclear discussion rather than examining all the options for power generation in the province. There is significant support for expanded research and development in the area of alternate energy sources and for a study, similar to the UDP, on the potential for renewables.

People want to know what the power needs of the future will be and what the best options, or mix of options, are for responding.

There was very little discussion about the potential implications of a carbon tax or cap and trade and the possible increased cost to the consumer, which could result if the province continues to burn coal as its primary power source.

Even with an increased focus on conservation, the province's power needs are likely to grow and with the international focus on climate change and the need to reduce carbon emissions. As such, it is unlikely the province can continue with a status quo approach to power generation.

New generation, regardless of type, requires advanced planning. Saskatchewan needs to position itself to proactively make decisions for our future.

People and governments need comparable, accurate, detailed information about the options, costs and risks.

The link between nuclear power generation and waste management is an important one for participants in the public consultation process. People link discussion of power generation with waste management, saying that the two must be considered together. Health, safety, environmental, and cost concerns about nuclear power generation are often extended to nuclear waste as well. Thus, any information provided on power generation should also include information about managing the resulting waste.

Recommendation 1

I recommend the Government of Saskatchewan develop a consolidated report on all power generation options and make this report available to the public. This report should:

- inform the public about the current and projected power needs of the province;
- outline the power generation options being explored in other jurisdictions including Canada, Europe and the United States;
- outline options for future power generation including:
 - expanded use of renewables, with particular emphasis on wind and solar, but also hydro, geothermal, bio-mass and any other options;
 - expansion of natural gas and polygeneration, clean coal and carbon capture and sequestration;
 - nuclear power generation;
 - increased energy conservation efforts; and
 - continued use of coal.
- document the health, safety, environmental and economic considerations for each of the above options;
- outline the costs associated with each of the options including initial capital investment, transmission costs, operating costs, the cost of storage for renewable sources such as solar or wind; costs associated with nuclear waste; and decommissioning costs;
- provide a comparable projection of the estimated costs to the consumer for each of the options;
- include a potential delivery discussion for each of the options including an expanded role for SaskPower and/or public-private partnerships; and
- explain the current global discussion regarding carbon taxation, cap and trade, and the implications of both.

Consistent with its mandate, SaskPower has been monitoring developments in other jurisdictions and assessing the potential for application to Saskatchewan. SaskPower provided information on its supply plan and future generation needs to the Uranium Development Partnership and as part of the public consultation process. SaskPower has acknowledged it has been exploring options and the need to make crucial decisions on future supply.

Recommendation 2

I recommend SaskPower publicly release any existing analyses it has already undertaken regarding provincial power needs, the current state of its infrastructure, and future options for response.

Recognizing that there are limitations to what can be released publicly because of confidentiality and contractual obligations, and knowing that much technical information around power is difficult for nonexperts to understand, this information should be in a format easily accessible to the public.

Health

Across Saskatchewan, people express significant concern for the health of the population in the event of nuclear development. In particular, they are concerned about the health of children and industry workers and the need to protect future generations.

Much information on health impacts was presented, many different views were expressed, and health studies conducted in Germany were frequently cited with differing interpretations of the findings.

Recommendation 3

I recommend the Government of Saskatchewan commission a study to review the current research on the health impacts of nuclear power and that this study, and a publicly consumable summary version, be publicly released.

Medical Isotopes

The production of medical isotopes is very topical due to shut down of the Chalk River facility in Ontario and the consequent worldwide shortage. Here in Saskatchewan, the provincial government and the University of Saskatchewan have developed and submitted a proposal to the Government of Canada's Expert Review Panel to establish the Canadian Neutron Source to produce medical isotopes, act as a research reactor and facilitate establishment of a national academic centre for nuclear research and development.

The public consultation process reveals that people are split on this issue with some people indicating Saskatchewan should go ahead and produce medical isotopes and others being opposed. Some argue that medical isotopes can be produced without a nuclear reactor, or without nuclear fission.

This area is currently the subject of considerable research and development and there are both proven technologies and emerging ones. Clearly, the Government of Saskatchewan is interested in establishing the Canadian Neutron Source in Saskatoon and is awaiting feedback on its proposal to the federal government. There is a pressing need to enhance the public's

understanding of isotope production and its use in health care. People also need to understand the nature of the Saskatchewan proposal.

Recommendation 4

I recommend the Government of Saskatchewan initiate a public information campaign regarding the production and use of medical isotopes. Information should answer the following questions:

- What are medical isotopes and what are they used for?
- How are they made?
- Who produces isotopes, what is their production status, what technology are they using and how much do they cost?
- What type of imaging technology is required in medical facilities, what is the availability of such technology and what are the costs?
- What is proven technology and what is emerging?
- What is the proposed Canadian Neutron Source, what will it produce, what technology will it use, what will it cost, and how is it similar or different from proposals submitted by other jurisdictions?

The Federation of Saskatchewan Indian Nations (FSIN) takes the position that any consideration of any aspect of the uranium value chain triggers the Crown's duty to consult and accommodate First Nations, which must occur at the strategic planning stage before any decisions are made, recognizing that public and stakeholder consultation processes are insufficient to discharge the Crown's duty to consult and uphold Crown honor.

Recommendation 5: First Nations

I recommend that a separate First Nations consultation process be established for consultation and accommodation on any aspect of the uranium value chain, including the Uranium Development Partnership report, in accordance with the unified *First Nations Strategy on Consultation, Accommodation and Resource Revenue Sharing*.

The Athabasca Denesuline First Nations indicated in the Stony Rapids, Fond du Lac and Wollaston Lake meetings their opposition to any further uranium industrial development until the provincial government reaches accommodation and reconciliation with the Athabasca Region respecting treaty and Aboriginal rights and land, water, and resource management issues.

Recommendation 6: Athabasca Basin

I recommend a First Nations consultation process be established in the Athabasca Basin for consultation and accommodation on any aspect of the uranium value chain, including the Uranium Development Partnership report, in accordance with the Athabasca Regional Government's *An Agreement Respecting: a Protocol Establishing the Framework for the Crown's Duty to Consult and Accommodate and A Resource Development Project Review and Approval Process*.

The Métis Nation – Saskatchewan takes the position that any consideration of any aspect of the uranium value chain triggers the Crown’s legal duty to consult.

Recommendation 7: Métis Nation-Saskatchewan

I recommend that a separate Métis consultation process be established for consultation and accommodation on any aspect of the uranium value chain, including the Uranium Development Partnership report.

Need for More, Better Information

At every meeting, I was told more information is needed in a variety of formats, and from a variety of trustworthy sources, so people and governments can formulate options and make informed decisions.

People access information in different ways. While there is information available on the Internet from a wide range of academic, environmental and other sources, many people do not have Internet access and even if they do, it is difficult to know whether the cited research and information is valid or reliable.

People told me there is a need for information from independent experts who do not have a stake in nuclear power or uranium. To maximize information exchange, dialogue, and debate, a variety of sources need to be accessed, a number of forums created and information distributed broadly in publicly consumable language so that people, and governments, can be properly informed. Radio, television, newspapers, videos, pamphlets, brochures, libraries and Internet sites should all be used. There is also a need to regularly collect information from the public about their information needs.

While more than 2,600 people attended public meetings and almost 1,300 other submissions were sent to me including letters and email; it is important that we do not lose sight of the fact that many people did not participate in this consultation process and they need information and future opportunities to engage in this essential discussion.

As well, the process I used was a non-deliberative approach whereby the views of the public and organizations were solicited, but competing views were not debated. Deliberative approaches need to be found to facilitate multi-way communication, allow for the education of participants and provide opportunities to listen, respond and debate. One key mechanism for information and debate will be the upcoming inquiry, approved by the legislative assembly on April 29, 2009 as follows:

That the Standing Committee on Crown and Central Agencies, in accordance with Rule 147(3) of The Rules and Procedures of the Legislative Assembly of Saskatchewan, shall conduct an inquiry to determine how the province can best meet the growing demand for electricity in a manner that is safe, reliable, environmentally-sustainable and affordable for Saskatchewan residents; and, That the said committee shall conduct public hearings to receive representations from interested individuals and groups; and further, That the said committee may, notwithstanding Rule 147(4), report its recommendations to the Assembly at a date determined by the committee (Hansard, Government of Saskatchewan, 26th Legislature, April 29, 2009).

In the short term, these hearings will facilitate continued public discussion, debate and information exchange. However, other forums are also necessary to ensure new research is disseminated, ongoing dialogue occurs, and the public is informed.

Recommendation 8

I recommend forums be organized on an ongoing basis to facilitate dialogue, debate, publication and information dissemination through the media. This should include, but not be limited to, the hosting of conferences, by the Government of Saskatchewan and the two universities to:

- discuss nuclear generation, environmental health and community health; and
- explore other options for future power generation including:
 - expanded use of renewables, with particular emphasis on wind and solar, but also hydro, geothermal, bio-mass and any other options;
 - expansion of natural gas and polygeneration, clean coal and carbon capture and sequestration;
 - increased energy conservation efforts; and
 - continued use of coal.

Recommendation 9

In order to make the best information available, I recommend the Government of Saskatchewan use mechanisms such as surveys, focus groups and polling on an ongoing basis to assess the knowledge, understanding, information needs and views of the public.

APPENDIX 7

THE GOVERNMENT'S STRATEGIC DIRECTION ON URANIUM

DEVELOPMENT

Saskatchewan has over one billion pounds of identified uranium resources, second only to Australia, and has been mining uranium continuously for 56 years. The province is the world's leading uranium producer, accounting for one-fifth of global production.

The government established the Uranium Development Partnership (UDP) in October 2008, with a mandate to identify, evaluate, and make recommendations on Saskatchewan-based value-added opportunities to further develop the province's uranium industry. The UDP presented its report to government on March 31, 2009, in which it provided recommendations for capturing growth opportunities across the uranium value chain.

On April 8, 2009, the government announced the Future of Uranium in Saskatchewan Public Consultation Process. Dan Perrins, a long-time civil servant was appointed Chair of the Process, and was directed to lead an independent consultation process focused on the recommendations made by the UDP. Mr. Perrins was to document, and report to government what he heard from the people of Saskatchewan about the UDP's recommendations throughout the consultation process. Mr. Perrins submitted his report to government in mid-September 2009.

At the end of July, 2009, the Government of Saskatchewan in partnership with the University of Saskatchewan (U of S) submitted to the Government of Canada's Expert Review Panel on Medical Isotope Production a proposal to develop the Canadian Neutron Source (CNS) at the U of S to:

- supply medical isotopes to meet Canada's health care needs and for export; and
- provide neutron beams for Canadian neutron science research and industrial applications.

The proposal was in response to Natural Resources Canada's (NRCan) Call for Expressions of Interest (EOI) to supply isotopes in the medium and long-term. The Expert Review Panel submitted its report to NRCan at the end of November 2009. NRCan will review the panel's report before making any decisions.

The government's general strategic direction on uranium includes:

Actively supporting uranium mining and exploration;

Encouraging investment in nuclear research, development and training opportunities, specifically in the areas of mining, neutron science, isotopes, small scale reactor design, and enrichment;

Reserving decisions on supporting Saskatchewan communities interested in hosting nuclear waste management facilities to when such proposals are advanced in a regulatory process;

Not endorsing Bruce Power's November 2008 proposal for a large scale nuclear power plant in Saskatchewan at this time, but encouraging the company to consider working with industry and government on opportunities that may arise from research into innovative reactor designs for implementation after 2020; and

Directing SaskPower to continue including nuclear power in the range of sustainable energy options available for additional baseload generation capacity in the medium and long term after 2020. SaskPower's proposed options will be outlined in the strategy it is preparing as part of a fall Throne Speech commitment and will take into consideration the final report from the Standing Committee on Crown and Central Agencies on Saskatchewan's future power needs.

Summary of responses to the Uranium Development Partnership Report Recommendations

The UDP Report, its executive summary and the report's recommendations can be found at www.saskuranium.ca.

UDP Recommendations on Exploration and Mining (Recommendations 1-7)

The government agrees with six of the UDP's seven recommendations in this area. It will examine its program incentives and competitiveness of its royalties, work with the federal government on a more thorough review of licence applications and on implementation of the recommendations of the federal competition policy review panel. It will work with industry on the infrastructure needed for new mine development. It is opposed to the UDP's recommendation on maintenance of the current physical claim staking system, given the investment already made in developing an electronic claim staking system.

UDP Recommendations on Upgrading (Recommendations 8-11)

The government agrees with all four of the UDP's recommendations in this area. It supports working with the federal government to clarify the framework under which an enrichment facility could be established in the province. It agrees with targeting the next generation of enrichment technology (laser isotope separation) and talking to industry about conditions under which a commercial-scale facility could be attracted to Saskatchewan within 10 to 15 years. It retains the ability to pursue development with industry of either a conversion facility or a fuel fabrication facility, as market conditions allow.

UDP Recommendations on Power Generation (Recommendations 12 and 13)

The government agrees with the UDP's recommendation that nuclear should be considered in the province's long-range energy mix. It does not agree with the UDP's recommendation (#13) on how a long-range planning process should proceed. The

government instead supports the long-range planning that SaskPower is currently undertaking on electrical needs in the post 2020 period.

It is in this context that the government is not supporting Bruce Power's proposal for a large scale nuclear power plant at this time. Based on SaskPower's current demand forecast and power generation strategy and the options available, the government cannot support the addition of 1,000 megawatts as proposed from a single nuclear reactor.

UDP Recommendations on Used Fuel Management (Recommendations 14-16)

The government generally supports the three recommendations in this area. It still reserves decisions and its options around a geological repository for nuclear waste and communities that might want to host such a facility, while acknowledging the Nuclear Waste Management Organization's consultation and siting process in this regard. It agrees with not pursuing PUREX (plutonium and uranium recovery extraction) and MOX (mixed oxide fuel containing plutonium) reprocessing facilities at this time.

UDP Recommendations on Research, Development and Training (Recommendations 17-20)

The government agrees with all four recommendations in this area, supporting the concept of a nuclear research centre of excellence and expanded mining and exploration programs at academic institutions. It supports determining investment priorities in targeted areas of nuclear research and in partnering with the federal government on a research reactor that would produce medical isotopes.

Responses to the Recommendations from the Future of Uranium Public Consultation Process (The "Perrins Report")

The Perrins Report and its recommendations can be found at www.saskuranium.ca.

The government agrees with the general recommendation from the report on public consultations that additional information and consultation are required around any future decision to pursue nuclear power. At the same time, it acknowledges that significant consultation has already occurred and is occurring, not only through the recent public consultation process, but also in connection with earlier uranium mining decisions, through regular public polling and surveying and through the work of the Standing Committee on Crown and Central Agencies.

The government believes the recommendations on special consultations with First Nations and Métis peoples are being addressed through the government's efforts to develop a new First Nations and Métis Consultation Policy Framework.

Government Responses to Each of the UDP Recommendations and to the Recommendations in the Perrins Report

The UDP Recommendations

UDP Recommendation 1: Maintain the current claim-staking system to provide a favourable environment for exploration.

Government Response: The Government of Saskatchewan does not support UDP Recommendation 1.

The government previously decided to adopt an electronic claim staking system consistent with other provinces.

This system is now being developed along with the appropriate legislative changes. It will mean greater efficiency for companies in registering land claims, and also encourage expenditures on the value added work of exploration for minerals.

UDP Recommendation 2: Work with the federal government to establish clear parameters and accountabilities for the duty to consult with First Nations and Métis communities.

Government Response: The Government of Saskatchewan supports UDP Recommendation 2.

This recommendation is already being addressed through the government's ongoing work to develop a new First Nations and Métis Consultation Policy Framework. The lead agency is the Ministry of First Nations and Métis Relations, with input from Energy and Resources and others. Input from First Nations and other key stakeholders is being factored in to the development of this framework.

We understand the federal government is developing its own interim guide on consultation, independent of our work here. Saskatchewan will certainly make every effort to ensure there is consistency and coordination in these initiatives.

UDP Recommendation 3: Examine the possibility of expanding its program incentives for exploration (e.g., flow-through shares, tax credits, and matching grants) to drive through-cycle investment decisions based on long-term uranium forecasts rather than spot prices.

Government Response: The Government of Saskatchewan supports UDP Recommendation 3, and has taken action in this regard for all industries within the mining sector, not just uranium.

The Saskatchewan Mineral Exploration Tax Credit was discontinued in 2006 but then re-enacted in November 2008, retroactively to April 2008.

In addition, in May 2009, the Government of Saskatchewan announced:

- the doubling of exploration credits for mineral dispositions until March 2011;

- the temporary elimination of the second and third year of rent for coal permits;
- the simplification of the grouping rules; and,
- the postponement of a proposed access fee.

UDP Recommendation 4: Undertake a review of the competitiveness of the royalty system in relation to other jurisdictions, with a focus on whether:

The capital recovery bank correctly reflects the current cost of developing new projects in Saskatchewan.

The royalty rate is sufficiently competitive and reflects the costs of extracting the resource.

Government Response: The Government of Saskatchewan supports UDP Recommendation 4. A review of the uranium royalty system will be undertaken over the next year.

The current uranium system was implemented on January 1, 2001.

Overall, the Ministry of Energy and Resources is pleased with how the system has operated but acknowledges it may be time to begin a full review of the system to ensure it remains competitive.

UDP Recommendation 5: Work with the federal government to establish clearer timelines and guidelines for a thorough, consistent, and predictable review of license applications.

Government Response: The Government of Saskatchewan supports UDP Recommendation 5.

Industry and provincial regulatory agencies have long identified the issue of regulatory delay as an added cost and uncertainty in development of new projects. A regulatory regime that does not account for objective cost benefit analysis of level of risk and defined environmental and safety targets creates uncertainty and delay for industry.

The quality of a regulatory regime impacts project development in the province, which in turn has clear economic impacts.

The Council of Mines and Energy Ministers have previously identified this as a priority. Provincial and Territorial Ministers have been working with the Government of Canada to improve the efficiency and effectiveness of federal/provincial/territorial regulatory processes.

UDP Recommendation 6: Work with the federal government to ensure the recommendations of the Competition Policy Review Panel are implemented.

Government Response: The Government of Saskatchewan supports the intent of UDP Recommendation 6, although not the letter.

The Competition Review Panel has recommended conditional removal of the Non-Resident Ownership Policy (NROP).

We see no need for the removal to be conditional. We view this policy as a barrier to foreign investment in the province and have raised these concerns numerous times during its tenure. Saskatchewan has consistently advocated its elimination, not conditional removal.

UDP Recommendation 7: Work with industry to prioritize and facilitate the development of key infrastructure to create an environment favourable to new mine development.

Government Response: The Government of Saskatchewan supports UDP Recommendation 7.

For example, the Ministry of Highways is in the process of developing a comprehensive Northern Transportation Strategy which will fully support recommendation 7.

SaskPower has partnered with industry participants in the past to build transmission infrastructure in Northern Saskatchewan that supported uranium mining development in this remote area of the province.

UDP Recommendation 8: Work with the federal government to clarify the framework under which an enrichment facility could be established in the province in accordance with all international non-proliferation agreements and obligations.

Government Response: The Government of Saskatchewan supports UDP Recommendation 8.

Development or even implementation of enrichment technology is governed by international safeguard agreements as well as trade restrictions and barriers.

Given the safeguard and trade implications, the development of an enrichment opportunity will require participation of Saskatchewan, Canadian, U.S. governments and in certain cases other international cooperation.

UDP Recommendation 9: Target the next generation of enrichment technology (laser isotope separation) and enter into discussions with current technology developers to determine the conditions under which a commercial-scale facility could be attracted to the province within 10 to 15 years.

Government Response: The Government of Saskatchewan supports UDP Recommendation 9. The Government of Saskatchewan is open to working with potential investors on enrichment projects, with the hope that the investment climate may lead to an earlier timetable for new plants than articulated within the UDP report.

UDP Recommendation 10: Not proactively pursue the development of a conversion facility, given current market conditions.

Government Response: The Government of Saskatchewan supports UDP Recommendation 10.

However, we remain open to working with potential investors on conversion projects, with the hope that the investment climate may lead to an earlier timetable for new plants than articulated within the UDP report.

UDP Recommendation 11: Not proactively pursue the development of a fuel fabrication facility, given current market conditions.

Government Response: The Government of Saskatchewan supports UDP Recommendation 11.

We agree with UDP's assessment of current market conditions. However, the Government of Saskatchewan remains open to working with potential investors on fabrication projects in the event that the investment climate improves. This may lead to an earlier timetable for new plants than articulated within the UDP report.

UDP Recommendation 12: Include nuclear as part of the province's long-range energy mix given its cost-competitiveness as a baseload power alternative and economic value it would generate within the province.

Government Response: The Government of Saskatchewan supports UDP Recommendation 12.

A commitment was made in the fall 2009 Throne Speech to develop an electrical strategy that addresses the province's long-range energy mix for the post 2020 period.

SaskPower is directed to include nuclear power in its deliberations, as a technology option for meeting long-term needs. The eventual report from the Standing Committee on Crown and Central Agencies will be factored into the SaskPower electrical strategy.

UDP Recommendation 13: Begin this long-range planning process by:

- Laying out an overall process and timeline for new generation implementation.
- Considering the development, in coordination with Alberta, of a common power generation solution for the two Provinces by pooling their power needs and building stronger interties between the two provincial grids.
- Defining the role that the Provincial Government would play and developing a strategy to optimize the balance between expected power pricing and Saskatchewan ratepayers' exposure to cost overruns.
- Evaluating the type of grid, reserve, and intertie upgrades required under both a domestic and an export power generation scenario to meet growing electricity demand, independent of supply mix. Consider the implications of nuclear power generation on these infrastructure upgrades.

Government Response: The Government of Saskatchewan does not support UDP Recommendation 13.

This UDP recommendation provides for a sound regional planning approach that reflects a strong commitment to proceed with a large scale nuclear power plant.

The Government of Saskatchewan has decided against proceeding with a large scale nuclear power plant, as proposed by Bruce Power, at this time.

A commitment was made in the fall Throne Speech to develop an electrical strategy that addresses the province's long-range energy mix for the post-2020 period.

SaskPower is directed to include nuclear power in its deliberations as a technology option for meeting long-term needs. The pending report from the Standing Committee on Crown and Central Agencies will be factored into the SaskPower electrical strategy.

UDP Recommendation 14: Not proactively pursue the development of PUREX (plutonium and uranium recovery extraction) and MOX (mixed oxide fuel containing plutonium) reprocessing facilities in the short term. This position should be revisited if there is a significant change in federal policy regarding long-term fuel storage or the full cycle economics of reprocessing.

Government Response: The Government of Saskatchewan supports UDP Recommendation 14.

Canada's nuclear policy position does not allow for the development of plutonium reprocessing facilities in Canada, and instead supports the long term storage of used nuclear fuel on a "once through" basis.

UDP Recommendation 15: Support the NWMO consultation and siting process, given the potential benefits of a geological repository, while maintaining flexibility with regard to its ultimate participation.

Government Response: The Government of Saskatchewan supports UDP Recommendation 15.

Saskatchewan respects and supports the Nuclear Waste Management Organization (NWMO) consultation and siting process, Adaptive Phased Management for the long term care of used nuclear fuel.

This process has been adopted by the Government of Canada under the 2002 Nuclear Waste Act.

The Government of Saskatchewan has no intention of becoming a project developer of a nuclear waste management facility.

UDP Recommendation 16: Support any willing host community that comes forward through this process and, as appropriate, support the development of the deep geological repository in the context of a broader nuclear development strategy.

Government Response: The Government of Saskatchewan generally supports UDP Recommendation 16.

However, the Government of Saskatchewan reserves its decision to support any willing host community until a proposal has been developed and put forward within a regulatory process.

UDP Recommendation 17: Create and support a centre of excellence for nuclear research and training with a dual mission of:

- supporting the existing nuclear industry in Saskatchewan; and,
- developing a nuclear R&D program to support emerging opportunities, with a few focused areas of research on longer-term commercialization prospects.

Government Response: The Government of Saskatchewan supports UDP Recommendation 17.

Saskatchewan's submission has already gone forward to the Government of Canada. A centre of excellence for nuclear research and training is a central component of the Canadian Neutron Source proposal submitted to the Expert Review Panel on Medical Isotope Production. This was a joint submission by the government and the University of Saskatchewan.

UDP Recommendation 18: Under the first part of this mission (i.e. Rec. #17), expand existing:

Mining and exploration programs at universities, colleges, and training schools to train engineers, geoscientists, and other mining specialists and to develop innovation through research in the earth, environmental, engineering, and social sciences relevant to the exploration and mining sectors.

Nuclear engineering and physics programs at universities and establish training facilities to help prepare students for the CNSC (Canadian Nuclear Safety Commission) nuclear operator examination.

Government Response: The Government of Saskatchewan supports UDP Recommendation 18.

Training and development of future workers for our nuclear industry is an integral part of such a centre of excellence, including for mining uranium.

Training for other nuclear related areas can proceed with growth in Saskatchewan nuclear activity.

UDP Recommendation 19: Under the second part of this mission (i.e. Rec #17), form a group of experts to determine investment priorities in a few targeted areas of nuclear research. This group should review the most promising areas of research based on the type of skills and infrastructure required, the investment necessary to be competitive, the potential for private funding, and the prospect for commercialization. Areas to be considered by this group include, but are not limited to, small reactors and advanced fuel cycle technologies.

Government Response: The Government of Saskatchewan supports UDP Recommendation 19.

Development of research programs for nuclear medicine and neutron science will be done in partnership with the university community and other research centres, as would programs for designs of advanced small reactors.

UDP Recommendation 20: Partner with the federal government to pursue the construction of a research reactor in the Province as a complement to synergies with existing infrastructure capabilities, and to better position the province to participate in multiple areas of study. Pursue medical isotope production as part of the reactor's mandate.

Government Response: The Government of Saskatchewan supports UDP Recommendation 20.

On July 31, 2009 the Government of Saskatchewan, in partnership with the University of Saskatchewan, submitted a joint proposal entitled "Canadian Neutron Source" to the Expert Review Panel on Medical Isotope Production established by federal Natural Resources Minister Lisa Raitt.

The proposal will secure medical isotope production and reclaim for Saskatchewan its former leading-edge role in nuclear science.

The expert panel has endorsed the approach proposed by Saskatchewan, but not the Saskatchewan proposal explicitly:

"We recommend that the government expeditiously engage in the replacement of the [National Research Universal] reactor as we believe a multipurpose research reactor represents the best primary option to create a sustainable source of [the isotope molybdenum 99], recognizing that the reactor's other missions would also play a role in justifying the costs," the report says.

Saskatchewan is cautiously optimistic that the Government of Canada will choose to endorse the Saskatchewan proposal and work with Saskatchewan to develop an appropriate sharing of costs between both levels of government. A decision is expected from the federal government in 2010.

Recommendations from the Perrins Report

Perrins Recommendation 1: I recommend the Government of Saskatchewan develop a consolidated report on all power generation options and make this report available to the public. This report should:

- Inform the public about the current and projected power needs of the province;
- Outline the power generation options being explored in other jurisdictions including Canada, Europe and the United States;
- Outline options for future power generation including: expanded use of renewables, with particular emphasis on wind and solar, but also hydro, geothermal, bio-mass and any other options;
 - expansion of natural gas and polygeneration, clean coal and carbon capture and sequestration;
 - nuclear power generation;
 - increased energy conservation efforts; and,
 - continued use of coal.
- Document the health, safety, environmental and economic considerations for each of the above options;
- Outline the costs associated with each of the options including initial capital investment, transmission costs, operating costs, the cost of storage for renewable sources such as solar or wind; costs associated with nuclear waste; and decommissioning costs;
- Provide a comparable projection of the estimated costs to the consumer for each of the options;
- Include a potential delivery discussion for each of the options including an expanded role for SaskPower and/or public-private partnerships; and,
- Explain the current global discussion regarding carbon taxation, cap and trade, and the implications of both.

Government Response: The Government of Saskatchewan accepts this as useful input.

A commitment was made in the Throne Speech that SaskPower would prepare an electrical strategy. The Standing Committee on Crown and Central Agencies is currently gathering input for a report on meeting Saskatchewan's future electrical needs. Its findings will be factored in to the SaskPower strategy. Our expectation is the end result will address the various priorities identified by this particular recommendation in the Perrins Report.

Perrins Recommendation 2: I recommend SaskPower publicly release any existing analyses it has already undertaken regarding provincial power needs, the current state of its infrastructure, and future options for response.

Recognizing that there are limitations to what can be released publicly because of confidentiality and contractual obligations, and knowing that much technical information

around power is difficult for non-experts to understand, this information should be in a format easily accessible to the public.

Government Response: The Government of Saskatchewan accepts this as useful input and has already complied.

In early 2008 SaskPower released all studies it had undertaken on nuclear power. It will release its future electrical strategy to the public as well.

Perrins Recommendation 3: I recommend the Government of Saskatchewan commission a study to review the current research on the health impacts of nuclear power and that this study, and a publicly consumable summary version, be publicly released.

Government Response: The Government of Saskatchewan accepts this as useful input. The Government of Saskatchewan agrees further provision of public information and consultation will be a necessary component on any future decisions to proceed with a nuclear power generation plant.

Perrins Recommendation 4: I recommend the Government of Saskatchewan initiate a public information campaign regarding the production and use of medical isotopes.

Information should answer the following questions:

- What are medical isotopes and what are they used for?
- How are they made?
- Who produces isotopes, what is their production status, what technology are they using and how much do they cost?
- What type of imaging technology is required in medical facilities, what is the availability of such technology and what are the costs?
- What is proven technology and what is emerging?
- What is the proposed Canadian Neutron Source, what will it produce, what technology will it use, what will it cost, and how is it similar or different from proposals submitted by other jurisdictions?

Government Response: The Government of Saskatchewan accepts this as useful input. There will be further provision of public information and consultation as part of the regulatory proceedings to approve a new nuclear research reactor, if Saskatchewan's proposal is endorsed by the federal government.

Perrins Recommendation 5: I recommend that a separate First Nations consultation process be established for consultation and accommodation on any aspect of the uranium value chain, including the Uranium Development Partnership (UDP) report, in accordance with the unified First Nations Strategy on Consultation, Accommodation and Resource Revenue Sharing.

Government Response: The Government of Saskatchewan accepts this as useful input.

Report recommendations 5, 6, and 7 dealing with First Nations and Métis consultations are already being addressed through the government's ongoing work to develop a new First Nations and Métis Consultation Policy Framework.

Perrins Recommendation 6: I recommend a First Nations consultation process be established in the Athabasca Basin for consultation and accommodation on any aspect of the uranium value chain, including the UDP report, in accordance with the Athabasca Regional Government's An Agreement Respecting: a Protocol Establishing the Framework for the Crown's Duty to Consult and Accommodate, and A Resource Development Project Review and Approval Process.

Government Response: The Government of Saskatchewan accepts this as useful input.

Report recommendations 5, 6, and 7 dealing with First Nations and Métis consultations are already being addressed through the government's ongoing work to develop a new First Nations and Métis Consultation Policy Framework.

Perrins Recommendation 7: I recommend that a separate Métis consultation process be established for consultation and accommodation on any aspect of the uranium value chain, including the Uranium Development Partnership report.

Government Response: The Government of Saskatchewan accepts this as useful input.

Report recommendations 5, 6, and 7 dealing with First Nations and Métis consultations are already being addressed through the government's ongoing work to develop a new First Nations and Métis Consultation Policy Framework.

Perrins Recommendation 8: I recommend forums be organized on an ongoing basis to facilitate dialogue, debate, publication and information dissemination through the media. This should include, but not be limited to, the hosting of conferences, by the Government of Saskatchewan and the two universities to:

Discuss nuclear generation, environmental health and community health; and,

- explore other options for future power generation including:
- expanded use of renewables, with particular emphasis on wind and solar, but also hydro, geothermal, bio-mass, and any other options;
- expansion of natural gas and polygeneration, clean coal, and carbon capture and sequestration;
- increased energy conservation efforts; and,
- continued use of coal.

Government Response: The Government of Saskatchewan accepts this as useful input.

In part, this recommendation is being addressed through the hearing process now underway of The Standing Committee on Crown and Central Agencies.

SaskPower's commitment to develop an electrical strategy in the October Speech from the Throne also is consistent with continuing a public dialogue on electrical energy issues.

It should also be noted a number of energy-related hearings and other public forums have been held over the years on these matters. There are an abundance of studies as well. At some point, decisions need to be made based on the best information available.

Perrins Recommendation 9: In order to make the best information available, I recommend the Government of Saskatchewan use mechanisms such as surveys, focus groups and polling on an ongoing basis to assess the knowledge, understanding, information needs and views of the public.

Government Response: The Government of Saskatchewan accepts this as useful input.

The Government of Saskatchewan agrees with the thrust of this recommendation, particularly in light of the report's caveat on page 36 "...the responses summarized here are not necessarily representative of the Saskatchewan population and cannot be linked back to the population with any statistical reliability." For instance, recent independent polling has shown support for the nuclear industry. We will not close any doors where further sampling of public opinion is concerned.