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**Sustainable Community Design and Subdivision in Calgary:
Development Industry Attitudes and Opinions Regarding the
Sustainable Suburbs Study and Improved Environmental Practices**

By

Murad Shivji

**A Master's Degree Project
Submitted to the Faculty of Environmental Design
In partial fulfillment of the requirements for the degree of
Master of Environmental Design (Planning)**

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ABSTRACT

Sustainable Community Design and Subdivision in Calgary: Development Industry Attitudes and Opinions Regarding the *Sustainable Suburbs Study* and Improved Environmental Practices.

Murad Shivji

Supervisor: William T. Perks

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Prepared in Partial fulfillment of requirements of the M.E.Des. (Planning) Degree in the Faculty of Environmental Design, The University of Calgary.

This study is a survey of the Land Development and Housing industry including land developers, homebuilders, planning design consultants, and other urban consultants about issues related to urban sustainability, community and housing design, affordability, environmental management, and technologies for improved environmental performance. The total number of firms that responded was 66, including 12 out of 20 developers registered with the Urban Development Institute, Calgary Chapter.

The Survey-Questionnaire addresses 6 major themes: The Calgary *Sustainable Suburbs Study* (July 1995); innovation for housing and community design; consumer preferences and choice; business practices and the environment; knowledge and state of awareness about innovative projects for sustainable community design and; situation and challenges for affordability and improving it.

The study also reviews and discusses in relation to the Urban Delivery System in general, and Calgary in particular, the need for alternative site development and infrastructure standards, barriers and constraints to innovation, consumer receptivity and market testing for sustainability choices.

The Study concludes with a set of observations about the Delivery System and interactions among the key industry players, strategies for diffusing innovations for sustainable housing and community design, principles for improving municipal policy and regulations, and industry commitment for improved environmental performance.

Key Words: Sustainable Urban Development, Community Planning, Subdivision, Sustainable Community Design, Urban Environmental Management, City Planning, Urban Development Standards, Infrastructure, Municipal Policy, Development Industry, Affordable Housing, Consumer Preferences, Innovation for Sustainable Housing and Community Design.

Introduction

It may not be exaggerated to say that Sustainable Development – and its companion theme, ecological planning and design – is bringing about a paradigm shift in municipal planning and development management. In 1995, the City of Calgary made a substantial policy shift with the introduction of comprehensive sustainability policies and community design guidelines. Reaction to this change by the industry has not been altogether favorable; or at best, it has been qualified with skepticism, and reservations. How far this has penetrated the private sector development industry is, however, an open question.

This Master's Degree project therefore, attempts to research the positioning and the attitudes of the Calgary development-homebuilding industry on a wide range of theory and practice factors pertinent to Sustainable Development.

The application of the concept of Sustainable Development (SD) to the practice of Urban Planning has been a much-debated issue. Academics, governments, and practitioners have adopted the term and applied it variously to "public policy", "theory" and "practice" – sometimes without serious scrutiny. For those who subscribe to the concept, the practice of it proves difficult in a number of important respects and arduously challenging, especially when it comes to defining, prescribing, or measuring the sustainability performance of the planning-design product or outcome; and, especially, those development practices described as being "more sustainable" than the conventional.

At its inception, circa 1986, SD expressed a thesis and a conceptual framework for reconciling consumption with conservation, environmental stewardship with the exploitation of renewable and non-renewable resources, quality of life with poverty and disparity, and competition with cooperation. However, SD was also a socio-economic-environmental – and thereby planning thesis that needed further explication and definition if it was going to be effectively applied at the macro or micro scales of urban development. The ramifications of SD for urban planning-design-development practice are still being worked out; and pilot projects and public programs (most particularly in Europe) have begun to temper and shape the thesis into practicable form. Within the field of Residential Community Planning and Design, significant attempts have been made by designers and academics, and municipal planning practitioners and builders to define, operationalize, and apply the concept, and to assess the 'practicabilities' and 'possibilities'. (e.g. van der Ryn and Calthorpe, 1986; Perks and Van Vliet 1993, Perks and Wilton-Clark 1996, Wackemagel & Rees, 1996, Grant, Joudrey, and Manuel, 1993,1996; Todd and Todd 1994; Rees and Roseland, 1991; Friedman 1993, 1994). Today, a decade after the Brundtland Commission publication, we are much better positioned to reasonably and comparatively assess the sustainability merits of a particular development project, an

urban design, or a community plan. (See for example, websites: Sustainable Community Design; Habitat Best Practices; ICLEI Case Studies) However, a full application and extensive adoption of sustainability principles and performance criteria by *industry* – the land development and housing industry, and the planning and design consultants who work for development companies – still remains a challenge and something of an under-exploited opportunity; the reasons for which are many and rather scarcely researched.

Generally speaking, Canadian development corporations and related manufacturers remain at worst indifferent and antithetical, or at best, unconvinced. The ostensible reasons for this appear to be:

- profits take precedence over the particular social issues and the concerns for environment; and ecology that figure in SD;
- lack of education and awareness about environmental issues, and ecological science and "design";
- poor communication and cooperation between academics, governments and the industry about sustainability;
- benefits of improved environmental performance and sustainability practices are usually measured in non-monetary terms, while costs of doing business and delays in regulatory process are quantified in monetary terms;
- the lack of connectedness of the notion of sustainable development with *specific* business operations and practices (i.e. not framing sustainable development issues specifically within the context of particular business operations and practices);
- a positioning of public/consumer commitment to sustainability practices as preferential to business-as-usual has not been convincingly argued or forcefully demonstrated; and
- an immature state of investment in, and development of, innovation and market research in the Canadian housing delivery system about sustainability choices, and practice alternatives.

One has to search widely across many subject areas of planning practice, empirical research and theory, housing design, infrastructure and housing technology, environment, etc., etc., to establish a confirmation or refutation of these commonly-expressed reasons. The task is large, a subject for Ph.D. research! My (extensive) literature search on these myriad considerations indicates there is as yet no single work that encompasses them.

Further, it is important to note there is available only a slim repertory of studies that probe *industry* perceptions or positions on the matter of Sustainable Development/Sustainability in the *urban development* context. For example, the American Urban Land Institute is only now in the process of

bringing forward a 'position' document. (I have been privileged to see an outline of it.) My study attempts to probe the "Industry side" of the question.

For practical reasons, the range of issues/questions I investigate do not exhaustively match the 'reasons' cited above. Second, the primary research is confined to Calgary; although my study does report and comment on the broader context and situations.

Purposes of the Master's Degree project

My purposes are to investigate the concept of Sustainable Urban Development as it applies to the planning, designing and building (construction) of residential communities in Calgary; and to examine and comment on the situation and challenges faced by this industry as it moves in the direction of sustainability. More specifically:

1. To identify key sustainability issues and challenges, and the responses to these by the housing and residential community delivery system in Calgary.
2. To evaluate the current situation and state of affairs of industry agents with regard to environmental performance and sustainability practices.
3. To gauge the opinions and knowledge of various industry firms involved in the planning, designing and development of residential communities in Calgary about various technology, affordability, and sustainability issues; and to assess the extent of practices regarding these aspects.
4. To critically discuss the City's *Sustainable Suburbs Policies* in light of the industry perceptions and practices, and to comment on the propensity for success of these policies.
5. Draw some conclusions about the situation and prospects of urban sustainability practices in Calgary, with specific reference to the *Sustainable Suburbs Study* policies and design criteria.

Methodology

The research proceeded in three phases: a literature review of key SD concepts and issues related to urban planning and residential community design, and housing; carrying out key informant interviews with representatives from the Calgary land development and housing industry, and; conducting a survey questionnaire to 119 Calgary firms, including land developers, homebuilders, and planning consultants such as architects, community planners, and engineers.

Literature Review

The literature review served two main purposes: 1) To gain a detailed understanding of the issues and concepts and technologies related to sustainable development; and 2) gain an understanding about the interactions between delivery system agents (land developers, homebuilders, urban planning consultants, etc.) generally, and with specific reference to the situation in Calgary. Key sources of information included municipal government publications and City of Calgary Planning Policies and Regulations, research publications from the Canada Mortgage and Housing Corporation (CMHC), books, and trade and professional journal publications related to land development, housing design and technologies, infrastructure systems, design and performance standards, and the design of communities and subdivisions.

Key word searches included the following terms and concepts: Sustainable Urban Development, Sustainable Housing, Residential Community Design, City Planning, Environmental Management, Urban Planning, Urban Intensification, Urban Villages, New Urbanism, Sustainable Development, Municipal Planning, Development Standards, Subdivision Planning. Some 400 publications, research reports, and government documents were reviewed.

Key Informant Interviews

In Phase 2, Key Informant Interviews (KII's) were conducted in the winter of 1996. Eight individuals from the land development and housing industry in Calgary were visited. We discussed the issues related to the delivery of housing and residential communities *from the perspective of the industry*. The interviews helped to identify key phases in the production of housing and land development that form part of the regulatory and approvals process in Calgary. They further identified key forces and factors of production – both regulatory and housing markets – which drive the industry and shape the particular practices of planning, designing and building of communities in Calgary. And, from the interviews, certain lines of enquiry for the survey design were developed.

A summary of the interviews appears in Chapter 1.

Survey Questionnaire

The design of the Survey Questionnaire went through several drafts and informal testing of question formulations, purposes, etc. with Professors William Perks, Harrie Vredenburg and Dixon Thompson.

It was distributed by hand in July 1997 to some 119 senior land development managers, homebuilders, and consultants in the Calgary delivery-system, and preceded by a phone call introduction/solicitation to each of the participants.

The survey was carried out with the cooperation and sponsorship of the Urban Development Institute (UDI) and the City of Calgary Planning and Building Department. The Calgary Home Builders Association (CHBA) also provided endorsement.

The questionnaire elicited input from the development industry in Calgary about a number of policy, technology, market research and innovations that are emerging around "environment", "sustainability" and "affordability". It is organized into five areas of enquiry:

1. Sustainable Suburbs – The City of Calgary Policy and dialogue process leading up to it.
2. Innovation in the Housing and Development Industry
3. The Market: Consumer Preferences for Sustainability Features
4. Business Practices and the Environment
5. Innovative Projects for Sustainable Community Design (Innovation in the Calgary Industry and their state of knowledge and awareness of SD practices, technologies, etc.)

In total, 145 questions were addressed to 5 types of firms. The first five questions (subdivided into 29 sub-questions) gauge the perceptions of industry agents about the various goals and objectives of the five main policy areas covered in the Suburbs Study. The policies were reprinted in the questionnaire. Respondents indicated their level of agreement or disagreement for a series of propositions about the likely success of the various sustainability policies in achieving consumer behavioral changes, improved environmental quality and performance, resources conservation, cost-efficiencies and improved affordability, consumer satisfactions, and market advantages. Questions were formulated so that responses could be compared between policies that have similar objectives (e.g., cost efficiency, affordability, and community design); and so that the perceptions of various industry agents about the effectiveness of each policy could be determined.

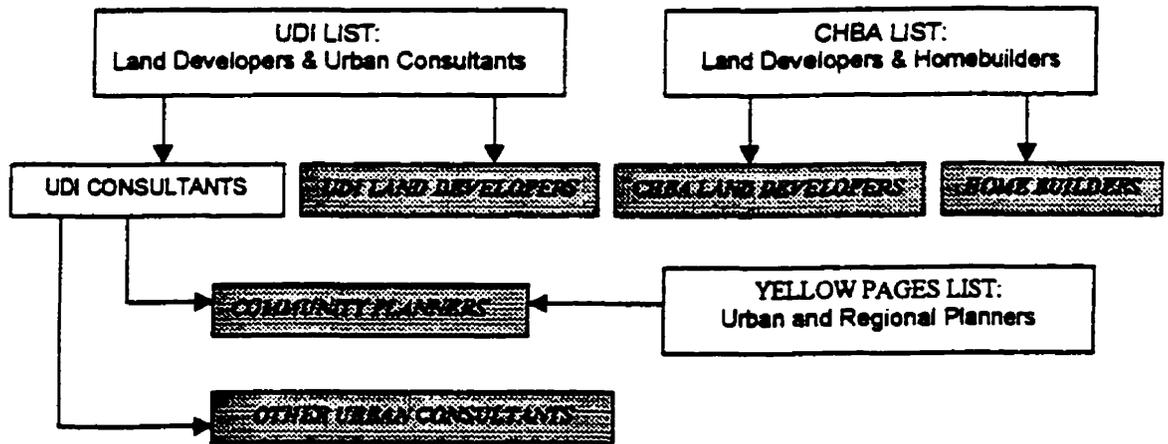
The extensiveness of the survey reflects the scope and reach of the City's policy document. Whereas it may have been expedient to collapse the first 29 questions into 5 to 7 main questions, this would not have provided very useful or meaningful results. The policies are not simply broad normative goal statements; they are broken out into very specific planning practice and urban design stipulations. Therefore, a more complete understanding about the industry's receptivity and propensity for adopting sustainability practices, is contingent on a thorough investigation of the particular aspects of sustainability, as they are operationalized by the Study. Equally important was to be able to report to the municipal administration, which specifics of their policy and guidelines were

favorably or unfavorably regarded, optimistically or pessimistically received, etc. Similarly with the question of the respondents' familiarity with up-to-date technologies and research information that are factors in innovation – one cannot get a meaningful appreciation of the position of the respondents without 'testing' their awareness against some minimum list of the more relevant projects and works.

See Appendices I and II for the full questionnaire and the findings, respectively. Question by question findings and analyses are variously presented in Chapters 1 to 5.

Firms selected for the survey questionnaire came from membership lists obtained from the two major industry associations – the Urban Development Institute (UDI) and the Calgary Home Builders Association (CHBA) – and from the Yellow Pages. The UDI list consisted of two sub-lists - one for "land developer" members, the other for "urban planning consultants". The CHBA list also consisted of two sub-lists - one indicating "land developer" firms and the other listing "home builders". Further, planning consultants who do not appear on the UDI list were supplemented by selections from the Urban and Regional Planning consultants listed in the Yellow Pages.

FIGURE 1: CATEGORIES OF SURVEY RESPONDENTS



All of the land developers on the UDI Membership list were selected. The consultants on this list were categorized by UDI as being either surveyors, engineers, architects, land planners, geo-technical and transportation engineers/planners; only those who do land use planning, subdivision, and community design were invited to participate. An overlap existed between the UDI and CHBA developer lists. Thirteen developers are members of both UDI and CHBA and, therefore, appear on both lists; only those Land developer firms *not* already included on the UDI list were selected to participate from CHBA. From the CHBA "home builders" list, firms operating outside of Calgary and

those that specialize in custom-built homes were eliminated; from those remaining, every second firm was selected and invited to participate.

FIGURE 2: SURVEY SAMPLE AND RESPONSE RATES

<i>Sample Group</i>	<i>Sample Size = n</i>	<i>Number of Respondents</i>	<i>Response Rate (%)</i>
UDI Land Developers	20	12	60%
CHBA Land Developers	13	6	46%
CHBA Home Builders	48	20	42%
Community Planners	22	18	82%
Other Urban Consultants	16	10	63%
Total	119	66	55%

Altogether, 119 surveys were distributed. Follow-up phone calls and reminders for questionnaire returns were made over the period August 1st to September 31st, 1997. Returns were accepted until October 15th, 1997. Sixty-six (66) questionnaires were returned; they are categorized into 5 groups, per figure 1. The respondents included representatives from land development, homebuilding, architectural, engineering, and community planning firms in Calgary. An overall response rate of 55% was realized (Figure 2). Only 8 of the major land development firms declined; thus the survey captures rather well the more influential or lead players in the Calgary industry. Among the homebuilders (i.e. the two CHBA groups), 26 out of 61 responded; this representation reflects the general involvement and participation, and relative degrees of power exercised by homebuilders in the formative processes of the Delivery System. The rate of response by the Community Planners reflects their attentiveness to the City's sustainability posture and is evidence of the seriousness with which sustainable development practices are received in that sector.

MDP Outline

Although the respondents were grouped into 5 categories, the data tables included in this document only include the first 4 groups. Responses for the last group – Other Consultants – are not reported in the document but can be found in Appendix II, and they are included in the discussion where relevant. The 5th group does not play as significant a role in the Residential Delivery System as the first 4, and it contains a mix of urban consultants each too small in number to isolate. Grouped together, the Other Urban Consultants provide a set of opinions that can be compared or contrasted with the first 4 groups.

Chapter 1: Residential Community Planning and Sustainable Urban Development

The first chapter provides a general context of sustainable urban development and introduces the reader to the Housing and Community Delivery System in Calgary. The roles and interactions among Delivery System agents are discussed. Findings from the key informant interviews and further questions for investigation are also presented.

Chapter 2: Sustainable Community Design and Development in Calgary

The second chapter discusses the results from Survey questions 1a, 1c, 2c, 3d, 4b, 4c, 6, 7, 7a, 13, 14, 15, 15a, 16, 16a, and 17. It includes a discussion about the Round Table process and industry perceptions about the adequacies and inadequacies of processes leading to, and prescribed by the study document. This chapter also discusses the role of municipal planning regulations and their impacts on affordability and sustainability in residential community design.

Chapter 3: Innovation for Affordability, Sustainability, and Resources Conservation

The third chapter discusses the role of innovation for sustainable community design and housing in the urban development context. In this context, findings for Survey questions 1a, 1d, 2a, 2b, 2d, 3l, 4d, 5e, 18, 19, 19a, 20, 20a, 22, 27, and 28 are also reported and discussed. This chapter also discusses the specific constraints to innovation within the Calgary Delivery System, and examines organizational practices and research and development activities of industry firms. Perceptions about the design changes expected from implementation of the policies are also discussed.

Chapter 4: Housing and Community Affordability and Consumer Preferences

This chapter examines the current situation and industry positioning with regards to affordability. Findings from Survey questions 2d, 3a, 3c-3h, 4a, 5f, 8, 9, 10, 10a, 11, 12, 12a, and 23 are presented and reviewed in this chapter. Strategies for improving affordability and sustainability within the Calgary context are also discussed. The final section of this chapter discusses the role of market studies research and for gauging consumer preferences, and suggests an alternative, 'conjoint analysis' model for measuring consumer receptivity for affordability and sustainability features in residential community design and housing.

Chapter 5: Development Industry Practices and Corporate Environmental Management

The fifth chapter does exactly what its title suggests. It examines the present situation regarding corporate environmental management practices within the land development-housing industry. Findings from Survey questions 5, 24, 24a, and 25 are also reviewed and discussed. These questions sought to 'test' the industry's awareness, knowledge, and familiarity with environmental management tools and find out to what extent such practices are evident in the day-to-day operations of this particular industry.

Chapter 6: Conclusion – Propensity for Change and Sustainability Merits of the *Sustainable Suburbs Study*

The final chapter summarizes the findings from the Survey questionnaire and discusses the propensity for implementation of the sustainability policies in the Study. It also provides an overview of the present situation of sustainability and affordability practices in Calgary. In light of the present situation, the *Sustainable Suburbs Study* policies are assessed and municipal initiatives are also discussed. This chapter concludes that, although some opportunities for innovations for improving sustainability and affordability are evident in Calgary (sufficient support exists among industry firms and certainly within the Planning Department), these are limited in scope, and constrained by a variety of factors including an inconsistent commitment to innovations on all three sustainability fronts: ecological-environmental preservation, social equitability, and economic development.

Chapter 1: Residential Community Planning and Sustainable Urban Development

The concept of urban sustainability – or SD in the context of urban development – has become a significant factor in planning residential communities in most if not *all* major Canadian municipalities.¹ Many municipal governments are experiencing a fiscal crunch; grants from provincial governments are reduced; and senior levels of government are pressing for fiscal reform and greater efficiency in municipal spending. Another factor – though perhaps less compelling to municipal politicians – is the steadily growing attention given to environmental impacts of the urban-industrial economy. Although there is growing awareness at the general societal level about adverse environmental impacts and a planet-wide depletion of natural resources, the conventional wisdom of governments and industrialists is that consumption cannot be arrested or radically re-patterned. Thus, the approach has been to adopt a concept that tries to reconcile profligate consumption with limits to growth; such is, according to a number of critical analysts, the essence – and paradoxical challenge – of Sustainable Development. (McGibben, 1989; Cairncross, 1991; Commoner, 1992; Jackson, 1996; Rees and Wackemagel 1996; Athanasiou, 1996)

Sustainable Development (SD) is neither a methodology nor a complete prescription for doing things right. Rather, SD is operationalized as a set of principles and criteria for producing more ecologically benign developments, incorporating an ethic of environmental stewardship and conservation of resources, incorporating inter-generational social responsibility and equitability into economic development, and ensuring that the benefits of growth and consumption are to be more equitably distributed. Further, meaningful and more democratic participation of local communities in development decisions is also called for. All of these conditions are required so that the earth's resources and ecosystems, and its human and animal populations survive our appropriation of resources – so that we sustain the carrying capacity of planet earth. (Brundtland, 1987; Canada Green Plan; 1989; Perks, 1993; Canadian Institute of Planners, 1990; Rees and Wackemagel, 1996)

Canadian governments generally, have responded to the challenges of SD by adopting policies and programs. The Green Plan and subsequent sectoral policies and programs at the national level and provincial round tables were formed, and have produced policy, legislative and administrative positions and programs. Municipal governments have also formulated sustainability policies; but to date the operationalization of these have not produced the kinds of dramatic changes in urban development that researchers and theorists seem to expect of Sustainable Development "in action". (See for example, van der Ryn and Cowan 1996; Wackemagel and Rees 1996; Wann 1996; Perks and Wilton-Clark 1996)

One of the most significant agents (in terms of its widespread social, economic, and ecological impacts) operating in Canadian cities is the land development and housing industry. The industry has a highly influential, if not dominant role in the planning and subdivision of "green field" sites, and for the construction and marketing of housing. More importantly, the industry is responsible for the planning, designing, and building of residential communities in Canada – corporate activities that variously include constructing roads and street networks, installing services and amenities, determining the types and prices of housing, establishing parks and civic places for social interaction; allocating the places where we live, travel, interact with our neighbors, and where children play and go to school. All of this is determined in all essential respects by a small, yet consequential industry. Generally speaking, over the past three decades, the universal trend in deregulation has positioned the industry and "market forces" to assume a dominant position in the partnership and regulatory environment shared between the municipality and the industry.

Against this background, and beginning in the early 1990's, municipal governments began considering, and in some places instituting planning policies and regulation more consistent with the concept of SD – or "sustainability"; policies and practices which seek to increase affordability of services as well as housing and infrastructure, conservation of resources, stewardship of natural resources, improved environmental performance, and greater social responsibility. The City of Calgary, for example, produced the *Sustainable Suburbs Study* (July, 1995), a policy document that operationalizes Sustainable Community and, importantly, sets out design guidelines and performance criteria for more sustainable communities. This award-winning policy document is aimed at changing substantially the practices in land development and housing delivery and in affordability and equitability of community environments and services.

1.1 The Development Process and Building Residential Communities

Planning-designing-building of residential communities involves a complex set of socio-political and technological processes, practices, public policies, normative goals, and consumer behaviour and marketing strategies that engage multiple agents in the public and private sectors, and to an extent citizen groups. At the same time, multiple *municipal* departments and agencies participate in the formulation, application and monitoring of regulatory codes and guidelines, and in the administration of procedures that accompany the subdivision-through-construction phases of development projects. Municipal departments set the development standards, establish minimum site servicing requirements, and adjudicate and approve plan proposals and development conditions. Regarding housing, on the other hand, they exercise little or no prescriptive or regulatory or design controls. And in most jurisdictions 'social housing' programs have all but been abandoned.

The private sector agents include various *urban consultants* - engineers, land use planners and architects, and *land developers, homebuilders, construction firms and sub-trades* that together bring a project to fruition. One more – though often relegated – agent is the consumer or end-user who seeks housing and community-life-fulfilling services and satisfactions. Consumers play no role in the critical, early-planning and community design phase of development. They are significant only to the extent that they can indicate their “preferences”; that is mainly through purchasing behavior and their responses to market studies (and, with even lesser significance, through the political process). But predictions about the consumer's choices and preferences, and the propensity for changes in consumer behavior, are commonly based upon the history of choices the consumer has already made. Generally speaking, the industry responds to consumer preferences in a conservative, low-risk fashion by continuing practices and product design and marketing strategies that have succeeded in the recent past. (Perks and Wilton-Clark, 1996; Sternthal, 1995) This approach to gauging preferences, however, lacks anticipatory zeal and tends to restrain the introduction of innovations in both housing and residential community design. Moreover, it is arguable that from an affordability and sustainability standpoint, the ‘history’ of choices is rather narrow in scope. In other respects, the consumer is rarely if ever a participant in the front-end planning and design of the “residential product”; and thus, the consumer's propensity or willingness to seek out or accept innovative product, be it house or community-setting, is not accounted for – or sought out – by either industry or municipal market research (Perks and Wilton-Clark, 1996). Indeed, municipalities do not practice housing research of any relevant significance to the issue of preferences and choice.

1.2 The Housing and Community Delivery System

The agents responsible for planning, building, and servicing residential communities – municipal departments and agencies, land developers, homebuilders, planning, architecture and other urban consultants, construction firms and sub-trades – together form what is referred to as the *Delivery System*. It operates with various intensities or force of interaction between the agents, depending on the nature, scope and complexity of development projects. It is governed by formal procedures and the (customary) play of political relations and power distribution between the municipality and the local industry. Informal procedures and negotiating processes can be equally important as the formal. To generalize: from the perspective of both the municipality and the industry agents, the system functions so as to: 1) optimize industry profitability consistent with the need for public regulation; 2) minimize costs, risks and liabilities; 3) accommodate sectoral interests and community concerns; and 4) offer superior quality of life and environmental protection to the City's residents. A brief examination of the Calgary delivery system and discussion about these agents, their roles and interests, and the outcomes of their interactions follows.

1.2.1 Municipal Agents

The municipality formulates policies and administers the formalized and informal (negotiative) regulations and procedures that flow from them. The singularly most important of these is Land Use; not entirely in by-law, prescriptive form. Transportation policy and capital programming are, in the main, wedded with Land Use plans. The municipal-administrative role is essentially: 1) development approval, 2) establishing minimum standards and regulations for the industry to follow, 3) establishing development agreements with the industry that sets out the terms and pace and location of building projects from one year to the next, and the respective shares of the municipality and developers in capital infrastructure investments; 4) coordinate and/or deliver the various public services that will be needed in the project (community) area; and 5) setting fees and levies to be collected from developers and homebuilders for the number of units (houses, acres) involved in a project proposal².

The regulatory instruments used by municipal authorities broadly include: development control standards, building standards, zoning bylaws, site-servicing and site-planning standards, and land development and building approval processes (Energy Pathways, 1991:5). Depending on the location, scale, scope and complexity of the given project, upwards of two or three years may be necessary to obtain a construction go-ahead.

Although the municipality is not directly responsible for the processing of raw land for infrastructure emplacement, or for the planning and designing of residential communities, they exercise a considerable degree of control – through land use designation and subdivision – on the overall form and organization of the residential community product. The costs of these development approval 'events' are factored into the purchase price of each housing unit built. Thus, costs to the developer that arise due to processing delays (costs of borrowed money and direct costs in satisfying approvals protocols), due to "gold-plated" site development and engineering standards, and to 'excesses' in site servicing requirements, are forwarded to the consumer. These have to be amortized by the consumer along with the other capital costs of the home (and community).

1.2.2 The Industry Agents

In the Calgary delivery system the land development-homebuilding industry is the paramount agent in the planning of communities and the allocation of housing diversity, by type and spatial distribution. Land developer firms are responsible for the purchase of land, subdivision, community planning, installation of infrastructure, marketing of the community, and sale of housing.³ However, these responsibilities are divided among the various professions and subtrades: planners, architects, engineers, homebuilders (framers, drywall installers, etc.). Only a handful of firms – probably 5 – are sufficiently large so as to control most (i.e. planning, subdivision, servicing, construction, marketing, and sales), if not all the factors. The degree of influence exercised by the various firms is therefore contingent upon their type, size, and range of activity. The industry in Calgary is comprised of firms

specialized in various activities and sizes range from 1 to 140 employees.⁴ Only three of the major Calgary development firms are integrated, through land assembly and planning to housing construction.

A developer is responsible for the front-end planning and designing of communities, and the servicing and emplacement of infrastructure, while homebuilders generally provide the designs and undertake construction of housing. The subdivision executed by a developer predetermines the overall form and finite property layouts of the community, and the composition of housing types – very often including basic 'architectural controls'. This specialization of activity and developer control has become one of the most significant factors dissociating the end-user from the front-end planning and the organization and design of the community. Also, it is one of the important inhibitors to innovations in both community and housing design for improved sustainability performance.

1.2.3 The Standard Development Agreement

Residential housing delivery in Calgary is essentially the product of a "marriage" between the municipal authority and the land development-housing industry. Each year, the municipality and the industry negotiate a *Standard Development Agreement* (City of Calgary, June 23rd, 1997). This document outlines the various infrastructure emplacement responsibilities and timing and the attendant cost sharing agreements between the public and private agencies; it is a contract which spells out the legal responsibilities and activities carried out by each party. For example, developers are responsible for "on-site" servicing costs within the subdivision area including: all streets up to a collector standard, curbs, gutters, sidewalks, fencing, street-lighting, sound attenuation fencing, landscaping of boulevards, and tot lots, as well as local water and sewer distribution. In the case of electrical power, developers pay the difference between overhead and underground distribution costs. The City establishes the standards for all of these services. The costs of "off-site" services including sewer and water distribution systems and access roadways up to a collector standard are shared through the municipal tax base⁵ and development charges – various levies, fees, and acreage assessments. (City of Calgary, 1994)

Ownership of the subdivision is transferred to the City after a maintenance period, normally one or two years. The municipality assumes responsibility for a wide range of costs of utilities, transportation and transit, parks and recreation, and an array of supporting community facilities and services. The power of the municipality to introduce additional development charges or servicing requirements are limited by the Planning Act. Additional servicing requirements/contributions must be negotiated with and agreed to by the developer. However, Council can leverage power by approving Land Use redesignations and restrict or delay development. (City of Calgary, 1994)

1.3 The Sustainable Suburbs Study and Policy Outcomes

1.3.1 The Round Table Process

In June 1995, the City of Calgary adopted as a policy document the *Sustainable Suburbs Study*. It identifies key economic, environmental and social issues that can be improved upon in the planning-designing-building of residential communities in Calgary. The study was carried out under the guidance of a "Round Table on Sustainable Community Development" made up of representatives involved in the planning, designing and development of suburban communities (*Report to the Calgary Planning Commission*, June 14, 1995:3). Representatives were selected primarily from the Urban Development Institute, the Calgary Home Builders' Association, the Public and Separate School boards, the Federation of Calgary Communities, the Alberta Association of Architects, the Alberta Association of the Canadian Institute of Planners, and two experts from the University of Calgary. In addition, all of the key municipal departments were represented and/or invited to make presentations at various stages. The representative character of a Round Table process are usually important factors in the 'outcomes'; hence questions are addressed to this in the present Survey.

1.3.2 Objectives and Design Principles of the Policy

The main reasons for the study were to implement the objectives of the *Calgary Transportation Plan* (1995 May 29); control the costs of growth; provide a better variety of housing and services in new communities; and help achieve the City's *Environmental Policy, Principles and Goals* (1994). The many specifics of these referred objectives appear in the *Sustainable Suburbs Study* policy, and are variously discussed in Chapters 2, 3 and 4.

The policies clearly articulate the principles of New Urbanism or Neo-traditional Planning. (For a review of these and an appreciation of the communities designed in this fashion, see *Home from Nowhere* by James Howard Kunstler, 1996, *The New Urbanism* by Peter Katz, 1994, and *Towns and Town-Making Principles* by Andres Duany and Elizabeth Plater-Zyberk, 1991.)

According to the Study, "the concept for a more sustainable community works best" when applied to a community of about plus or minus 12,000 people. Ten major plan/design elements are prescribed:

1. A focal point and recognizable boundaries and entrances that give the community a distinct identity.
2. A public activity centre, offering a variety of goods and services sufficient to meet people's daily needs

3. A mixture of residential, public and commercial uses at and near the activity centre.
4. Parks, schools and shops within a comfortable walking distance of homes.
5. Safe, pedestrian and cyclist-friendly streets providing direct connections from homes to community and transit facilities.
6. A wide choice of housing types and costs to meet a variety of household types and lifestyles.
7. A range of local employment services.
8. An efficient and effective public transit system that provides a viable option to the car, especially for the journey to work.
9. Protected natural areas and a variety of linked open spaces offering a choice of activities, connected where possible to the regional open space system.
10. Connections to the regional pathway system providing a safe transportation and recreation option for pedestrians and cyclists.

The Study recommends that further actions be undertaken in consultation with the development industry:

- a) Develop new street design standards
- b) Develop a city-wide policy on affordable housing
- c) Develop indicators of Sustainability
- d) Review other requirements, standards and practices.
- e) Explore opportunities for new approaches to planning and managing communities, such as community-based financing of community facilities.

Altogether, there are 28 policies, organized into five issue-areas. In summary:

1. Community Centres and Neighborhood Nodes

Each community must have a community/public activity centre and neighborhood nodes and must encourage pedestrian and bicycle access and transit use.

2. Schools and Open Space

Existing natural systems must be integrated into new communities and built open space must be located, sized and configured to create places that are functional, safe, flexible and form a linked open space system. Joint/shared use sites should be located in proximity to the community centre or neighborhood nodes, on the transit route and close to daycare and other services.

3. Housing

New communities must be capable of achieving a minimum density of 7 upa; and provide a wide choice of housing types, provide adequate choice of affordable housing, and focus multi-family housing near community centres, neighborhood nodes, recreational areas, other public amenities, and be close to transit stops.

4. Transportation

The transit system must be integrated into the community design and be a key component of the community centre, neighborhood nodes and other community focal points. New street design standards must be developed to meet the needs of pedestrians, cyclists, and transit users. Connector (grid pattern) versus collector roadway networks should be considered.

5. Environmental Issues

Builders are asked to: ensure that all new buildings are audited for construction; use recycled materials in the construction of new buildings when supplies are available, existing standards allow; equip all buildings in new communities with bins for sorting recyclable dry waste and to locate a permanent composter on site; design, locate and construct all buildings in new communities with the objective of reducing energy consumption. All homes should have water meters and manufactured water-saving fixtures.

For each of the policies, the Study outlines the "Public benefit Intended", "Acceptable Performance", and "Design Guidelines". These can be found in table 1 of Appendix III.

1.4 Key Informant Interviews

In phase two of the present Project, key informant interviews (KIIs) were undertaken with representatives from the land development and housing industry during October-November 1996. The purpose was to undertake a situational analysis and to investigate key sustainability issues significant to the operations of the Calgary delivery system. The KIIs each lasted about sixty minutes; interviewees were asked three questions:

1. "What is your firm doing about sustainable development?" "How is the development industry addressing sustainability?"
2. "What are the key forces driving sustainability initiatives in the industry?"
3. "What specific innovations or initiatives have you introduced to address sustainability?"

1.4.1 Interview Findings

All of the interviewees had participated either throughout or occasionally in the Round Table; not surprisingly, they made reference to the *Sustainable Suburbs* policy to frame their responses. The salient comments, concerns and issues raised by these are now summarized.

1.4.1.1 Definition/Operationalization of Sustainability

1. There is concern over the definition and applicability of sustainability in the urban development context. One respondent suggested that the definition of sustainable community in the Suburbs policy document is inadequate, as *sustainability* is limited to certain design criteria:

I take a broader more systems approach than the Sustainable Suburbs policy...all that can be implemented in that [policy] are things like the town center, where we have some more local commercial at the centre...

Another respondent argued,

You'll never be able to take a community that's developed under the Sustainable Suburbs report and say you can have it run on its own and function on its own because: (a) the City insists that the sewage, and rightfully so, go into their treatment plant and (b) they insist on the water coming from their plant, and rightfully so. Electricity is the same thing. So right off the bat, they're offside with a true [complete] definition of sustainability.

2. The Sustainable Suburbs Study policies and guidelines have become synonymous with certain design-change requirements such as rear lanes, front porches and elimination of the double front-drive garage. These and other 'features' have seemingly become the sole preoccupation of those who dispute the policies/guidelines and the rationale for them. Some interviewees perceive that municipal planners have de-emphasized more important considerations and placed too much weight on 'design' considerations like 'community character', 'feel', etc.

Planners who have had a lot to do with this particular agenda have focussed way too much attention on the Built Form. What does the street look like, how cute are the porches on the house, all of those things. Is neo-traditional planning the answer? - No! There are no simple, precise solutions and answers to any of this issue.

They would like to get rid of the front drive garages. But that's a market decision. The market wants front drive garages. It's not us that's driving those decisions. So we told the planning department look, forget that. The front drive garage is here to stay as long as the market says it is.

3. The Sustainable Suburbs Study was developed according to the principles of New Urbanism or Neo-Traditional community design. Most developers argue that the Neo-Traditional approach will not "sell": consumers are not willing to buy into this concept; consumers are conservative and will purchase a product which they regard as being the most secure investment:

Neo-traditional planning and design is not a panacea for – and has nothing to do with – sustainable urban Calgary. It's just one way of dealing with some of the things that people have suggested they would like to have. People are funny. People always say, community of people, they say "oh our neighborhood is too unfriendly, we never see our people on the street anymore, we don't have that sense of community...we don't like the garages on the

street; but people drive into them, they close the door, they disappear. They're never outside. We don't even know who our neighbors are. You know all of those things they say - well we don't duh, duh, duh, duh. But then when they go to buy a house, they put all that aside and they go out and they will buy, what they perceive to be, is the safest investment for them.

4. Neo-traditional developments in the United States have met with little or dubious success. Developers are concerned that they are being pressured to employ unproven design principles and 'styles'.

There are a few projects in the States, that have applied it and, if you look at any of the neo-traditional projects from an economic stand point, they've all been economic disasters. It tends to be some of the architects and designers that like them because it's different. And that's fine to try and produce something different and test the market. I've recently been to the Kentlands. The Kentlands is surrounded by a huge density, huge population. And we can look at the absorption rate of something like the Kentlands. It was a financial disaster.

5. The Sustainable Suburbs Study prescribes a density of 7 upa; up from 4-6 upa. Some interviewees felt that the policy for increasing density is not needed, because:

Our densities are going up without any policy changes whatsoever. Densities in communities are going up dramatically. It's all based on affordability and the urban economics of what's occurring.

1.4.1.2 Sectoral Interaction in the Delivery System

Developers are part of a team, which includes City policymakers and administrators, technical designers, fiscal agents, financial players at the City, the development industry, homebuilders and commercial property interests.

6. The delivery system involves negotiations to deliver a product that accommodates various sectoral interests, some of which can be in direct conflict; compromise or outright negation of certain policy-design stipulations result.

We have to try and come to the best solutions that meet everyone's needs and objectives in a reasonable time frame. Many times, in fact, those interests are competing. And the agendas are not set primarily by ourselves but by other people such as our clients or the standards that City Hall sets down, or the politicians and ward alderman... so what ends up may meet the policy agenda. We do what we can to move things toward what we think are good planning practice, sustainable development being only one of them.

7. The industry handles most if not all of the aspects of planning-designing-building of community projects from beginning to end. The municipality is responsible only for approving developments, and ensuring the public interest is not compromised. Effectively, the City is not a meaningful stakeholder, nor an investor, in the actions and outcomes that finally count.

We [planners] and the private sector do much of the detailed planning for the City. We go in with the plans for the communities and neighborhoods. The developer funds most of the construction of these neighborhoods, which many people aren't aware of outside the industry. The City doesn't build these neighborhoods, roads, sewers...it used to be twenty years ago that the City would extend the sewers, for example so that a land owner would be able to develop some houses; but that doesn't happen anymore.

8. Municipal policies are seen to be cumbersome and inflexible; developers and their consultants are induced to follow guidelines and policy prescriptions only to avoid complications and costly delays:

We don't go out and build the subdivisions just on our own. What we do is we stack up all the books at City Hall on planning legislation, zoning bylaws, zoning conditions, exiting guidelines, street standards, lane standards, road standards, light standards...all of the things. We stack up them up - the big books; there's a whole bunch of big books we get. And then we spit out subdivisions that match all those books. We have no creative [latitude] whatsoever. We have no ability to change anything.

1.4.1.3 Affordability and Alternative Development Standards

9. Developers and homebuilders are highly concerned with the Affordability of their product. "Alternative Street Design Standards" is one way by which the industry is trying to achieve improved affordability.

The City put together a task force to study road standards. The result was going to provide a menu... given certain criteria the designer could select to design their own roadways. And the whole idea was to not design anymore than you needed. You don't want to put in a road that has a capability of handling 10,000 vehicle trips per day when you're only going to put on 6,000 vehicle trips per day. What we wind up with is wasted land and asphalt and concrete. You've got the capital cost and long term maintenance costs with that; so we want to make sure we keep the infrastructure down to a minimum.

Two important reasons for changing development standards are: a) reducing long-term maintenance costs to the consumer/taxpayer, and b) creating more human scale developments. Unfortunately the misperception that any cost-saving initiatives (e.g., alternative development standards) will automatically increase developer profits, and resistance from administrators, hamper their implementation:

People think that actually, when we reduce the standards of development to coincide with the need to produce more sustainable, new suburbs, that that money just simply goes in our pockets. But it doesn't. You know there's this illusion out there that every time we save money, it just simply goes in our pockets. But it doesn't.

The ingredients for keeping the costs down start with the provision of infrastructure... and it boils down to the standards for underground servicing, the nature [dimensions, engineering design] of streets...all of those things. Which are incredibly difficult to change...the mind-set of municipal technicians and the rules through either bylaws or engineering requirements, or engineering guidelines, either provincial regulations, federal regulations,

City Hall regulations, all those things today that we use...our subdivisions and our new neighborhoods per se are enormously difficult to change.

10. It is difficult to apply the Sustainable Suburbs design guidelines and also continue to produce more affordable housing and communities:

That's one of the problems with going on script according to sustainable suburbs...the City's view of the sustainable suburbs report unfortunately requires more streets more lanes. [Second] It's very difficult to get the densities and [at the same time] keep affordable. It's a line that we're pretty careful on. We're trying to keep our streets and lane percentage the same. Which is harder to do with the new approach.

11. The "social" goals of the Sustainable Suburbs Study can compromise and undermine the "affordability" goals in some situations. For example, one developer is reconfiguring lots to widen them and lessen their depth. The increase in front footage will lead to an increase in servicing costs and higher overall house prices, only worsening the affordability problem.

Our garage front model will be a 46 foot lot. So it'll provide us an opportunity to recapture the street. Have more windows, more doors onto the street, more porch area, those are the elements that all fit in the sustainability issue. So it won't really change the density. It's a reasonably significant added cost for us. Because when you get the wider frontage you have more sewers, more roads, more concrete beside each lot. But we've decided to bite some of that. Provide people a wider lot, which we think will be very attractive for the market place and help to recapture the streets for pedestrians.

Had the developer located the garage at the rear of the house, the lot could have been made narrower instead, hence improving its affordability.

12. Municipal restructuring and provincial-municipal fiscal retrenchment policies are aimed, in their combination, at increasing revenues and decreasing spending. This has further contributed to the affordability problem:

Fiscal policies of the municipality are also incredibly influential. They're what determine what the development charges are that they put on us. Development charges are all the assessments that the new home purchaser pays...there are assessments for parks, assessments for freeways and expressways, assessments for major roads, assessments for other selected areas. They have now got assessments for recreational space! They're proposing all sorts of new assessments...called acreage assessments; but they're actually levies or charges, development charges. And they gain it because of political issue.

There are 'external' costs [to a project] that are supplied by the City but we [have to] pay a portion of. For expressways and freeways, the development industry pays on an acreage basis...as well as water feeder mains, storm sewers, sanitary sewers, and improvements, we pay for everything on site. And then at the end of the two-year maintenance period, turn that over to the city. So it's a turn key operation. Brand new utilities, brand new roadways, with subdivided lots and houses that they can start collecting taxes on. So it's a neat cash cow for the City.

1.4.1.4 Consumer-Market Demand and Innovations for Sustainability

13. Developers argue the Suburbs policy fails to take into consideration the needs and wants of the marketplace. One respondent stated that consumer preferences can be determined by visiting showhomes in Calgary; the industry builds what the consumer wants. However, another respondent argued that "if we don't produce it, people won't know whether or not they want it" – i.e. the consumer can only choose from among products currently available for sale.

14. Land Developers exercise considerable degree of influence over the composition and house-types designed into the communities. Effectively, they establish the markets for communities and housing, and design products that meet the needs of these markets:

We control and we determine what the various markets will be in the subdivisions. We target a particular subdivision. We'll say that we want this to address a certain band width of the market price range. Then based on analysis of what our competition's up to and what we think they'll be up to in five and ten years time, we assemble a group of builders that will work best in that market range.

15. An emerging practice is to establish homeowners associations for the management and maintenance of local community amenities: an encumbrance is placed on the title of each property in the community, and homeowners are responsible for paying annual dues for use of community facilities. The developer or community receives a rebate each year for the amount the City would have spent maintaining the amenity (e.g., park area). This practice devolves maintenance responsibilities to the residents, and it leads to the creation of 'exclusive' communities whereby only those able to afford the extra amenities can live in the community.

16. While the industry associations acknowledge the legitimate role of public policy, there is strong resentment toward policies designed to change consumer behavior:

One of the things that we made abundantly clear as an association [CHBA] was that some of the 'thou shalt' or 'shall be' and so on should be removed and in fact, were removed from the document. Because we know from the fifty years that this association has been in existence, we cannot dictate to the public. Nobody can, because it's the consumers' market; and the consumer is going to decide whether they want to buy into the sustainable suburbs philosophy or whether they don't. It's not any legislation which is going to force people to live where some legislation would want them to live.

17. Practices and innovations consistent with sustainability reported by the interviewees were: building constructed wetlands; designing alternative street standards; increasing the mix of housing and higher densities; producing wider lots to improve streetscape and street character; recycling water in major community amenities, such as water fountains and man-made waterfalls; improving affordability of product; and measures such as using recycled construction products, reducing on-site construction waste, and using engineered construction materials.

The Calgary Home Builders' Association is currently instituting practices to make the homebuilding industry as "green as possible". (However, the association has not yet produced a policy document about such practices.)

We are also supporting, encouraging the use of engineered products, as much as, wherever possible. Again, it's not only to address it from an environmentally friendly situation, but also from an economic standpoint, and longevity. An example being engineered truss choices. There are other materials that are recycled, or man-made materials – flooring, silent-flooring, other products that are replacing some of the raw materials that have been used up to this point in construction.

18. Sustainability initiatives cannot be instituted overnight. Implementing sustainability policies and initiatives is – or should be – an incremental one; they should be phased in over time:

I can give you all kinds of examples. It will take a period of time for people to decide whether they want to live next to a row housing project or whether they want to have their half a million dollar estate home next to something else. So, we perceive that, as much as we would love the Sustainable Suburbs concept, it's going to be a growing process, and a learning process.

1.4.2 Key Informant Interviews Summary and Questions Arising for Inclusion in the Survey Questionnaire

A number of conclusions and inferences for the Questionnaire design were drawn from the KII's:

- All of the respondents were intimately familiar with the *Sustainable Suburbs Study* and Round Table but expressed reservations, skepticism and concerns. The nature and extent of this reaction needed further investigation and explanation.
- The policy seemingly compromises the interests of the industry and the homebuyer. Informants suggested that while the policies were packaged to improve the character of residential communities, there is significant doubt this would indeed occur: would the design guidelines produce undesirable outcomes for the industry and its customers?
- The delivery of housing, and planning and design of residential communities does not occur by land developer firms in isolation: the process involves extensive interaction and negotiation of various agents, representing sectoral interests. This suggested that a better understanding about the propensity for success of the sustainability policies would have to be gained by disaggregating the industry by firm type and by the levels of influence exercised in the design-development of residential communities and housing.
- The interviewees expressed significant disdain for the initiation of a new planning-development policy which, in their view, challenges consumer supremacy and seeks to coerce industry-driven innovation. They assert that they are already addressing affordability, quality of life, environment,

consumer preferences etc.; and competition in the industry, they say, is or should be the primary driver for innovations. The degree to which these claims are true can conceivably be answered by an inquiry into specific industry practices and the types of innovations actually introduced by industry firms. (Note, however, the competition factor could not be feasibly addressed in the present survey questionnaire project.)

- Interviewees were unwilling to disclose their policies on environmental (management) practices. They state that such policies are not available for public scrutiny. Thus, questions for further investigation were raised: What is the present situation regarding Environmental Management practices by the industry generally? And, What are, or would be the key driving forces for improving environmental performance and management practices for this industry?

Apart from the KII's a number of other sustainability issues or queries concerning the planning of residential communities were identified from the literature. These were drawn in the main (though not exclusively) from Perks and Van Vliet, 1993; Perks, Bilku and Thompson 1996; Perks and Wilton-Clark, 1996; Energy Pathways, 1991; Maclaren, 1996; and the *Sustainable Suburbs Study*, 1995. The first three research reports were valuable for their Calgary-specific information as well as for discussion on empirical and theoretical sustainability topics. The Energy Pathways and Maclaren works are of particular value for an exposition of, and issues discussed concerning alternative planning approaches for improving affordability and sustainability, and developing indicators for urban sustainability reporting. The *Sustainable Suburbs Study* outlines policies, practices, and design guidelines expected to produce changes in industry operations and in residential development projects.

In summary, questions for the Survey-Questionnaire were formulated around the following themes or issues gathered together from the literature review and the KII's:

- Municipal Planning Regulations – policies, administrative practices, and procedures, design guidelines, etc.
- Alternative Development Standards
- Innovation in Housing and Community Design
- Consumer Preferences and Related Market Studies
- Affordability – of housing, infrastructure, maintenance of services
- Alternative Planning and Urban Design Models (e.g. "New Urbanism" and "Neo-traditional")
- Environmental Management

Chapter 2 deals with the Round Table, the definition of sustainability, the impact of municipal planning regulations, and site development and infrastructure standards.

Chapter 3 goes on to discuss the innovations for affordability and sustainability and the propensity for the industry and City to adopt such innovations.

Chapter 4 discusses industry positioning about the issue of housing affordability, and examines the present situation regarding affordability initiatives. Market research for sustainability and affordability choices, and perceptions about the marketability of *Sustainable Suburbs* policies are also examined in this chapter.

The Survey findings and discussions about the themes conclude with a discussion about the environmental management practices and the Environmental Issues policies in Chapter 5.

Footnotes for Chapter 1.

¹ See for example, the Appendix in The GoPlan document titled *Calgary's Future Suburban Growth, Moving Towards Sustainable Development*, City of Calgary Planning and Building Department, May 1994; Perks, William T., J. Bilkhu and D.A. Thompson, 1996; Paehlke, 1991; and *The Ecological City: Canada's Overview*, 1995).

² Municipalities are no longer responsible for infrastructure emplacement, as was the case in the years following the Second World War. Beginning in the early 1950's and continuing through to the 1960's, municipal governments began to withdraw from the land development and servicing field. Builders became responsible for purchasing land and servicing it with their own funds. In Calgary, a group of builders created a partnership to form a private land development business, called Carma. The number of builders participating in Carma grew to 45. During the 1960s, municipal government involvement in the development and servicing of land became more an aspect of control and regulation. (Clayton Research Associates 1989: 41).

³ For a historical account of the transfer of responsibilities for community planning and infrastructure emplacement from municipalities to land developers. See Clayton Research Associates, Report #4, 1989).

⁴ Firm sizes ranged from 1 to 140 for survey question D3.1 (Full-time personnel employed by firm).

⁵ According to the City of Calgary, developer contributions (through acreage assessment charges and levies) account for only 12% of "off-site" infrastructure costs. (City of Calgary, 1994)

Chapter 2: Sustainable Community Design and Development in Calgary

This chapter discusses the results from survey questions 1a, 1c, 2c, 3d, 4b, 4c, 6, 7, 7a, 13, 14, 15, 15a, 16, 16a, and 17. It includes a discussion about the Round Table process, and industry perceptions about the adequacies and inadequacies of processes leading to, and prescribed by, the Study document.

2.1 The Sustainable Suburbs Study and its Round Table Process

The *Sustainable Suburbs* Round Table involved participation from representatives of the Urban Development Institute, the Calgary Homebuilders' Association, the Public and separate School Boards, the Federation of Calgary Communities, the Alberta Association of Architects, the Alberta Association Canadian Institute of Planners and the University of Calgary. Also participating were the directors of Calgary Parks and Recreation, Engineering and Environmental Services, Transportation and Planning & Building Departments, and several others – e.g., numerous landowners, consultants, marketing experts, builders and staff from City departments and agencies – were included. (*Sustainable Suburbs Study*, p.4)

Thus, the process is described as an extensive and inclusive one – representative of public and private agencies, and citizens. Given this, one would expect firms engaged in land development and homebuilding to have a sound and fairly comprehensive understanding of the policy and its intended outcomes. Second, one might expect that the industry would be fairly satisfied that most, if not all interests were adequately represented. Finally, it should be expected that since the policy is directed toward the activities and operating practices of land developer and homebuilder firms, that all of these firms in Calgary would have a copy of the Study (Policies).

2.1.1 Survey Findings

Four questions (viz. Q6, Q7, Q7a, and Q16a) sought to establish the feelings and opinion about the nature and effectiveness of participation and input from the various industry agents. Question 17 sought to determine how many of the respondents have a copy of the policy document.

Roughly 4 out of 10 respondents/firms do *not* have a copy of the Study; most land developer and community planning firms do, while very few homebuilders – only 30% - said they have a copy. The success of the policy is contingent on awareness and information about the policy prescriptions and the changes therein. How will the policies be successfully implemented if a significant number of firms do not possess a copy that can be regularly referenced?

Figure 3 – (Question 17) Percent of Respondents who have a copy of the City's Sustainable Suburbs Study

		Percent
UDI Land Developers	Yes	92
	No	8
CHBA Land Developers	Yes	50
	No	50
HomeBuilders	Yes	30
	No	70
Community Planners	Yes	83
	No	17

All Respondents	Percent
Yes	62
No	38

The relatively few homebuilders in possession of a copy could mean that, as an industry, homebuilders were adequately represented through their association, the CHBA; but individual firms may not have been. It could also signify that homebuilders might not take as close an interest in the Suburbs policy as do other industry representatives (i.e. land developers and community planners), conceivably because the homebuilders are not influential agents in the City-industry give and take on development/planning matters.

When asked about the representation and participation of other sectoral interest groups or associations, there are unequivocal differences in the perceptions of the five industry groups; see the Figures 4 and 5 (from Q6 and Q7) below.

6a. Adequate Development Industry Participation and Input?

Of the UDI Land Developers, 4 out of 10 disagree; only one-third of them agree. A significant majority (84%) of the CHBA developers are unsure. There is no disagreement from homebuilders, although 58% are unsure. Disagreement is low among the planners, but only one-third actually agree, and one-half indicate uncertainty; and they may be averting this particular question. Thus, there is strong disagreement among UDI developers; within the other four groups opinion is divided, although more planners and homebuilders tend to agree than disagree.

6b. Adequate Homebuilders Participation and Input?

It is interesting to note that while UDI developers mostly disagree, homebuilders and planners are divided. One can conclude that participation of homebuilders in the Round Table was judged unsatisfactory. Maybe homebuilders were under-represented; or maybe their role was subordinated to other, more assertive players.

Figure 4 – (Question 6) Percent who believe the Sustainable Suburbs Round Table had adequate participation and input from:

- a) The Development Industry.
- b) Homebuilders.
- c) Potential home-buyers/consumers.
- d) City municipal officials/departments.
- e) Other relevant experts (architects, planning consultants, researchers, experts on sustainable development, sustainable community design, etc.).

Type of Firm	Question 6	a	b	c	d	e
		% Response				
UDI Land Developers n=12	Strongly Disagree	17	8	25	0	8
	Disagree	25	42	42	0	8
	Unsure	25	33	17	0	33
	Agree	25	17	17	58	42
	Strongly Agree	8	0	0	42	8
CHBA Land Developers n=6	Strongly Disagree	0	0	0	0	0
	Disagree	17	0	17	0	0
	Unsure	84	100	67	50	67
	Agree	0	0	17	33	17
	Strongly Agree	0	0	0	17	17
Homebuilders n=20	Strongly Disagree	0	6	6	0	0
	Disagree	0	25	13	0	6
	Unsure	56	31	56	31	38
	Agree	38	31	25	63	50
	Strongly Agree	6	6	0	6	6
Community Planners n=18	Strongly Disagree	0	0	21	0	0
	Disagree	14	29	36	0	43
	Unsure	50	36	43	7	43
	Agree	21	29	0	50	14
	Strongly Agree	14	7	0	43	0

Figure 5 – (Question 7) Percent who believe The Sustainable Suburbs Study and its 28 policies achieved a fair and considerate balance of all interests – current and potential homebuyers, land developers, homebuilders, the City municipal departments, private consultants.

Type of Firm		Percent
UDI Land Developers	Strongly Disagree	33
	Disagree	60
	Unsure	8
	No Opinion	8
CHBA Land Developers	Strongly Disagree	17
	Unsure	33
	No Opinion	50
HomeBuilders	Strongly Disagree	12
	Disagree	6
	Unsure	18
	Agree	18
	No Opinion	47
Community Planners	Disagree	36
	Unsure	24
	Agree	18
	No Opinion	24

All Respondents	Percent
Strongly Disagree	11
Disagree	26
Unsure	16
Agree	18
No Opinion	29

6c. Adequate Potential Homebuyers/Consumers Participation and Input ?

Clearly the Process did not include homebuyers/consumers to a satisfactory or adequate extent: two-thirds of UDI land developers and more than half of the planners disagree. While the highest level of agreement (25%) was expressed from the homebuilders, more than half of them are unsure; and only 12% of all respondents agree for this question. If the inadequacy of representation and participation of the homebuyer in the Round Table is any indication of regular municipally-directed, participatory planning processes, one cannot help but conclude that the consumer is rarely, if ever, seriously involved in the front-end planning and design of residential communities.

6d. Adequate City municipal officials/departments Participation and Input?

Certainly municipal officials and departments had adequate participation (no disagreement). The responses for this question suggest that municipal officials had the strongest and possibly preponderant presence in the process, and doubtless in the final policy document.

6e. Other relevant experts (architects, planning consultants, researchers, experts on sustainable development, sustainable community design, etc.): Adequate Participation and Input?

Just under half of the Planners disagree (and an equal number are unsure). Developers and homebuilders are more satisfied with the participation from relevant experts. Perhaps community planners did not enjoy the level of participation they would have preferred; but apparently, they were considered by others to have had an 'adequate say'. A clearer articulation for this disagreement is forthcoming in other sections of this paper.

6f. Others Adequate Participation and Input?

Some respondents disagree that the Round Table included adequate participation from the real estate industry and from other financial institutions.

Balance of all Interests Reflected in the Policy Outcome (Question 7)

Only 18% of all respondents agree; more than one-third of all respondents disagree. UDI land developers expressed the greatest level of disagreement – 83% disagree (33% strongly). A significant number of respondents – 50% of the CHBA group, 47% of homebuilders, and 24% of community planners – indicated no opinion on this question.

These responses may be attributable to a variety of reasons. First, the issue may be so politically heated that respondents were unwilling to provide a fully candid opinion. On the other hand, the high

levels of uncertainty and no opinion could signify unfamiliarity with the policies that emerged from the Round Table. It could also mean that respondents are simply not sure because they are unaware of the positioning of other industry groups and their perceptions about the actual nature of the discussions and the outcomes of the Round Table. The emphatic disagreement on the part of the UDI Developers doubtless reflects their extreme disappointment in the policies ultimately adopted. (See also Chapter 1, (Kil's) and Survey findings below.)

2.1.2 Reasons why the Sustainable Suburbs Study did not achieve a fair and considerate balance of all interests (Question 7a)

Land Developers and Homebuilders

The most frequently cited reason by developers is failure to represent consumer preferences and "market realities":

The study and process repeatedly ignored "the market" and its realities in pursuit of a utopian, dated (this is 1970's planning theory) planning concept.

The process was weighted in favor of ideology and took very little account in the wants and needs of the marketplace.

One developer asserted that consumers prefer conventional densities, not what is prescribed in the Study (7 upa).

Further reasons for disagreement include:

It was manipulated to a predetermined outcome by those controlling the process.

The Sustainable Suburbs Study will create unattractive identical boring communities and increase demand for older traditional [conventional] developments.

All new communities will be forced to be the same, which is definitely not what the consumer is looking for. Not all consumers want to live in small lot, multi-family communities

Municipal officials and politicians not committed to support recommended changes – want 7 upa without required changes in standards.

Not all City departments appear to have bought in. Also, the consumer is very "unaware" of the implications.

The exercise was too academic. Not enough weight given to the actual costs of these policies. Not enough experienced practitioners involved.

Some consideration needs to be given on how to incorporate current communities into new zoning and expectations.

Total emphasis was on new areas. Many people who prefer higher density accommodation or are better served by it, (i.e. seniors & lower income) either cannot or will not live in outer suburbia of new subdivisions. The sustainable suburban goals cannot be properly reached without the accompanying consideration of urban renewal.

Industry respondents seem to believe that the prescriptions in the Study will be treated as *proscriptions* by municipal administrators/regulators. In other words, these policies will be applied with little flexibility or opportunity for change. However, given that the policies are *only* administrative, they can presumably be challenged by innovative community plans submitted by the industry. On the other hand, proposals that do not conform to existing expectations about community design and subdivision may involve lengthier approval times. Perhaps respondents are concerned that the new policies – developed according to the principles of Neo-Traditional planning – will be applied to duplicate McKenzie Towne in other parts of Calgary.

Another reason for disagreement is that political support for the Suburbs policies is not unanimous among departments and between administrators, policymakers and elected officials. It is further argued that the consumer does not prefer the Neo-Traditional concepts to conventional, curvilinear subdivision designs. Here, they may be right; however, only because the neo-traditional community typically envisaged in Calgary is McKenzie Towne. In Calgary, neo-traditional planning has become associated with the New England urban form idioms applied in McKenzie Towne; as this is the only demonstration of the neo-traditional planning concept. However, while the Suburbs Study *recommends* design guidelines, it does not prescribe architectural styling or dictate construction materials, etc.; therefore, there is no reason to believe that *all Neo-Traditional-styled communities in Calgary* need imitate McKenzie Towne.

Another argument from the developers and homebuilders is that the policies address *new communities only*. An argument typically made is that the guidelines, applying only to new communities, will lead to unfair increases in property values in conventional communities and will thereby create inequities between residents of new and established neighborhoods. Change must, however, begin somewhere – and it is arguably easier and more effective to design communities which inhere principles of sustainability than it is to retrofit and re-design (which of course leads to added costs).

That the City did not anticipate the costs of implementing the policies and design guidelines is a *bona fide* concern. An accounting of the costs for improving the "social" and aesthetic environment was not undertaken to predict and calculate the affordability outcomes, nor was this method used to convince policymakers and the industry about the sustainability-affordability merits of the policies. This lack of an accounting study undermines the City's position and signifies the seriousness with which the policies were formulated.

Community Planners

More than the other groups, Community Planners offered explanations for disagreement that touch on the policy process. They suggest that the process did not adequately represent the interests of *non-human residents*, potential homebuyers, and some design professionals. On the other hand, one planner argues:

If you have a "fair and considerate balance of all interest" you usually have a watered down, vague policy that you never really know if you're achieving anything.

Concern over the implementation and operationalization of the policy was expressed:

The process breaks down going from the theory "Sustainable Suburbs" to policy/implementation

One respondent expressed disagreement because:

The policy objectives were predicated on public sector objectives of increasing transit ridership and decreasing the reliance on the automobiles – through intervention in the marketplace without a review of the fiscal implications or the cumulative impacts on the delivery of cost effective development of housing.

Other Urban Consultants

The two respondents both suggested that the *Sustainable Suburbs* policies must be accepted by consumers as a matter of choice, not impressed upon them:

"Sustainable Suburbs" should come from consumer demand and not forced upon them. If they don't agree with higher density, will move to smaller Towns, or older neighborhoods. You can't force higher density on consumers. If consumers move to surrounding towns, transportation problems will increase rather than decrease. Sustainable Suburbs should be one of many options. By making it mandatory you are showing disrespect for the rights of consumers to have a choice.

A number of legitimate reasons are offered for explaining why the Study document did not achieve a fair and considerate balance of all interests. First, the Round Table process was manipulated to produce a pre-conceived outcome. Second, the respondents tend to believe that the policies will lead to the design and development of communities that imitate McKenzie Towne; Neo-Traditional with New England urban form idioms. Third, municipal administrators either oppose the policies, or are not fully committed to ensuring the successful application of them. Fourth, the costs of the policies were not anticipated or demonstrated to improve the situation of affordability. Fifth, the policies do not encourage sustainability in established neighborhoods. Sixth, it is argued that consumer interests were not represented. Finally, the policy is poorly operationalized.

All of these reasons point to the lack of commitment, direction and specificity with which the policies were envisioned and produced. The ways in which these policies would contribute to affordability and sustainability and lead to consumer benefits were also ill-conceived and disappointing. Is it any

wonder that the policies received limited support and endorsement from the industry? Why would anyone apply these policies without clear incentives and tangible marketing benefits?

2.2 The definition of Sustainability and Sustainable Suburbs

The City of Calgary defines *Sustainable Suburbs* as...communities that are capable of being sustained far into the future...

fiscally: the costs of building, operating and maintaining new communities and their supportive infrastructure and services are affordable, having regard to other spending priorities, and will not become a burden on future generations;

socially: communities are designed to be socially diverse, adaptable to changing lifestyles and to further the objective of providing all Calgarians with access to affordable housing, education, health care, essential goods, public amenities and services, such that their basic needs are met;

environmentally: communities are designed to minimize air, water, and soil pollution, reduce resource consumption and waste, and protect natural systems that support life.

Figure 6 – (Question 16) Percent who believe the City's definition of "sustainable community" is adequate.

Type of Firm		Percent
UDI Land Developers	Yes	30
	No	40
	No Opinion	30
CHBA Land Developers	Yes	50
	No Opinion	50
HomeBuilders	Yes	45
	No	20
	No Opinion	35
Community Planners	Yes	44
	No	38
	No Opinion	17

All Respondents	Percent
Yes	41
No	29
No Opinion	30

The definition is not adequate for almost one-third of all respondents. An equal number indicate no opinion for what is an ostensibly significant policy concept for the planning-design of new development projects in Calgary. Predictably, we can expect poor receptivity by those dissatisfied with the definition and the subsequent propositions drawn from its articulation.

Suggested changes to the definition (Question 16)

The UDI land developers would like the definition to include some reference to the market and consumer preferences, and requirements for recycling. One respondent suggests that the definition is already too broad and does not need further elaboration. CHBA land developers would like to add some reference made about flexibility in applying the policies and scale of development projects.

One respondent stated that

The land owner should have the flexibility to design large or small cells of different price bands of house as the market defaults.

Homebuilders are more specific about changes to the definition. They would like to include references to: the concept of lifecycle costing; crime, security, and "sense" of community; and provisions for old as well as new communities to share the costs of development and growth in urban municipalities.

One respondent suggests that the definition is contradictory unless weighting favors either fiscal or social criteria for sustainable communities. One respondent hinted to the contradictory nature of the City's transportation policies, and posits that *Sustainable Suburbs* "will be hindered" unless

the city changes its policy of building freeways and overpasses to facilitate easy automobile movement from one community to another for work, entertainment, shopping, etc.

The Planners altogether would like to see additional considerations embodied in the sustainability concept: retail and office (business), transportation, evolution over time, beauty, urban design and character, humanly-scaled communities that enhance quality of life and sense of community, regional (and landscape) perspective, and protection of natural systems.

2.3 Municipal Planning Regulations – Policies, Administrative Practices and Procedures

Recent studies have argued that municipal planning and site development standards and regulations are excessive and inflexible (Energy Pathways Inc, 1991; D'Amour, 1993; IBI 1992; Marshall Macklin Monaghan Ltd., 1994, Perks and Van Vliet 1993). It is argued that excessive standards and inflexible requirements "impede the housing delivery system's ability to supply smaller units and other types of housing appropriate to current economic and social conditions." In addition, "building standards and land development regulations often inhibit innovative approaches to housing and community design and construction, even though these approaches reflect changes in household composition, size, and lifestyle." (Energy Pathways, 1991)

While it is now widely recognized that regulatory instruments can contribute significant costs in the final price of a home, municipalities are reluctant to make changes, especially where 'lower' standards would likely – or conceivably – increase their administrative resources and operating-maintenance costs. The industry may well be concerned with the initial capital costs of development, but the primary preoccupation of the municipality is the long-term maintenance costs of the

infrastructure.¹ Therefore, the process of relaxation and 'down-sizing' existing regulatory mechanisms is a slow and difficult one. Reporting on the situation at the beginning of the 1990s (and on local experimental projects in the 1970s), Perks and Van Vliet (1993) report that in Calgary, no significant progress has been made. More recently, the McKenzie Towne project introduced some relaxed site development standards; but the debate over less capital-intensive infrastructure-engineering standards goes on.

It has been widely argued from the side of public policy advocates, that current planning practice strongly favors the production of single family homes over other types of residential units. "This appears to be based on a belief that as lot sizes and house sizes increase, the value of the properties increase and, hence, the assessment and taxes per house increase." (IBI,1992: 5.4) Second, the production and supply of mainly single-detached housing units as the predominant housing form, limits or restricts the number of low income residents in a community; size and form reflect price, which is a proxy for income-affordability. Types and size of housing reflect the socio-economic diversity within the residential community.

Delays in the land development and building approval processes increase the cost of housing construction and act as a barrier to the development of innovative housing types, materials and site plans. (Energy Pathways, 1991) Reasons for delays in the development approval process include complicated and uncoordinated building permit application and review procedures, inadequate information and unclear application forms, lack of trained staff, competing jurisdictional authorities, overlapping jurisdictions between government departments, and effective mechanisms for public consultation. (Ibid.)

In Calgary, the municipality is attempting to alter the rigid application of policy by instituting a number changes to its development approval process and community planning and design phases. These new processes are expected to encourage industry innovation and facilitate the move toward greater affordability and sustainability in new residential communities. Three questions (Q14, Q15, Q15a) sought to measure industry opinion about the New Community Plan Process outlined in the *Sustainable Suburbs Study*.

Figure 7 – (Question 14) Percent who believe *The City's new Community Plan Process* will:

- a) lead to greater efficiencies in the development approval process.
- b) lead to better input of public and consumer interests in the planning-design phase of new residential communities.
- c) add to the customary costs of doing business.
- d) lead to improved overall environmental and sustainable qualities of new residential communities in Calgary.
- e) provide opportunities to experiment with alternative site development standards for affordable and sustainable communities.

Type of Firm	Question 14	a	b	c	d	e
		% Response				
UDI Land Developers n=12	Strongly Disagree	17	25	0	17	50
	Disagree	50	33	17	50	8
	Unsure	17	8	0	25	25
	Agree	17	33	50	8	17
	Strongly Agree	0	0	33	0	0
CHBA Land Developers n=6	Strongly Disagree	50	0	0	0	0
	Disagree	0	17	17	0	0
	Unsure	17	50	17	50	80
	Agree	33	33	33	50	40
	Strongly Agree	0	0	33	0	0
Homebuilders n=20	Strongly Disagree	11	0	0	0	8
	Disagree	22	11	8	22	0
	Unsure	39	44	44	44	44
	Agree	28	39	33	22	44
	Strongly Agree	0	8	17	11	8
Community Planners n=18	Strongly Disagree	12	0	0	8	13
	Disagree	41	35	25	41	44
	Unsure	29	35	31	24	19
	Agree	18	29	31	29	25
	Strongly Agree	0	0	13	0	0

14a. lead to greater efficiencies in the development approval process.

There were greater levels of disagreement than agreement from all groups. The land developers showed the highest levels of disagreement – 67% of the UDI group disagree, 17% strongly; and one-half of the CHBA group strongly disagree. Homebuilders are the only group for which an unequivocal response is not indicated; while one-third disagree, 39% are unsure and 28% agree. Planners and other consultants indicated high levels of disagreement.

14b. lead to better input of public and consumer interests in the planning-design phase of new residential communities

Only the UDI group expressed significant disagreement for this question. The CHBA land developers and Homebuilders were more likely to agree, although there are high levels of uncertainty expressed by respondents from both groups. Community Planners were divided; while over one-third disagree, the same number express uncertainty and 29% agree. Other consultants are clearly divided. The high levels of uncertainty expressed by the CHBA, homebuilders, and planners groups may reflect

pessimism, or it may indicate their general position about public participation in the development approval process.

14c. add to the customary costs of doing business

A majority of all respondents expressed agreement for this question. Strongest levels of agreement came from the land developer groups. However, a significant proportion of Homebuilders (44%), Planners (31%), and other consultants (50%) express uncertainty. Perhaps the policy lacks clear direction about the cost implications – i.e. savings that are expected due to changes in the planning process. On the other hand, these costs may be difficult to predict at this time, given the large number of factors and agents involved in the planning process; the pace of approvals, and hence carrying and other costs, may be highly irregular and not quantifiable by members of the industry.

14d. lead to improved overall environmental and sustainable qualities of new residential communities in Calgary

The UDI group and planners are less optimistic than any of the other groups. One-third of Homebuilders and half of the CHBA group agree, although a significant number of them are unsure. The uncertainty expressed by homebuilders and other groups might reflect the Study's vagueness or lack of direction about which specific initiatives (e.g., resource-conserving practices and technologies introduced in the home and the community) will lead to improvements in environmental and sustainable qualities. This issue is further explored in a Chapter 5 discussion about Environmental Issues Policies.

14e. provide opportunities to experiment with alternative site development standards for affordable and sustainable communities

High levels of disagreement from the UDI group and planners comes as no surprise, especially since the City Council rejected the *Alternative Street Designs Study* and placed a five-year moratorium on this issue. That 50% of the homebuilders agree is interesting. They are either very pessimistic, or less aware about the outcome of the streets debate.

Figure 8 – (Question 15) Percent who foresee the new Community Plan process as encouraging or discouraging industry innovation

Type of Firm		Percent
UDI Land Developers	Encouraging	33
	Discouraging	67
CHBA Land Developers	Encouraging	33
	Discouraging	33
	No Opinion	33
HomeBuilders	Encouraging	38
	Discouraging	22
	No Opinion	39
Community Planners	Encouraging	47
	Discouraging	33
	No Opinion	13
	No Impact	7

Land Developers Only	Percent
Encouraging	33
Discouraging	56
No Opinion	11

All Respondents	Percent
Encouraging	42
Discouraging	32
No Opinion	25
No Impact	2

Land Developers and Homebuilders

Most developers remain pessimistic that the Community Plan Process will encourage innovation. However, respondents who expressed optimism, suggest the new process: "will alert developers to consumer attitudes and changing preferences"; provide "marketable feedback from the end-user"; and "speed things up overall". One homebuilder suggested,

As industry perceives an environment receptive to new innovation and opportunity, it will respond positively.

Reasons why the process will discourage innovation are:

- The *Sustainable Suburbs* criteria are fixed:

Planning Department is stuck on a fixed template or design as to what all new communities should look like.

All new communities must now conform to the same "cookie-cutter design".

- The policy does not address changes to existing development standards and regulations:

Until all standards, zoning regulations, etc. change – little innovation will occur.

- Greater community involvement in the process will lead to delays and escalate costs:

Any time you slow down the process of approving new community plans – you increase the cost to the consumer – the industry then begins to build only what is most easily approved.

Too many cooks spoil the broth! An all inclusive planning process suggests the involvement of those with no vested interests with nothing to risk, being given a say in how privately owned land is developed.

- An inclusive process will bring about community opposition to change

More community involvement will lead to more NIMBY attitudes thus discouraging any and all types of innovation.

Three respondents suggested that innovation would occur *independent* of the process because:

The market place will ultimately be the dominating force to encourage or discourage innovation - not the well-meaning but of ten uninformed wishful thinking of "wannabe" planners. When consumers are convinced of the necessity for innovation, they will exert pressure to obtain. (For example, "Air Bags" in the auto industry.)

Industry innovation is driven by individual companies not a cast of community regs or City Planners. The Community Plan seeks a standard solution to all problems and hopes to eliminate any one individual concern.

Community Planners and Other Consultants

Most respondents from these groups believe the process will encourage innovation. Planners and consultants are optimistic that the process: generates "more flexible attitudes at the conceptual planning level", "develops unique solutions", is an all inclusive process; encourages dialogue and "allows a forum of explanation for innovations".

In addition, opportunities for innovation are foreseen because

It [Sustainable Suburbs] encourages developers to consider alternatives to the design concepts which were considered "tried and true".

The design process encourages the exploration of different options by having the public involved and meeting with City departments together.

Since it is non-statutory, there should be more room for discussion of non-traditional approaches, reasonably close to the development design stage.

Planners and consultants who believe *innovation will not occur*, suggest

- Municipal administrators are not committed to change:

While the process in theory is forward thinking, many of the stakeholders are not to date prepared to relinquish the status quo and/or trade off their position for the greater good - process is also very prescriptive.

- Developers will produce plans that appease municipal administrators, not innovative ones:

Obtaining approvals for innovative planning is very time consuming and developers are simply not willing to hold land off the market while approvals are obtained. This results in many taking 'the path of least resistance' to obtain approvals meaning innovation is sacrificed. This problem will be further compounded as housing markets 'heat-up'.

- The Sustainable Suburbs policies are inflexible

A preconceived "community model" underlying all community plans, although somewhat different than present development, nevertheless, encourages stereotype development and inhibits creativity.

2.4 Alternative Site Development & Infrastructure Standards

2.4.1 Need for Revised Development Standards

High-level site development standards in Canadian municipalities – variously referred to as “Cadillac”, “Gold-plated”, “excessive” – have been challenged on a number of fronts; two of them being the SD and Affordability fronts. Many studies have suggested that relaxations of development standards are feasible and can improve affordability. When combined with other innovative planning approaches, alternative standards can lead to additional benefits, including community conveniences, and enhanced quality of life and physical environments. Infrastructure for which reduced standards can be considered include: right-of-way widths; pavement widths; curbs and sidewalks; geometric road standards; watermain standards; sewer standards; storm design standards; storm conveyance systems (eliminating curbs and storm sewers in favour of roadside ditches) and; foundation drains (smaller and much shallower storm sewer). (Hygeia Consulting Services, 1995)

The two sets of standards of main concern are: 1) Land use-urban design standards - such as dimensions and/or area of lots, streets and lanes, parks, school sites, front/rear/side yards, lot coverage, the arrangement and configuration of sites and buildings in space and in relationships to each other; and 2) Engineering design-construction standards for infrastructure – essentially engineering designs that determine capacity (e.g., traffic on streets, size of sewage or stormwater pipes, etc.) and construction specifications (durability, lifecycle, etc.). Both of these have capital cost implications. The urban design standards have further implications for land resources conservation, function or convenience and efficiency in community structure, and land ecology opportunities (preservation, etc.).

Most developers and some engineers in the private sector believe that most municipalities enforce “gold-plated” engineering standards because the capital costs of infrastructure are paid by the developer (and subsequently, upfront, by the consumer), while the resulting maintenance and repair costs are paid by the taxpayers at large. It is therefore frequently argued that significant savings in the cost of infrastructure can be realized by applying a “Performance Based Approach” to development standards.² Performance based design recognizes ‘diminishing returns’ – viz., as standards are increased, the increased benefits do not continue to rise proportionately, and therefore at some point, can no longer justify the extra costs. (Hygeia Consulting Services, 1995)

Improvements in infrastructure technology over the past few decades would appear to have masked this possibility of cost-savings. As one report notes: “Increasing standards and requirements would be expected to drive servicing costs beyond the rate of inflation. They have, however, been held in check by the application of innovative construction techniques and materials.” (Marshall Macklin

Monaghan Ltd. 1994: 12). In effect, bringing real cost savings to the consumer was much of a lost opportunity.

A number of recent studies have compared costs of conventional patterns of development to alternative developments (i.e. with innovations in development standards such as roadway widths, rights-of-way dimensions, and other linear infrastructure standards). The 1994 Marshall Macklin Monaghan study examined four types of standard for subdivision design: Suburban Conventional; Suburban Innovative; Urban Conventional; and Urban Innovative; it concluded that,

- a reduction in the road right-of-way width is the single most effective 'engineering' contribution that can be made to achieve infrastructure cost efficiency (measured on a per dwelling unit basis). ROW width can be reduced by considering sidewalks, pavement, watermains, utilities.
- the source of greatest savings is a reduction in lot size and lot frontage.
- innovative standards can result in savings of 9% to 12% on a per metre servicing basis.
- reduction in road right-of-way width from 20.0 m to 16.0 m produces a worthwhile reduction in land usage.
- while the benefits of individual changes in land use intensification, innovative planning and engineering standards, or joint use community facilities may not seem significant, the cumulative effect of their implementation will be significant infrastructure cost efficiency and effectiveness.

(Marshall Macklin Monaghan 1994: 31)

The Market Study of Alternative Development Standards for the Regional Municipality of Ottawa-Carleton (Brethour Research Associates 1992) also demonstrated that significant savings can be achieved by offering a package of "ADS" (Alternative Development Standards) components that include lot width, lot depth, front and rear yard setbacks, door to door separations, and reduced right-of-way (ROW) widths. Estimated cost savings are \$9,000 to \$12,500 for single-detached homes and \$5,500 for a townhouse.

Two additional research-design studies are worth noting. The first involved the redesign of a site in Ottawa-Carleton, using alternative development standards. The alternative plan included a more compact urban form, a finer mix of land uses, higher residential densities, narrower road right-of-ways, a modified grid system of streets, a transit-supportive design, and other features. (Essiambre-Phillips-Desjardins Associates 1995: 4). Per unit emplacement cost savings of \$5,000 could be realized – assuming costs were passed on to the consumer – due to the increase in residential density and the increase in land use mix (which reduces the residential sector's share of capital, operating and maintenance costs).

In the Calgary context, Perks and Wilton-Clark (1996) demonstrated in a "re-design" of Edgemont, a suburban community site, that if densities are increased from the typical 3 or 4 units per acre to between 7 and 10 upa, significant savings could be realized in infrastructure capital cost (between 11

and 57 percent, depending on the site area and density)³. The study also showed that cost savings for single family housing occur as a result of reduced street dimensions and single trenching for connection to two houses, as well as from a higher density achieved through a greater proportion of narrower and sometimes shorter home lots.

More recent investigations suggest that although alternative infrastructure and engineering-design standards can reduce capital and operating and maintenance costs of residential communities, "per unit cost savings in [more compact developments] are not enough to offset reductions in per unit revenues, making the conventional plan more attractive under the current property tax system." (Hemson Consulting Ltd., 1996) Although compact communities reduce capital, operating and maintenance costs, the costs of many municipal services – i.e. those not significantly influenced by spatial factors – are unaffected by community design. Furthermore, existing municipal revenue rate structures do not adequately accommodate the alternative plan, for two reasons. First, the alternative plan contains proportionately more higher-density housing which generates less development charges on a per unit basis than single-family detached houses which account for over 61% of all the housing in the conventional plan. Second, the alternative plan also generates significantly less property tax revenue than the conventional plan because the smaller houses and smaller lots in the alternative plan are assumed to be more affordable. But to this, the question remains: Why should we continue to promote a system of taxation and revenue generation that propels over-consumption and encourages development standards exceeding the needs and requirements of urban residents and challenges affordability? Should municipal policy continue to support over-development of urban infrastructure because our current system of taxation is (seemingly) revenue-dependent on it? Perhaps changes not only to existing development standards but to other municipal policies, procedures, and practices as well, are called for. Thus, a resolution of the site development standards is not simply one of urban design and engineering design; it is contingent on municipal fiscal policies as well. A further contingency is the matter of City charges to the developer – the costs of "doing business".

2.4.2 The Consumer in the Argument

Consumer receptivity to the aforementioned alternatives (i.e. increased density, mix of housing, reduced standards, etc.) is another concern. Consumers are accustomed to conventional development standards, and downward changes might be perceived as inferior, lowering the quality of life and the value of property investment currently enjoyed by urban residents. Further municipalities are still generally reluctant to risk increased maintenance costs by compromising engineering standards that were derived from long-term experience, especially if the compromise would increase the developer's profits and undermine the consumer's faith in a sound, durable, value-appreciating property. (Hygeia Consulting Services, 1995)

It would seem that three considerations are important for a successful strategy of altering development standards. First, both the industry and their municipal counterparts must be willing to implement changes in development standards for a successful transition. Second, changes in standards must be marketed to the consumer in ways that clearly articulate the financial benefits and other non-monetary advantages (e.g. environmental, aesthetic, etc.). Third, the choices must be presented as a package of changes rather than a series of discrete and mutually-independent choices for each item of change in plan-making, urban-design and infrastructure engineering. Visualizing an alternative environment and diversity of housing and property choices, and articulating the cost-advantage-trade-off of many alternatives in a site design scheme, was done by Perks and Wilton-Clark (1996) to test the consumer's receptivity to such alternatives. (See also, website: Manitoba School of Architecture)

2.4.3 UDI Calgary Investigations for Alternative Development Standards

In Calgary, the Urban Development Institute has spearheaded efforts to change existing municipal site development and engineering standards. Their recent report requests:

- Reduced right-of-way widths for residential streets
- Reduced roadway widths (from 12.0 to 11.5 m)
- Revised curbing from 500 mm to 250 mm for all major roadways
- Elimination of the design requirement for super-elevation on any collector roadways with park, school site, or residential frontage
- Reductions in sidewalk widths on collector roadways
- Reduced corner radii on residential street intersections (to decrease length of pedestrian crossings and reduce traffic speeds)
- Increase environmental standard traffic levels on certain types of local and collector roads
- Minimum amount of Municipal Reserve should be set at 6% of developable land (Reduced open space component)
- The City of Calgary improve processing times for development approval.⁴

UDI Calgary has also challenged the municipality about acreage assessment charges and off-site development charges.⁵ A 1996 discussion paper argues that "acreage assessment charges...have adverse distributional consequences and to the extent that they become hidden taxes, the integrity of the City's fiscal regime is compromised." (Wright Mansell Research Ltd, 1996) Another UDI-commissioned study concludes that development charges violate many of the fundamental principles of fairness and suggests that "If the City of Calgary requires additional funds to finance infrastructure, it is more equitable and efficient to increase user fees and property taxes than to introduce development charges." (Wright Mansell Research Ltd., 1993)

Following fast upon the *Sustainable Suburbs Study*, the Calgary administration together with the Calgary UDI, tackled the matter of street design and produced the *Alternative Street Standards Study*. Aimed at introducing both reduced standards and costs, and enhanced aesthetic values to the

design of streets, the set of recommendations in this report failed to obtain City Council approval in March 1997. One has to wonder why this effort, which cost the industry and the City \$80,000 to produce, would be rejected by the politicians. Question 13 in the present survey-questionnaire was designed to probe the matter.

2.4.4 Survey Questionnaire Findings

Figure 9 – (Question 13) Main reasons why the joint proposals of UDI and the Planning and Building Department on *Alternative Street Design Standards* were not approved by City Council

Reasons why Alternative Street Standards not approved by Council	No. of respondents from each category who cited reason					
	Land Developers		Home-Builders	Consultants		Totals
	UDI	CHBA		Planners	Others	
Lack of understanding by City Council	5	2	2	3	0	12
City Political/Political Reasons (Fear of constituents' backlash, lawsuits, etc.)	3	1	2	5	1	12
Perception that Alternative Development Standards are lower	1	1	1	6	1	10
"Poor sell" by Administrators to Council	2	0	0	3	4	9
Lack of commitment by City Admn. to change and reducing costs. Technical counter-arguments from civic depts.	6	1	1	6	2	16
Concern over future maintenance costs	3	0	0	0	0	3

The reasons point to the highly political nature of municipal policy and development decisions. It appears that, although the *Alternative Street Design Standards* received endorsement and funding from the Calgary Planning and Building Department, this initiative lacked the support from other (Streets and Engineering) departments and elected officials. It is interesting to note that *only* three respondents think the street standards lacked support because of a concern over future maintenance costs. Clearly, the political arguments took precedence over the affordability and sustainability considerations for instituting the street design changes. If this is an indication of the lack of political support and level of importance of the sustainability initiatives in Calgary, we can expect that the other sustainability practices and design guidelines instituted with similarly low levels of commitment and intensity.

Further information and Survey findings relevant to the issue of site development standards and charges are presented in Chapter 3 on innovation.

2.5 Propensity for Community Plan/Design Changes

The *Sustainable Suburbs Study* policies and design guidelines are intended to bring about changes in urban form to achieve the objectives of the Transportation Plan and the City's Environmental Policy, Principles and Goals, and to accommodate the costs of growth. It is expected that the policies will lead to the design of more compact communities – with services, employment, and other amenities closer to residential housing and, improve the socio-economic diversity of residents in communities. However, the extent to which these changes will occur, is contingent on the support and endorsement of the various delivery system agents and their individual, as well as collective commitment to bringing about change.

So far, it seems that the industry agents are opposed to the City's sustainability policies because they prescribe to a principles of New Urbanism or Neo-Traditional planning. While the cost savings achievable by applying Neo-traditional principles is well-researched (e.g., Marshall Macklin Monaghan, 1994; Hygeia Consulting 1995; Essiambre-Phillips-Desjardins Associates, 1995; IBI 1992), it also widely understood that in order to achieve the capital and maintenance cost-advantages of Neo-Traditional design, other strategies – such as increasing residential densities, and relaxing infrastructure engineering and site development standards – must also be employed. The degree to which industry agents are optimistic that the policies will achieve the desired community plan/design changes are investigated by Survey questions 1a,1b, 1c, 2c, 3d, 4b, and 4c. The findings for these questions are now discussed.

Figure 10 – (Question 1b) The Community Centres and Neighborhood Nodes policies will result in more employment opportunities within new residential communities.

Type of Firm		Percent
UDI Land Developers	Strongly Disagree	17
	Disagree	60
	Unsure	17
	Agree	8
	Strongly Agree	8
CHBA Land Developers	Disagree	50
	Unsure	60
HomeBuilders	Disagree	25
	Unsure	40
	Agree	30
	Strongly Agree	5
Community Planners	Strongly Disagree	6
	Disagree	33
	Unsure	28
	Agree	17
	Strongly Agree	17

Figure 11 – (Question 1c) The Community Centres and Neighborhood Nodes policies will result in a significant mix of public and commercial activities in the community to satisfy resident needs for shopping and services.

Type of Firm		Percent
UDI Land Developers	Strongly Disagree	18
	Disagree	36
	Unsure	18
	Agree	9
	Strongly Agree	18
CHBA Land Developers	Strongly Disagree	17
	Disagree	33
	Unsure	33
HomeBuilders	Unsure	45
	Agree	40
	Strongly Agree	15
Community Planners	Strongly Disagree	12
	Disagree	24
	Unsure	29
	Agree	35

While all groups are divided on the issue of employment opportunities (Figure 10), the UDI group expresses highest disagreement. Interestingly, 35% of homebuilders and 34% of planners agree. Evidently, the pessimism expressed by the UDI group is not as prevalent among the other 4 groups.

Figure 11 shows that groups are also divided about the mix of services and activities that will be built in new communities. However, a significant proportion of the UDI group (27%), the homebuilders (55%) and planners (35%) agree. The spread of opinion reminds one that even within expert-professional and sectoral interest groups, we often have a diversity of opinions about issues; clearly, the respondents within the groups do not all share the same opinion. The spread of opinion also presents an opportunity for experimentation and change, should the policies be applied by even one-third of the industry agents. Innovation will first require the introduction of change, after which the success and widespread diffusion is contingent on the benefits – economical, social, aesthetic, convenience, etc. derived by the consumer.

Figure 12 – (Question 2c) The School and Open Space policies will result in improved pedestrian and cyclist movement within the community.

Type of Firm		Percent
UDI Land Developers	Strongly Disagree	8
	Disagree	33
	Unsure	8
	Agree	50
CHBA Land Developers	Unsure	33
	Agree	67
HomeBuilders	Unsure	25
	Agree	60
	Strongly Agree	25
Community Planners	Disagree	6
	Unsure	39
	Agree	33
	Strongly Agree	22

Figure 13 – (Question 3d) The Housing policies will result in more choice of housing for people of different household types, income levels and age groups in the neighborhood.

Type of Firm		Percent
UDI Land Developers	Strongly Disagree	25
	Disagree	17
	Unsure	33
	Agree	17
	Strongly Agree	8
CHBA Land Developers	Disagree	17
	Unsure	17
	Agree	67
HomeBuilders	Disagree	5
	Unsure	30
	Agree	45
	Strongly Agree	20
Community Planners	Strongly Disagree	11
	Disagree	17
	Unsure	17
	Agree	50
	Strongly Agree	6

In Figure 12, agreement is high among all the groups; 63% of all respondents agree. Are we to conclude that community plans and designs will include greater circulation – paths for bicycling and walking – within new residential communities? Evidently, a majority of all respondents seem to believe so.

There is a striking difference in levels of agreement between the UDI group and the other four groups about the diversity of housing in new communities. That one-third of the UDI group and 30% of Homebuilders are unsure, is most attributable to the lack of understanding about the situation of affordability in Calgary and about the pent-up demand for more affordable housing in Calgary. (See for example, Chapter 4 on affordability.) The high levels of agreement among the Planners and Homebuilders, and CHBA groups are also noteworthy; improving the diversity and mix of household types within communities is clearly a significant issue for these agents.

Levels of agreement about the Transportation policy (Figures 14 and 15) outcomes is high for a significant proportion of all industry groups; although among the UDI developers, levels of disagreement are equally significant. However, in light of the disproportionate disagreement expressed by the UDI group on most questions, their spread of opinion here is refreshing. Clearly, most industry agents believe that the Transportation policies will lead to improved pedestrian and cyclist modes of access and safer streets.

Figure 14 – (Question 4b) The Transportation policies will result in more pedestrian and bicycling modes of access to centres and services within the community.

Type of Firm		Percent
UDI Land Developers	Strongly Disagree	17
	Disagree	25
	Unsure	25
	Agree	33
CHBA Land Developers	Unsure	17
	Agree	67
	Strongly Agree	17
HomeBuilders	Strongly Disagree	5
	Disagree	5
	Unsure	35
	Agree	46
	Strongly Agree	10
Community Planners	Disagree	11
	Unsure	11
	Agree	72
	Strongly Agree	6

Figure 15 – (Question 4c) The Transportation policies will result in safer and more pedestrian-oriented streets.

Type of Firm		Percent
UDI Land Developers	Strongly Disagree	8
	Disagree	25
	Unsure	33
	Agree	17
	Strongly Agree	17
CHBA Land Developers	Unsure	17
	Agree	83
HomeBuilders	Strongly Disagree	5
	Disagree	20
	Unsure	30
	Agree	36
	Strongly Agree	10
Community Planners	Disagree	11
	Unsure	22
	Agree	67

Levels of agreement fall slightly for question 1a (Figure 16). That Homebuilders and Planners are more convinced changes in design will induce changes in people's travel behaviour is evidenced by this question. However, design changes will have to accompanied by efficient public transit and other policies designed to improve the attractiveness of public transportation over the private automobile. In Calgary, a fuel tax has been proposed and whether or not there is sufficient political momentum and political will to follow through with it remains an open question.

Figure 16 – (Question 1a) The Community Centres and Neighborhood Nodes policies will result in increased use of alternate forms of transportation such as walking, cycling, & public transit use.

Type of Firm		Percent
UDI Land Developers	Strongly Disagree	17
	Disagree	42
	Unsure	25
	Agree	17
CHBA Land Developers	Disagree	17
	Unsure	17
	Agree	67
HomeBuilders	Disagree	30
	Unsure	20
	Agree	46
	Strongly Agree	6
Community Planners	Strongly Disagree	6
	Disagree	22
	Unsure	22
	Agree	33
	Strongly Agree	17

2.6 Summary of Findings

The Survey respondents are divided as to whether policies will achieve increased employment opportunities, increased mix of services and business activities, and increased diversity of housing (and socio-economic groups). They are, however, less divided, and more inclined to agree that the *Sustainable Suburbs Study* policies will improve pedestrian and cyclist access, and result in safer, more pedestrian-oriented streets. On the other hand, respondents are not optimistic that transportation behavior changes will come about from changes in design. Importantly, disagreement among the UDI group is disproportionately greater than any of the other groups across all of the above issues.

Two things can be concluded. First, there is a spread of opinion among and within industry groups about the likely outcomes of the policies; this has consequences for the implementation and application of the policies and design guidelines. Second, among the diversity and spread of opinion, there is at least some optimism, indicating a propensity for implementing and following through on at least some of these policies in the short-term. Unfortunately, the implementation of only some of the policies, such as rear laneways and more sidewalks, will not improve the situation of affordability and sustainability without the application of complementary policies such as increasing density (intensification of land use) and experimenting with alternative housing forms (i.e., other than single-family detached). The delivery system in Calgary may either take advantage of these opportunities

for innovative enterprise or they may go unnoticed because of conventional counter-positioning of the municipal and industry players with respect to traditional, fiscal and market-supremacy arguments.

The following chapter on the innovation theme in our Survey examines industry practices that provide further illumination about the disposition of the industry towards affordability and sustainability in Calgary.

Footnotes Chapter 2

¹ See key informant interview findings October-November 1996.

² The performance based approach will create standards set for actual rates of use, not levels well-beyond those required. Question: if a road is engineered to handle 20,000 vehicle trips per day, but only 10,000 actually use the road, does this mean the road will last twice as long and the maintenance costs will be spread over a longer period and therefore lead to cost savings in the short-term? Or, does it mean that lower standards require more regular maintenance and hence greater frequencies of inconvenience, discomfort, etc. for the consumer?

³ The highest levels of savings occur not only because of the density factor, but also because sewage is not taken off-site through large pipes to a distant point; it is treated in the neighborhood at 'solar-aquatic' plants.

⁴ Recommendations include:

- a) The Planning Department should seize the authority to better control the response time from other departments. Applications submitted with all necessary information should not be delayed beyond the normal circulation period.
- b) The Administration should only comment on applications from a technical and policy consideration and leave political decisions and considerations to City Council.
- c) City Council must indicate to Community Associations their role in the approval process and their expected response time. Inordinate delays currently occur with some Community Associations. (UDI undated document).

⁵ For a typical house in Calgary: valued at \$121,000, 1300 sq ft, and 30 front ft., the total development charges (including infrastructure, land dedications, development application processing fees, and building permit and plumbing fees) are estimated to be \$5,000. (*Levies, Fees, Charges, Taxes, and Transaction Costs on New Housing*, CMHC, 1996). Development Charges and Transaction Costs and GST for a typical single-family detached house in Calgary amounts to approximately 12% of the purchase price; Canada-wide the percentage can be as high as 20% (*The Housing Industry and Housing Trends in Canada*, Canadian Home Builders' Association, Nov. 1997)

Infrastructure Charges	\$2,200
Land Dedications (10%)	1,880
Development Application Processing Fees	250
Building Permit and Plumbing Fees	870
1. Total Development Charges and Levies	\$5,000
New Home Warranty Fees	195
Homebuyer Transaction Costs	856
Mortgage Transaction Costs	3,081
Developer Transaction Costs	450
2. Total Transaction & Warranty Costs	\$4,582
3. GST (after rebate)	\$5,421
Total Development Charges, Transaction Costs and GST	\$15,003

Chapter 3: Innovation for Affordability, Sustainability and Resources Conservation

This Chapter discusses the role of innovation for sustainable community design and housing in the urban development context. In this context, findings for Survey questions 1a, 1d, 2a, 2b, 2d, 3l, 4d, 5e, 18, 19, 19a, 20, 20a, 22, 27, and 28 are also reported and discussed.

3.1 Innovation in Housing and in Residential Community Design

Most if not all authors on sustainability design and project research declare that movement toward better, more sustainable communities will require innovations in the planning, design and construction of residential communities and housing; and reform and restructuring in the municipal administrative structure and management practices. (See for e.g. Perks and Van Vliet, 1993)

Innovation here refers to a continuous process of introducing improvements to urban forms, planning principles, patterns of development, and regulatory processes, community plans and designs, house-designs and technologies, etc. Such innovation would be to various ecological, political, social, technological, and economic pressures and theoretical propositions. Innovations can be at the level of municipal policy, regulation and site development standards, or in community design, site planning, street design, subdivision, site-servicing, lot positioning and dimensioning, house type, size and dimension, construction methods and materials, type of building envelope, appliance technologies in the home, etc. These innovation attributes have been identified in numerous trade magazines (e.g., Builder Magazine), and in many CMHC and various other research reports and publications (e.g., IBI, 1992; Energy Pathways, 1991; Perks and Van Vliet, 1993; Marshall Macklin Monaghan Ltd., 1994; Perks and Wilton-Clark, 1996; Brethour Research Associates, 1992; D'Amour, 1993; Hygeia Consulting Services, 1995; CH2M Hill Engineering, 1994; Essiambre-Phillips-Desjardins Associates, 1995; Marshall Macklin Monaghan, 1994; Booth and Rettenbeil, 1994; Van Vliet, 1990; and Wilton-Clark, 1995.)

Recent planning theories and frameworks have also emerged and deal with the challenge of urban sustainability or sustainable urban development. The most prominent ones include Ecological Design (Hahn, 1990), Landscape Ecology (e.g. Grant, Joudrey, and Manuel, 1993; Dramstad, Olson, and Forman, 1996) and Ecosystem Planning (Tomalty, et. al., 1994). Each of these frameworks attempts to integrate, among other features, greater concern for ecological (natural ecosystem) processes in the planning and design of urban environments.

3.1.1 Common Barriers and Constraints to innovation

Many barriers and constraints are said to preclude innovation for sustainability in land development and housing. These commonly include: the industry (developers, builders and planners) and the municipal administrators' resistance to change, to ultra-conservative values and (at times) oligopolic conditions in the land development business; inhibitive, exaggerated municipal government regulations and development standards; protracted development approval processing times; high risk and costs associated with innovations and demonstration projects; 'fuzzy benefits' of innovation; and the reactive position of both NIMBYism and environmental groups. (Booth and Kettenbeil, 1994; Skelton, et. al., 1995; Energy Pathways, 1991). Two additional constraints are identified by Perks and Van Vliet (1993) – a lack of well-defined and empirically tested "sustainability performance criteria" in residential settings, and the industry's narrow and (possibly distorted) opinions "about the market acceptability of the present form and character of residential communities in Canadian cities".

Other factors contributing to the sluggish pace of innovation in the homebuilding industry described in a report by Clayton Research Associates and Scanada Consultants Limited, (1989) are: the industry is composed primarily of small firms compared to other industries; the evolutionary nature of homebuilding production processes and product inhibits the willingness of builders to search actively for changes; the limited size of the market reinforces the predominance of small firms, thus retarding the introduction and adoption of change; and excessive regulation retards innovation. The average land developer firm size is larger, though market fragmentation and close regulation are also characteristics which are attributable to protracted rates of innovation.

Two key factors identified by Perks and Van Vliet (1993) as missing in the Canadian delivery system that would improve the pace of innovation for sustainability are: demonstration projects and continuous experimentation; and expert practitioners in sustainable development. Speaking to the Calgary context, they report a number of factors discouraging innovations: mistakes are being repeated even though a number of exemplary residential projects have been built in other jurisdictions; costs are high for research and development of new technologies; increased timelines for gaining municipal approvals; lack of government incentives for innovation; structural barriers that preclude inter-sectoral and integrated planning within City administration; and "accounting procedures" for calculating future benefits of innovative product design.

Later research by Perks and Wilton-Clark (1996) challenged industry suppositions about the consumer receptivity to innovations in sustainable community design and form. They redesigned a suburb in Calgary (Edgemont) to demonstrate sustainability principles and practices, and they

employed a hyper-media visualization tool to test consumer receptivity for a wide range of sustainability and affordability choices.¹

Booth and Kettenbeil (1994) identify two significant constraints: (1) there is information overload and it is the most important obstacle to the industry; and (2) the influence of government is a major issue. Booth and Kettenbeil recommend ways to accelerate the adoption of innovations for environmentally sustainable and high performance housing. Their recommendations focus on the availability of reliable information about product availability, product performance and technology comparisons; municipal and supplier cooperation to improve the affordability and lower risk of financing innovation; and the use of computer technology for product simulation and improved management techniques. Further opportunities for innovation are: reducing the cost and time required for acceptance of new products vis a vis building codes and material standards, and training and demonstrations aimed at increasing awareness of advantages of using environmentally sustainable, high performance products and procedures.

The mere availability of innovative technologies and products, however, is not a sufficient condition for change. In their review of innovative firms in Scandinavian countries, Perks and Van Vliet (1994) identify a number of factors and *preconditions* that could make the Canadian housing delivery system more successful at adopting innovations, including:

- Leadership from *municipal authorities* to incorporate in their planning practices a sustainability posture;
- Attention to persuading the public about the richness of the ecologically-sensitive residential environment experience, and to the personal satisfactions and conveniences that can be obtained;
- Freshly-conceived and longstanding *institutional frameworks for promotion, experimentation and diffusion of innovation*;
- Local and state programs which provide a *strategy of action research at the local level*; and *nurtured technologies*.

3.1.2 Other Organizational Constraints to innovation

While the various studies on innovation examine municipal-political and macro-level constraints, they say very little about the organizational impediments or constraints for diffusion of innovation. None of these studies answers questions such as: What are the organizational capacities of land development and housing firms to respond positively to sustainability policies? What is the current status and positioning of firms with respect to research and development (R&D) activities? What are the current levels of awareness and receptivity among industry firms for innovative products and designs? Obviously the process of innovation is not entirely dependent upon factors external to industry firms; internal organizational practices, behaviour and culture also factor into the propensity for change. Questions 18, 19, 19a, 20, 20a, 27, 28, 28a, 29, 21, and 22 sought to investigate these issues.

3.1.3 Specific Constraints to Innovation Among Calgary Industry Firms

Question 18 (Figure 17 below) in the survey sought to determine what are specific constraints to introducing innovations by industry firms.

Figure 17 – (Question 18) The Most Significant Constraints to Introducing Innovations in the Planning-Designing and Building of residential communities in Calgary

Most Significant Constraints to Introducing Innovations	Land Developers		Home-Builders	Consultants		Totals
	UDI	CHBA		Planners	Others	
Municipal Regulations, Policies, and Development Standards						
Rigid/inflexible application of existing policies, regulations, and standards		2	2	3	4	11
Excessive municipal bylaws, engineering and street standards, servicing and infrastructure requirements, and Building Code requirements	6	3	3	5	3	20
Densities in excess of market acceptance/consumer preferences			1	1		2
Grid pattern of Subdivision design/Sustainable Suburbs Guidelines	1			1		2
Site planning (front street for people, land for utilities)				1		1
Municipal Administrators and Politicians						
City Council/Elected Officials "resistance to change"	1	1	2	5	1	10
Mind set ("old thinking") of city administrators and politicians	7		2	1		10
City intervention in the marketplace		1				1
Interference of politicians in the process		1				1
City is afraid to take innovative steps because of liability issues			1			1
Poor staff in the city				1		1
Fear of change				1		1
Lack of commitment and "positive will-power" by city politicians and administration			1			1
"Over-controlling municipal social engineers"				1		1
Delays in the Development Approval Process						
Slow and inefficient development approval process	1	1	3	1	1	7
Additional costs related to time delays in development approval	1		1			2
Additional delays for approving "non-traditional" standards or new products	2			1		3
Consumer Preferences/Market Trends						
Existing consumer perceptions and attitudes regarding property values		2				2
Community/Public resistance or unwillingness to accept change		1	2	3	2	6
Overcoming consumers' mindset regarding what they will give up			1			1
The public has only been exposed to traditional building types				1		1
Existing markets and patterns of development			2			2
Cost						
Consumer sensitivity and resistance to cost increases	2		1	1		3
High cost of infrastructure		1				1
Community Involvement/Public Participation						
Community Involvement/Public Participation		1	2	2		5
Risk/Developers "playing it safe"						
Risk/Developers "playing it safe"			1	3	1	5
Time Constraints						
Time Constraints	1		1			2

Across all industry groups, the most significant constraints reported are:

- Excessive municipal bylaws, engineering and street standards, servicing and infrastructure requirements, and Building Code requirements;
- Rigid/inflexible application of existing policies, regulations, and standards;
- City Council/Elected Officials "resistance to change";
- Mind set ("old thinking") of city administrators and politicians;
- Community/Public resistance or unwillingness to accept change; and
- Slow and inefficient development approval process.

3.1.4 Present Situation and Positioning of Industry Firms for Sustainability Innovations

Ten questions (19, 19a, 20, 20a, 27, 28, 28a, 29, 21, and 22) sought to investigate the current situation regarding innovation. Specifically: What types of innovations have been successfully introduced by industry firms, and what are the driving forces for these innovations? What is the level of awareness and knowledge by industry firms about innovations for sustainability? How many firms actively engage in research and development of new ideas, concepts, and proposals for sustainability? What specific sustainability initiatives are introduced by the industry? How up-to-date are the industry firms about innovative projects, programs, and research publications about improving affordability, environmental performance, consumer preferences, resources conservation, and social equity in communities? What degrees of influence do industry firms exercise over the introduction of sustainability initiatives at various stages of residential community planning, design and development (construction)?

Figure 18 – (Question 19, 19a) Most significant innovations introduced in recent years that delivered a better housing product or better community environment to the consumer & the “driving force” for each of the innovations.

Most Significant Innovations Introduced in Recent Years	Driving Forces							
	Consumer demand or preferences	Municipal bylaws, policies, procedure or provincial regulation	UDI, UU, CHBA or FCI advisory or research documents	Innovative community design projects built in North America	Consumer Feedback on one or more of your previously-finished projects	Growing consumer awareness and concerns for environmental protection and improvements	Municipal or other government programs/incentives	Improved cost efficiencies of your business
House Construction								
Maintenance (Low) Free Exterior Finish	5	1	2		2			2
Engineered (Better) Floor System (reduce timber)	2			1	1	1		1
Improved Construction Standards or Practices	2	3	1	1	2	1	1	3
Better Mechanical Systems	1	2			2	1		1
House Design								
New or innovative House Designs to improve flexibility, quality or affordability	10	1		3	3	4		7
Lot Size/Configuration								
Smaller/Narrower lots to improve affordability	4		1	1	1			3
Higher Density and Mix of Housing								
Improved Mix/Variety of Housing Type (Greater Choice, multi-family, and seniors housing)	4	1		2	3	1		
Higher density development (7.3-7.5 u.p.a.)	2		1	1				
Open Space, Parks, Community Amenities								
Incorporate/Retain natural wetlands				1		2	1	2
Protection of ER and natural landscape areas	1				1	1		
Improved park design	1			1	1			
Alternative/More Functional Open Space	3	1		3		2	1	1
Linear (linked) Open Space Concept	2	1		2	1	2	1	
Homeowners Assoc./Community Activity Centre								
Homeowners Association	1	1	1	1				
Neighborhood Activity Centre (built early in development stage)	3			2	2			1
Street Design and Layout								
Streets designed to reduce traffic/improve circulation	2				2	2		
Community/Project Design								
Green Land Condominium		1		1	1			
Traditional Neighborhood (New Urbanism) Development	1		1	1	1			
Improve overall quality and “community feel” of projects	2		1	1	1	1		1
Totals for Driving Forces	48	13	8	22	24	18	4	22

The table in Figure 18 lists the categories of innovations identified from survey responses for Questions 19 and the Driving Forces identified by question 19a. These innovations are consistent with sustainability principles, according to the *Sustainable Suburbs Study*, insofar as they lead to improved affordability, environmental performance, resources conservation, and to some extent produce overall social (or aesthetic) benefits to the homebuyer or consumer.

Only innovations cited two or more times are included in the Figure 18 table. (A complete list appears in survey findings in Appendix II.) Unfortunately, we are unable to discern whether each innovation is introduced individually or in combination with others. It is also not known whether these innovations are introduced randomly by various firms or if innovative products and practices are unique to a particular group or type of firm. Finally, we are unable to ascertain if innovations were not listed by some respondents because they are not really innovations but more a matter of regular practice for them.

First, innovations citing the use of recycled building materials² or operating practices for improved environmental management, utilization of ecological landscaping, solar-energy maximization or for resources conservation are not mentioned. The industry in Calgary has yet to vigorously adopt "green" building practices.

Second, some of these innovations are consistent with affordability and sustainability. For example, the introduction of bonus room plans (an additional room built above the garage) improves space utilization within the home without increasing the building footprint. The ASH built in Scenic Acres is one example of a demonstration project in Calgary, built according to conventional size and lot dimensions but including technologies for improved sustainability in the home (e.g. composting toilet, water cistem, solar paneling, etc.).

One type of innovation, the bare land condominium, is a type in which the homeowner purchases a housing unit but shares ownership of the land on which the project is situated. The advantage of employing the bare land condominium concept is that the developer – and eventually the co-owners – assume the long-term maintenance and operating costs of the project, for which it receives certain exemptions from municipal development standards and regulations. These costs are of course paid by the homeowners through a yearly membership or condominium fee. On the other hand, these projects could create inequity among communities and only exacerbate the number of exclusive or private ("gated") communities. Examples include Bears paw, Priddis Greens and Heritage Point.³

The incidence of innovation for higher density developments is a reflection of the general industry practice in Calgary. Most developments are comprised of low-density single-detached housing units.

The topic of density has led to a heated debate about the calculation of density and the comparison of densities in existing Calgary communities. In fact, the calculation of density has not been uniformly or consistently applied throughout the municipal planning department.⁴ The *Sustainable Suburbs Study* (p.93) defines density as the number of dwelling units in a given area expressed in dwelling units per gross hectare or acre. However, the calculation of residential density will usually exclude: Environmental Reserve; Expressways, Freeways, and Major Streets; Regional and Sector Shopping Centres; Major Institutional Centres; Land Reserved by the Province; High School sites; Vacant multi-family sites and single-family acreages; Commercial centres greater than 2.8 ha (7 ac); Industrial uses; Regional land uses such as regional parks, etc.; and Community Lakes. Meaningful comparative norms still escape the Calgary delivery system.

The four most frequently cited driving forces for innovation are:

- consumer demand or preferences;
- innovative community design projects built in North America;
- consumer feedback on previously-finished projects; and
- improved cost efficiencies for business.

The least cited forces are: municipal or senior government programs or incentives; UDI, ULI, CHBA or FCM advisory or research documents; and Municipal bylaws, policies, procedure or provincial regulation.

3.1.5 Key Drivers and Lack of Government Incentives

The introduction of innovation has been driven primarily by increased competition for consumer satisfaction and improved affordability. Governments have offered very little, if any, incentives for encouraging innovations for improving residential communities in Calgary.

The high incidence of consumer demand and preferences as a key driver for introduction of innovations suggests that any efforts directed towards the industry to initiate sustainability practices must also target the consumer or homebuyer. The industry perceptions and presuppositions about the conservative nature and preferences of the consumer are a major constraint for introducing sustainability design-initiatives. However, this constraint can be turned into an opportunity if the risks and costs associated with innovations can be markedly reduced, and, if pragmatic, concrete opportunities are created for testing the consumer affordability and receptivity to such innovations. (The Perks and Wilton-Clark (1996) study did demonstrate such market receptivity to sustainability features, but its methodology has not been reproduced nor have its findings been implemented in any projects in Calgary.)

3.1.6 Research and Development Expenditures

Question 20 sought to find out what industry firms dedicate to research and development. Figure 19 indicates that very few firms allocate resources for R&D.

Figure 19 – (Question 20) Percentage of firms having a designated budget category and activity for Research and Development (R&D)

Type of Firm		Percent
UDI Land Developers	Yes	17
	No	83
CHBA Land Developers	Yes	33
	No	67
HomeBuilders	Yes	11
	No	84
	Don't Know	5
Community Planners	Yes	24
	No	71
	Don't Know	6

Of those firms who actually do dedicate funds for R&D, most spend less than 3% of their operating and capital budgets. Only two planning firms indicated they allocate more than 3% on R&D expenditure.

Figure 20 – (Question 20a) Percentage (%) of annual gross expenditures – operating and capital – dedicated to R&D

Type of Firm		Frequency
UDI Land Developers	0.6-1.0%	1
	Total	1
CHBA Land Developers	1.1-3.0%	2
	Total	2
HomeBuilders	0-0.5%	2
	1.1-3.0%	1
	Total	3
Community Planners	1.1-3.0%	2
	3.1-6.0%	1
	More than 6.0%	1
	Total	4
Other Urban Consultants	0.6-1.0%	2
	Total	2

These numbers are evidence of the limited role R&D plays in the development of housing and residential communities in Calgary. They suggest that the land development and house building industries typically undertake less research and development for innovative products than is customarily expected in other sectors. This is also confirmed by a recent CHBA poll which reports that only 1 in 5 builders in Alberta undertake custom research on the size/characteristics of their

target markets, or conduct exit interviews and/or focus groups with visitors to their new home sales sites and, "in general, the majority of builders are not using various types of market information/research on a frequent basis. (Clayton Research Associates, 1997:12)

3.1.7 Industry Knowledge and Awareness about Innovations for Sustainability

A number of innovative research design projects, programs, studies and demonstrations were reviewed by the researcher. A selection of these were included as part of the questionnaire in order to measure the degree of familiarity by industry firms:

- **Edgemont II** – which re-designed a Calgary suburb using ecological-design and more sustainable planning principles, practices, and technologies.
- **Sprout** – is an innovative starter home designed to meet affordability needs of young families. This house design allows the owners to make modifications to the house as their needs and household size may change.
- **Affordability and Choice Today (A-C-T)** – this program was initiated in 1990 to encourage municipalities and private sector and non-profit builders and developers to work cooperatively to eliminate excessive residential regulations and to streamline the development approval processes. A-C-T has provided funding for numerous demonstration projects such as infill housing on small lots, Garden Suites, stacked fourplexes on single-family lots, suburban houses and more. (D'Amour, 1993)
- **Healthy House** – is the winning design in CMHC's Healthy Housing Design Competition. This award-winning design is completely self-sufficient in water, sewage, heat and electricity.
- **The Grow Home** – was developed at McGill University. The design of the house addresses: resource conservation (land and infrastructure), affordability, environment, design efficiency (use of construction materials).
- **R2000 Homes** – was launched in the early 1980's by Natural Resources Canada to improve energy efficiency in Canadian homes. The program provides information, training and education, certification, and promotional/marketing assistance to homebuilders participating in this voluntary program.
- **Autonomous Sustainable House** – is a demonstration project located in the Calgary-suburban community of Scenic Acres. Key sustainability features of the house include: Xeriscaping and native species planting in the front yard; use of recycled materials for home construction; use of energy-efficient windows and 'eco-studs'; use of formaldehyde-free fibreboards and other chemical-free materials; grey-water recycling; solar-panels; water-collecting cistern; and a composting toilet.
- **EnviroHome** – was established in 1994. It is a consumer education and marketing program designed to showcase homes that blend high-quality design and construction with innovative, but proven, energy-efficient and Healthy Housing features.
- **Assessment of Built Projects** – is a CMHC funded research project that reviewed over 30 Scandanavian community design and housing projects with sustainability features.

Figure 21 – (Question 27) Degrees of Familiarity with Innovation and Research-design Studies, Projects or Programs

- a) "Edgemont II" - A Study in Sustainable Community Form
- b) Sprout: the versatile, dynamic house
- c) Affordability and Choice Today (ACT) - Regulatory Reform Activities to Improve Housing
- d) Healthy House (Vancouver, Toronto, Montreal)
- e) The "Grow Home"
- f) R2000 Homes
- g) Autonomous Sustainable House (ASH) in Calgary
- h) EnviroHome demonstration program/projects
- i) Assessment of Built Projects for Sustainable Communities

All Groups Combined n=66	Question 27	a	b	c	d
	Not at all Familiar	48	70	74	42
Somewhat Familiar	10	18	13	18	
Moderately Familiar	20	5	5	18	
Considerably Familiar	15	5	5	12	
Very Familiar	8	2	3	10	

All Groups Combined n=66	Question 27	e	f	g	h	i
	Not at all Familiar	47	2	54	50	65
Somewhat Familiar	13	12	21	27	23	
Moderately Familiar	13	23	11	15	8	
Considerably Familiar	22	40	5	3	3	
Very Familiar	5	23	8	5	0	

For a review of responses by industry group, see Survey Results in Appendix III.

Apparently all groups are most familiar with R2000 Homes. This is not surprising; R2000 is one of the oldest programs (initiated in the early 1980's as a Federal Government initiative) and has received significant promotion resources. The other initiatives quite familiar to a significant proportion of all respondents are the Healthy House, Edgemont II, and The "Grow" Home.

The low levels of familiarity with the Autonomous Sustainable House (ASH) are surprising, given that it is a local demonstration project, designed by local architects Yorg and Helen Ostrowski, that has received much publicity in Calgary and nationally. Perhaps the higher levels of 'somewhat' and 'moderately familiar' responses are attributable to name recognition for the project; and low levels of 'intimate familiarity' are because respondents have not yet visited the site.

Figure 22 – (Question 28) Percent of Firms that have implemented concepts, ideas or design practices listed in question 27 in any residential communities or house-building projects.

Type of Firm		Percent
UDI Land Developers	Yes, Some	33
	No, None	67
CHBA Land Developers	Yes, Some	67
	No, None	33
HomeBuilders	Yes, Some	40
	No, None	60
Community Planners	Yes, Many	15
	Yes, Some	38
	No, None	46

All Respondents	Percent
Yes, Many	3
Yes, Some	36
No, None	60

Strikingly, 36% of all respondents indicate they have implemented at least some of the concepts and practices from the innovative research design projects, programs, studies and demonstrations. However, references to specific projects and developments (in question 28a) are disappointingly limited and vague. One suspects that the professed awareness is limited (extremely) to the (few) Duany and other U.S.-based Neo-Traditional projects. Only two respondents state they have built a "Grow Home" in Calgary.

3.1.8 Familiarity with Other Research Reports and Publications

Notably, the respondents express surprisingly low levels of familiarity with other research publications and technical reports about housing design, technologies, and market trends (see question 29 in Survey Findings).

The UDI group expressed highest degrees of familiarity with:

- *Towns and Town-Making Principles* (54% are considerably or very familiar)
- *Innovative Site Development Standards and Practices, Review of Industry Perceptions Final Report* (38% are considerably or very familiar);
- *Infrastructure Costs Associated with Conventional and Alternative Development Patterns, Summary Report* (38% are considerably or very familiar); and
- *Achieving Infrastructure Cost Efficiency/Effectiveness Through Alternative Planning Approaches*. (36% are considerably familiar).

The CHBA Land Developers expressed very low levels of familiarity with all of the publications; the best 'score' is registered for *Future Trends in Housing: Attitudes of Potential Home Buyers Towards Housing*. Community Planners were most familiar with *Towns and Town-Making Principles*.

Very low levels of familiarity indicated for publications about sustainable residential developments, residential preferences, construction practices and affordability reflects a lack of awareness and (arguably) propensity for responding to them. The reader will recall that in question 19(a) the second most important driver for innovations is innovative community design projects built in North America. The relatively high levels of familiarity by the UDI and Planner groups (those primarily responsible for community planning and concept design), with the Neo-Traditional literature reinforces this finding from question 19(a); the industry in Calgary is conservative and imitates popularized trends in other North American cities. Rather than investing in local R&D initiatives and context-specific initiatives, there is a tendency for development and planning firms to apply practices popular in other parts of North America.

To summarize: The findings suggest that issues such as market receptivity for sustainability, affordability, and improved environmental performance are not actively researched and investigated by the firms in Calgary. The UDI group expressed most familiarity with studies about innovative site development and engineering standards, and associated cost efficiencies. Although we would expect land developer firms to investigate these issues – and indeed, UDI-Calgary has investigated these issues on behalf of the industry – the relatively high levels of familiarity are somewhat suspect, especially in light of the response for item (f). Most disappointing among the Homebuilders is that 75% indicate *no familiarity* with item (h), CMHC's waste management and recycling practices publication.

The publication from Seattle about residential preferences for "urban villages" – item (f) – was included as a "test" item; respondents were expected to have no familiarity with this publication. However, that more than one-third (36%) of the UDI group indicated 'somewhat familiar' for this item suggests that results for this particular question are dubious. (Interestingly, at least one respondent from each group indicated familiarity with this publication.)

3.1.9 Degrees of Influence for Introducing Innovations for Affordability, Sustainability, and Resources Conservation in community projects

The reader will recall from the Kil's (Chapter 1) that industry firms are only one agent in the delivery system. They compete, deal and cooperate with a multitude of other sectoral interests to bring development proposals to fruition. An understanding of these various agents in the delivery system and their various roles in the planning, designing and construction phases of development would help to establish improved and, arguably, more focussed municipal policies and incentives for influencing the adoption of sustainability initiatives.

Question Q22 sought to determine the degrees of influence exercised by industry agents for introducing innovations for "Affordability", "Sustainability", and "Resources Conservation".

Figure 23 - (Question 22) Degree of Influence for Introducing Innovations for "Affordability", "Sustainability", and "Resources Conservation" in Community Projects

- a) House design(s) and technologies for optimal energy and water consumption
- b) Community plan/urban design for compact form and overall higher density
- c) Greater ecological sensitivity in the overall physical environment of a new community project.
- d) The design of housing - for e.g. home-office, second unit, flexibility for expansion...
- e) Sizes of the homes in a new community project.
- f) Sizes (and dimensions) of the lots in a new community project.
- g) Configuration and orientation of the streets and lots for optimal solar/climatic response (subdivision)
- h) Xeriscaping for home lots and public areas
- i) Street design standards
- j) Pedestrian/cyclist access and circulation system in a community
- k) Choice of construction materials for housing - low embodied energy, recycled materials, etc.
- l) Number, percentage, and location of single-family and multi-unit and attached housing in a new community project.
- m) Diversity of housing choice and prices for all income groups in a new community project.

Type of Firm	Question 22	% Response													
		a	b	c	d	e	f	g	h	i	j	k	l	m	
LDI Land Developers n=12	No influence at all	58	9	9	11	0	0	0	14	27	9	60	0	0	
	Marginal influence	22	0	9	22	0	0	18	14	27	27	30	0	9	
	Moderate influence	11	9	36	44	18	0	27	29	27	18	10	9	36	
	Considerable influence	0	36	18	22	27	27	36	29	9	36	0	64	46	
	Strong or Decisive influence	11	46	27	0	55	73	18	14	9	9	0	27	9	
CHSA Land Developers n=6	No influence at all	0	20	25	0	0	0	50	33	50	25	0	0	0	
	Marginal influence	50	0	25	20	0	25	0	0	0	0	25	0	0	
	Moderate influence	50	60	25	40	25	0	25	67	25	50	50	40	40	
	Considerable influence	0	20	25	40	75	75	25	0	25	25	25	40	40	
	Strong or Decisive influence	0	0	0	0	0	0	0	0	0	0	0	20	20	
Homebuilders n=20	No influence at all	33	33	42	0	0	11	73	64	57	50	18	33	33	
	Marginal influence	33	8	25	8	8	16	7	9	21	14	8	8	0	
	Moderate influence	13	17	8	25	8	16	7	18	0	21	24	22	20	
	Considerable influence	7	25	17	31	61	37	7	9	7	7	35	33	47	
	Strong or Decisive influence	13	17	8	38	28	21	7	0	14	7	18	8	0	
Community Planners n=18	No influence at all	38	0	0	0	0	0	0	11	13	0	46	0	9	
	Marginal influence	38	0	0	55	42	17	0	11	20	0	18	20	55	
	Moderate influence	13	33	38	0	8	25	29	33	33	7	27	40	18	
	Considerable influence	0	40	43	38	50	42	50	33	20	73	0	13	0	
	Strong or Decisive influence	13	27	21	9	0	17	21	11	13	20	9	27	18	

Together with the Planner-consultants, Land Developers exercise considerably high levels of influence over most of the planning and design elements and innovations in residential communities. They exercise greatest influence over the community plan/design for compact form and higher density, level of ecological sensitivity in the physical environment, configuration and orientation of streets and lots (subdivision), ecological landscaping for public areas, and pedestrian/cyclist access and circulation.

However, control over the sizes of the homes and lots, and the (composition) number, percentage and location of single-family and multi-unit housing are negotiated among the various industry agents. That is, they all perceive themselves to exercise considerable or decisive influence on these features and factors.

Policies and incentives designed to achieve sustainability in its various potentials and possibilities must therefore be directed towards changing the perceptions and practices of *all* agents in the delivery system – not just the developers, as it would seem was the City's strategy in the Sustainable Suburbs Round Table.

Equivalent numbers of homebuilders and land developers perceive themselves to exercise moderate to considerable degrees of influence over innovations for the diversity of choice and prices for all income groups in the community. We can therefore infer that the role and influence of the homebuilder is more important and consequential in the Delivery System than is commonly argued. If homebuilders and developers are equally responsible for deciding on the types, styles and prices of housing, they are jointly responsible for establishing the market band-width and diversity of housing planned and designed into communities. Therefore, municipal policies intended to induce innovations for affordability and sustainability should equally be aimed more forcefully and strategically towards homebuilders.

Homebuilders assume the dominant position in introducing innovations for house designs and technologies for optimal energy and water consumption, and for choice of construction materials for housing. Together with planners, homebuilders exercise considerable influence (relative to the other agents) over the introduction of innovations for the design of housing, for home-office, second-unit options, and flexible designs. Therefore, administrative policies and regulations specifically aimed at housing design and construction – e.g. choice of materials for embodied energy, "cradle-to-grave" lifecycle assessments, recycled components, waste management, resource conserving technologies, and ecological landscaping on private lots – should be directed towards the housing component of the Calgary industry. However, performance indicators and monitoring and evaluation processes must also be established to guarantee the successful and regular application of policies intended to advance innovations.

One-third of the Community Planners perceive that they exercise considerable or decisive influence over the introduction of alternative street design standards. The other industry agents indicated lower levels of influence for this item; this comes as no surprise since the Alternative Street Design Standards failed to pass City Council in March of 1997.

3.2 Sustainable Suburbs and Innovation

Calgary has embraced and institutionalized 'Neo-Traditional' Planning principles (*Sustainable Suburbs Study*, July 1995). The principles are variously articulated in the works of Peter Katz, *New Urbanism* (1996), Andres Duany and Elizabeth Plater-Zyberk, *Towns and Town-Making Principles* (1991), and Peter Calthorpe, *The Pedestrian Pocketbook* (1994). Essentially, this approach or style

involves intensifying development – producing a finer mix of land uses, more compact development, shorter travel distances to services, greater pedestrian access, and so forth. Certain urban design and aesthetic idioms of street layout are very closely associated with Neo-Traditional planning. This approach is believed amenable to achieving the transportation objectives of the City, and to reducing the costs of capital-infrastructure and operating-maintenance costs of development.

However, success is contingent on the introduction of innovations by the industry, as well as municipal officials responsible for administering the policy. And, the stylistic, patterning credo of Neo-Traditional planning can be, and seemingly is in itself an inhibiting factor in innovative thinking (paradoxically).

A number of innovative initiatives are specified in the *Sustainable Suburbs Study*. These include⁵: innovations for the development approval process (GRAMPS), new street design standards, a city-wide policy on affordable housing, and indicators of Sustainability. Other innovations spelled out in the design guidelines are: community centres and neighborhood nodes within 400 m of housing; more pedestrian-friendly streets; higher densities around the community activity centre; bicycle paths in every community; increased community participation in community planning; establishment of homeowners' associations; increased densities to 7 u.p.a.; garage and driveways at the rear with laneways (i.e. discourage front-drive garages); connector (i.e. grid system) versus collector street system; use of natural systems for stormwater management (e.g., constructed wetlands); recycling facilities in the house and neighborhood; business practices such as waste audits, use of recycled materials for construction; recycling waste products; 'xeriscaping' or ecological landscaping; installation of technologies for water and energy conservation in the home; and design of housing to maximize solar orientation⁶. However, the *Sustainable Suburbs Study* does not address all of the factors affecting the inspiration and diffusion of innovation (See Perks and Van Vliet, 1993): viz., it does not speak to reform or restructuring of the delivery system qua a system of negotiations, deals, consumer participation, partnerships and incentives for demonstration and test, and other factors.

Survey questions 5e, 2a, 2b, 2d, 4d, 1a 1d, 3b and 3l were intended to probe the respondents about their perceptions of the likely success of the policies in achieving numerous urban design, resident behavior and economic, social or environmental benefits. Findings for these questions are discussed below.

Figure 24 – (Question 5e) The Environmental Issues policies will result in housing and communities that are more environmentally-friendly and designed with sustainability features.

Type of Firm		Percent
UDI Land Developers	Disagree	42
	Unsure	25
	Agree	25
	Strongly Agree	8
CHBA Land Developers	Strongly Disagree	17
	Unsure	33
	Agree	50
HomeBuilders	Strongly Disagree	10
	Disagree	10
	Unsure	30
	Agree	40
	Strongly Agree	10
Community Planners	Strongly Disagree	6
	Disagree	11
	Unsure	33
	Agree	44
	Strongly Agree	6

Figure 25 – (Question 2a) The Schools and Open Space policies will result in better or more protection of natural and environmentally sensitive areas.

Type of Firm		Percent
UDI Land Developers	Strongly Disagree	17
	Disagree	25
	Unsure	25
	Agree	25
	Strongly Agree	8
CHBA Land Developers	Strongly Disagree	17
	Unsure	17
	Agree	67
HomeBuilders	Strongly Disagree	5
	Disagree	5
	Unsure	35
	Agree	40
	Strongly Agree	15
Community Planners	Strongly Disagree	11
	Disagree	28
	Unsure	28
	Agree	33

3.2.1 Environmental Issues Policies (See Figure 24)

One-third (33%) of the UDI group, and half (50%) of the CHBA land developers, Homebuilders and Planners agree that the environmental policies will lead to communities that are more environmentally-friendly and designed with sustainability features. High levels of uncertainty expressed by all groups might indicate skepticism about the policy outcomes or, they might indicate a "maybe" position; the outcome may depend on the administration. The high numbers of "unsure" responses may also reflect a vagueness of the policy or poor familiarity with the policies and the intended benefits of these.

3.2.2 Schools and Open Space Policies (See Figures 25, 26 & 27)

The UDI developers and Community Planners express higher levels of disagreement than agreement that the Open Space policies will lead to more protection of natural and environmentally sensitive areas. However, one-third of UDI developers and Planners also express agreement. Other industry groups are more inclined to agree: 67% of CHBA developers and 55% of homebuilders. The levels of unsure response might reflect skepticism about the outcome, vagueness of the policy direction, or uncertainty about the administration.

While more than half of the UDI group disagree (one-third of them strongly), two-thirds of the CHBA group, more than half of homebuilders, and one-third of other consultants express agreement that the Schools and Open Space policies will lead to creation of greater recreational areas. The Community Planners, however, are divided on this issue. The strong disagreement from the UDI group may be a political statement or, it may reflect practical knowledge about the constraints of adding more recreational space in new communities given the municipal standards and regulations currently enforced in Calgary.

Figure 26 – (Question 2b) The Schools and Open Space Policies will result in greater passive recreational areas than are now available in existing suburban communities.

Type of Firm		Percent
UDI Land Developers	Strongly Disagree	28
	Disagree	33
	Unsure	17
	Agree	17
	Strongly Agree	8
CHBA Land Developers	Unsure	33
	Agree	67
HomeBuilders	Strongly Disagree	5
	Disagree	21
	Unsure	16
	Agree	47
	Strongly Agree	11
Community Planners	Strongly Disagree	11
	Disagree	22
	Unsure	33
	Agree	33

Figure 27 – (Question 2d) The Schools and Open Space Policies will result in cost efficiencies for the City and taxpayers because of more efficient land use and more compact urban form.

Type of Firm		Percent
UDI Land Developers	Strongly Disagree	42
	Disagree	42
	Unsure	8
	Agree	8
CHBA Land Developers	Disagree	17
	Unsure	50
	Agree	33
HomeBuilders	Disagree	35
	Unsure	30
	Agree	25
	Strongly Agree	10
Community Planners	Disagree	31
	Unsure	38
	Agree	25
	Strongly Agree	6

UDI developers indicate overwhelming disagreement (84%), while the CHBA, homebuilders and planners groups appear divided that the Schools and Open Space Policies will lead to cost efficiencies for the City and taxpayer because of more efficient land use and compact urban form. The UDI response probably reflects the concern over the allocation of Municipal Reserve lands and the heated debate about vacant school sites in Calgary. However, the high levels of uncertainty and dissonance of opinion may reflect ignorance about the cost implications of the policy prescriptions since these have not yet been empirically tested in Calgary.

Figure 28 – (Question 4d) The Transportation policies will result in alternative street design standards for decreasing capital and maintenance costs.

Type of Firm		Percent
UDI Land Developers	Strongly Disagree	17
	Disagree	33
	Unsure	17
	Agree	28
	Strongly Agree	8
CHBA Land Developers	Disagree	20
	Unsure	20
	Agree	60
HomeBuilders	Disagree	10
	Unsure	45
	Agree	30
	Strongly Agree	15
Community Planners	Strongly Disagree	12
	Disagree	6
	Unsure	53
	Agree	18
	Strongly Agree	12

Figure 29 – (Question 1a) The Community Centres and Neighborhood Nodes Policies will result in increased use of alternate forms of transportation in new communities such as walking, cycling, and public transit use.

Type of Firm		Percent
UDI Land Developers	Strongly Disagree	17
	Disagree	42
	Unsure	25
	Agree	17
CHBA Land Developers	Disagree	17
	Unsure	17
	Agree	67
HomeBuilders	Disagree	30
	Unsure	20
	Agree	45
	Strongly Agree	5
Community Planners	Strongly Disagree	6
	Disagree	22
	Unsure	22
	Agree	33
	Strongly Agree	17

3.2.3 Transportation Policies (See Figure 28)

The UDI group expresses the highest levels of disagreement, although one-third of them agree that the Transportation policies will lead to alternative street design standards for decreasing capital and maintenance costs. That one-third of the UDI developers and more than half of the Planners indicate agreement is interesting, especially considering that the Street Standards Study failed to pass City Council in March of 1997. Other groups express higher levels of agreement than disagreement; this may indicate optimism and anticipation for achieving this outcome.

3.2.4 Community Centres and Neighborhood Nodes Policies (See Figures 29 and 30)

The Sustainable Suburbs Study is developed in accordance with Neo-traditional Planning or New Urbanism Principles. These principles are supposed to make communities more people-friendly and encourage less use of private transportation in the community. The SSS is therefore designed to induce behaviour changes in community residents. While developers remain unconvinced, all other industry groups expect (indicate high levels of agreement) that the Community Centres and Neighborhood Nodes policies to increase the use of alternate forms of transportation in new communities.

More than half of all respondents from all groups disagree that the Community Centres and Neighborhood Nodes policies will lead to reduced (vehicle) trips outside the community. However, the respondents (except CHBA who indicate higher levels of uncertainty) appear polarized on this issue: while 42% of the UDI group disagree, 25% agree; 50% of Homebuilders disagree, but 35% agree; and 50% of planners disagree, but 39% agree. These relatively moderate levels of agreement (and uncertainty) point to opportunities for implementing this particular policy.

Figure 30 – (Question 1d) The Community Centres and Neighborhood Nodes Policies will result in reduced trips to work and shopping outside the community.

Type of Firm		Percent
UDI Land Developers	Strongly Disagree	25
	Disagree	17
	Unsure	33
	Agree	25
CHBA Land Developers	Disagree	60
	Unsure	33
	Agree	17
HomeBuilders	Disagree	60
	Unsure	15
	Agree	30
	Strongly Agree	5
Community Planners	Strongly Disagree	8
	Disagree	44
	Unsure	11
	Agree	39

Figure 31 – (Question 3b) The Housing policies will result in more journeys to work, etc. by walking, transit, or bicycle.

Type of Firm		Percent
UDI Land Developers	Strongly Disagree	25
	Disagree	42
	Unsure	25
	Agree	8
CHBA Land Developers	Disagree	33
	Unsure	50
	Agree	17
HomeBuilders	Strongly Disagree	20
	Disagree	30
	Unsure	30
	Agree	20
Community Planners	Strongly Disagree	17
	Disagree	39
	Unsure	28
	Agree	17

3.2.5 Housing Policies (See Figures 31 and 32)

The policies are expected to introduce design innovations that are expected to encourage walking, bicycling and increased use of public transit. Most groups seem pessimistic that the Housing policies will result in more journeys by walking, transit, and bicycle: two-thirds of the UDI group, half of the Homebuilders, and more than half the planners disagree.

With the exception of the UDI, industry groups express higher levels of agreement than disagreement that the Housing policies will lead to infrastructure innovations for improved cost efficiencies. However, one quarter of homebuilders and community planners disagree that cost efficiencies will occur. The high level of disagreement expressed by UDI land developers probably reflects pessimism as a result of the failure of the Street Standards Study. On the other hand, developers

may indicate disagreement because years of experience lead them to believe little if any innovations will occur in infrastructure designs; entrenched behaviours, regulations and development standards and resistance to change attitudes evidenced (e.g. see questions 18, constraints to innovation) by municipal departments are most likely reasons for this pessimism.

Figure 32 – (Question 3f) The Housing policies will result in innovations in infrastructure designs and technologies for improved efficiencies and reduced maintenance costs.

Type of Firm		Percent
UOI Land Developers	Strongly Disagree	17
	Disagree	42
	Unsure	33
	Agree	8
CHBA Land Developers	Unsure	67
	Agree	33
HomeBuilders	Strongly Disagree	15
	Disagree	10
	Unsure	25
	Agree	40
	Strongly Agree	10
Community Planners	Disagree	24
	Unsure	35
	Agree	36
	Strongly Agree	6

I conclude: in order to implement the policies and encourage the adoption of innovations consistent with urban sustainability, incentives and benefits must be clearly articulated to the industry. Unfortunately, no such incentives are offered by the *Sustainable Suburbs Study*. Nor are there any clues as to the financial and other benefits to industry firms or to the consumer when sustainability innovations are implemented. In light of the foregoing, the extent to which the Suburbs Study addresses the concerns and opinions of industry representatives is something of a moot point.

The successful introduction of innovations will require support and action from agents in the delivery system at the levels at which they operate and exercise the most influence. For example, land developers, primarily responsible for infrastructure emplacement, site-servicing and subdivision, together with community planners and urban designers are responsible for community design and planning, and can be expected to introduce innovations at this level of design-development. Homebuilders are responsible for house design and construction, and other design elements directed around the lot, and can introduce sustainability initiatives to improve performance in these areas. Municipal governments are also expected to do their part by committing resources – financial and technological – and by instituting policies that embrace a sustainability posture so as to induce

behaviors and actions from the industry and consumer which will improve the propensity and speed at which innovations are introduced.

Endnotes Chapter 3

¹ This study showed that consumers are willing to choose sustainability features if given the opportunity. However, its recommendations and design suggestions have not yet been actively employed in any demonstration projects or community plans in Calgary. (The Perks and Wilton-Clark 1996 study is available from CMHC Publications Centre.)

² The Calgary home Builders Association together with Rocky Ridge Builders Cedarglen, Stepper, Sterling, Jayman, Mapeland and Avi is undertaking a pilot project in cooperation with Marquis, and Allwaste Systems to recycle construction waste from new housing. Whether or not recycling will become a matter of regular practice is still an open question. The costs to recycle most of the materials is estimated to be between \$400 and \$600, but participating builders are only paying \$393 right now – the same as they would have to pay to have all excess material hauled to a landfill site. City-wide recycling of construction waste is therefore contingent on the success of the pilot project and the estimated costs of recycling as compared to hauling. (King, Sat., Dec. 6, 1997)

³ Personal communication with Ron Wrigley, Walker Brown Consultants.

⁴ Personal communication with Kevin Freese, City of Calgary, Planning and Building Department.

⁵ This list is not exhaustive. It contains significant items identified by the KII's and Survey Respondents.

⁶ Most (but not all) of these items are innovations only in the sense that they propose to "go back" to earlier norms of development that pertained in the early 20th Century Canadian and American Cities and Towns.

Chapter 4: Housing and Community Affordability and Consumer Preferences

Housing and community affordability can be discussed from a perspective of social housing policy and programs, the economy and subsidies etc., and in which considerations of household incomes, mortgages, interest rates and the local economic situation together with macro-economic policies would be pertinent. However, such is beyond the scope of this Master's Degree Project. This chapter discussion is confined to the issue of affordability as it is (or can be) influenced by planning-design-development policies and standards, and with a focus on sustainability goals and design criteria. Findings from Survey questions 2d, 3a, 3c-3h, 4a, 5f, 8, 9, 10, 10a, 11, 12, 12a, and 23 are presented and reviewed in this chapter.

4.1 The Four Main Planning-Design-Development Measures

Affordability has once again become a preoccupation of municipal administrators. They attempt to attack this concern essentially through their limited powers of urban development, planning and regulation (and taxation); the focus given to affordability being the supply of housing and the capital and maintenance costs of residential community projects.

Thus, affordability measures within the scope of responsibility of the delivery system is, in the first instance, centered on: the costs of infrastructure, the costs of doing business between the development industry and the city, the costs of maintaining infrastructure and public facilities in communities. Second, the municipality customarily tries to negotiate land use area and density, and the development regulations and rules of the game so as to compel developers to provide housing affordable to the lowest income groups without subsidy by the municipality. This practice, commonly referred to as 'inclusionary zoning' or its equivalent in informal regulatory dealings, usually involves requiring housing in multiple or attached forms and of lesser architectural attraction than single-family detached units in the neighborhood. Third, the municipality can encourage (but seldom if ever, "demands" or regulates) cost-advantage technologies and fixtures in the house. A fourth measure open to municipalities is to allow for 'grow' or 'sprout'-type homes, in all or selected residential projects, a measure evidently not widely adopted.

The last mentioned option strikes at affordability by allowing consumers to purchase a relatively modest house below the average market price, and over the years, as income grows, to expand the house size. The third is also not widely practised in regulation or building codes; it usually involves some higher initial capital costs to be traded-off against lower home-operating and maintenance costs over an extended period of time. The second brings capital cost savings to the per-unit charge for housing and, at the same time tries to ensure that the industry makes a stipulated contribution to the provision of housing for the lower income groups. The first option provides direct municipal control

over affordability through development charges and taxes charged against each unit of housing, the transaction and carrying charges associated with development approval processes, and via the direct costs of infrastructure and land; such measures being contingent on the engineering and site development standards established for minimum servicing requirements. (D'Amour, 1993; IBI 1992; Perks and Wilton-Clark, 1996)

4.1.1 Impacts of Planning-Design-Development Practices on Affordability

Housing and community affordability is strongly linked to land use and urban design-development practices. Affordability is contingent on the capital costs of land and infrastructure. For example, it is estimated that for all linear infrastructure (roads, pipes, etc.), the detached housing option requires approximately four times (!) more infrastructure per unit than the duplex option. (D'Amour, 1993). Additionally, with changes to site development and engineering standards, significant improvements can be made towards improved affordability. (Brethour Research Associates, 1992; Essiambre-Philips-Desjardins Assoc., 1995; IBI, 1992; Marshall Macklin Monaghan, 1994) Greatest cost savings are a function of the reduced lot frontage, and a reduction in the road right-of-way is "the single most effective engineering contribution that can be made to achieve infrastructure cost efficiency (measured on a per unit basis)". (Marshall Macklin Monaghan, 1994: 14). However, the site development standards and engineering-infrastructure requirements are regulated by municipal authorities. Therefore, measures aimed at improving affordability are contingent on the relaxation of (so called) "excessive and inflexible" municipal planning requirements. (Energy Pathways, 1991) A recent trend has been the application of Neo-Traditional or New Urbanism planning principles to achieve these aforementioned objectives. For example, in a 1995 comparison of a conventional suburb with one designed according to New Urbanism principles, the researchers argue

Infrastructure standards can be lowered by adopting a balance of efficient street design, moderately high densities using compact urban forms of housing, and cost-effective engineering standards. (Hygeia Consulting Services, 1995)

However, the cost-savings associated with the Neo-Traditional are a by-product of compact urban form, not of street configuration that characterizes a typical of Neo-Traditional plan. Thus, the street patterning typical of Neo-Traditional urban design is not the only cost-sensitive option. Any other community designs that apply higher densities, greater mix of land uses, more compact housing options, and ecological-design features can be expected to yield similar, if not better cost-efficiencies for improved overall community, and per unit housing affordability. (See for e.g. the "Edgemont II" design produced for the Perks and Wilton-Clark research, 1996.)

4.2 Industry Positioning for Affordability

Questions 12, 12a, 8, 8a, 9, and 10 sought to determine industry perceptions about the situation of affordability and assess the situation in Calgary. Municipal constraints and recommendations for improved affordability are also investigated.

Question 11 asks what proportion of *total housing production and/or development plans* are dedicated to supplying housing – ownership or rental – for a range of income categories. Ostensibly, only respondents from the UDI and CHEA groups, and homebuilders were qualified to respond; i.e. 47 / 66 respondents. Thus, while the results for this question are not a statistical representation of all developers and homebuilders, they do provide a useful indication about the allocation of land and housing units for various income groups.

In 1991, the median household income in Calgary was \$43,000. Notably, most housing units and land allocations are dedicated for households with incomes greater than \$45,000 (refer to compilations for Question 11, Appendix II). Most housing production and land dedications are for markets in the income range of \$45,000-\$59,999 and \$60,000-\$74,999. This indicates that a majority of those who responded for Question 11 are producing housing for market segments with incomes higher than most of the Calgary home purchasers (houseseekers). This raises the question: Is there limited demand from lower household income groups or, is demand for housing so high from upper income groups that it actually absorbs virtually all of the productive capacity of community and housing producers?

4.2.1 Current Situation of Affordability in Calgary

It is generally asserted that housing in Calgary is relatively affordable (City of Calgary, 1994); but only a small proportion of new housing – only 6% to 7% – serves the demand for lower-priced housing (\$110,000 or less). Most of the housing constructed in Calgary – upwards of 80% - is priced above \$150,000, and the average price of single-family detached housing is now over \$190,000¹. The average price for a 40-foot lot has increased between \$3,000 and \$5,000 over 1997 because of higher costs for raw land and servicing². According to one developer, costs increased between six and seven percent last year, and this year will increase an additional 7.5 per cent. (Hope, 1998) Further, according to CMHC Calgary, 54% of renters cannot afford to purchase housing in Calgary.

The *Sustainable Suburbs Study* calls for a new Housing policy and prescribes an interim solution:

developers are encouraged to target a minimum of approximately 10 percent of all dwelling units in a community at households earning no more than the median Calgary household income. (p.48)

Two considerations are important. First, while the *Sustainable Suburbs Study* recognizes that the average purchase-price of single-family housing is well-above the income-affordability of (likely) a half or more of Calgary's households, it prescribes a measure ensuring only 10% of housing is dedicated to "no more than" the median. What about the other 40% (below the median)? Second, even though the policy calls for affordably priced housing, it does not specify what market segments or household-income groups will be targeted. Is it households earning \$10,000, \$20,000 or \$30,000 per annum? The policy does not specify. The issue of housing affordability has not yet been adequately addressed.

Figure 33 – (Question 12) Percent who believe the situation of "affordability" in Calgary has become better or worse over the last 10 years.

Type of Firm		Percent
UDI Land Developers	Better	68
	Worse	25
	Don't Know	8
	No Opinion	8
CHBA Land Developers	Better	50
	Worse	50
HomeBuilders	Better	68
	Worse	21
	Don't Know	11
Community Planners	Better	44
	Worse	22
	Don't Know	28
	No Opinion	6

All Respondents	Percent
Better	50
Worse	27
Don't Know	16
No Opinion	8

Interestingly, half of all respondents believe the situation of affordability has become better over the last 10 years. Homebuilders and the UDI group in particular believe this. Planners, on the other hand, are not so certain: 1 in 5 indicate that the situation has become worse, and one-third have no opinion (or don't know). As agents who plan and design communities – especially with affordability and socio-economic diversity as important criteria – planners might be expected to demonstrate greater awareness on this issue.

Reasons given for improved affordability (independent of more favorable interest rates in recent years) are attributed to (Question 12a):

1. Increased competition (in the industry)
2. Production of smaller homes
3. Smaller or narrower lot sizes
4. Improved efficiency in production and within firms.
5. Lower/Stable labor, materials, and construction costs.
6. Higher densities and more multi-family housing production.
7. Greater supply and diversity of product/Better product design.
8. Consumer confidence (in Calgary economy, etc.)
9. Lowered profit margins by developers and builders

Evidently, the respondents believe that the primary driver of affordability has been competition in the industry. As far as the industry is concerned, they have advanced affordability. Other reasons for improved affordability are: *an abundant land supply has kept lot costs equitable; the development industry is listening to market demands; and CMHC policies regarding first time buyers.*

Against these industry assertions, one respondent argued that the only place the industry has improved affordability has been in energy consumption and reduced wastage by using alternative building products - i.e. composite materials rather than raw wood (K-3 or MDF board or Finger-joined wood).

Not surprisingly, the two other significant reasons are production of smaller homes and smaller lots. Still, these two initiatives point only to the predominance of single-detached housing units over all other types – innovations such as row housing, condominiums, dual-unit (attached) housing forms, etc. That predominant subdivision and house-design practices continue, reflect the promotion of individualist over collective and/or equitability values in the Calgary delivery system. Furthermore, the improvements in detached house and lot sizes – mostly, if not entirely – improve affordability only for those families already able to afford *single-unit detached* housing.

Why then did the City include a Housing Policy in the *Sustainable Suburbs Study*? This was asked in Question 10(a). Land Developers and Homebuilders say the primary reason is to mandate greater diversity and supply of housing, as follows:

They want every community to have the same mix of low to high income housing

The City is looking for each community to offer all ranges of house prices

To ensure that as properties grow, and the economy continues to move ahead there are still opportunities to provide this housing and it remains economically feasible so that market is not left behind.

So that lower income housing would be spread throughout the city, rather than congregating in one sector.

But, the City's efforts at instituting a housing policy are characterized by industry agents as:

- *Social engineering objectives;*
- *Trying to achieve what can not exist;*
- *Trying to legislate a community rather than letting natural evolution determine the mix;*
- *A misguided belief that everyone should have equal access to each new community regardless of ability to pay.*

At the same time, the respondents also suggest there is

resistance from the middle income consumers to low income housing in close proximity to higher quality housing

and therefore

Low to medium income housing is provided city wide – but not always in all communities.

Besides suggesting that the housing policy was instituted to "include social housing", "produce a more balanced mix of housing options" and "produce a more uniform mix of socio-economic classes", the Planners and other consultants feel it was adopted because:

- of *Political reasons – public consumption and appearance*
- the *City wants to control location of low/moderate price housing*
- of [City Planners] *Ideological objection to free market*

4.2.2 Industry Initiatives for Improved Affordability

Figure 34 – (Question 8) Respondents' position on the following statement:

At this time and for the near future, there is little or nothing the industry itself can or should do to bring a more affordable community and housing product onto the market.

Type of Firm		Percent
UDI Land Developers	Strongly Disagree	33
	Disagree	25
	Agree	25
	Strongly Agree	17
CHBA Land Developers	Disagree	20
	Unsure	20
	Agree	40
	No Opinion	20
HomeBuilders	Strongly Disagree	20
	Disagree	10
	Unsure	20
	Agree	25
	Strongly Agree	10
Community Planners	No Opinion	15
	Strongly Disagree	18
	Disagree	29
	Unsure	24
	Agree	24
	Strongly Agree	6

All five respondent groups are divided on this issue. However, a significant proportion of the UDI group (greater than half) and the planners disagree: viz., the industry can (or should) take further action to improve affordability.

In Question 8(a), Land Developers and Homebuilders variously suggest introducing changes in the delivery system to reduce maintenance requirements; produce more efficient infrastructure; achieve higher density; modify road standards and design criteria; "provide quality without lots of expensive

extras³; "reduce lot prices through size and access and dedication"; and work with municipalities to provide affordable housing. They propose innovations so that:

Planning of whole communities and land allocation supports a variety of housing types and prices. Maintaining more mix of product.

The Planners recommend the industry should achieve higher development density, reduce house 'features' and amenities, reduce quality, reduce street pavement widths in local streets, reduce size of houses, build further out to obtain lower land costs, offer a wider variety of housing options, plan affordable housing in inner city communities that already have adequate levels of public services and amenities; and ensure a higher level of public participation for developing more choice. (All of these measures appear in Perks and Van Vliet (1993) and Perks and Wilton-Clark (1996)).

Interestingly, planners would like to see increased public participation; on the other hand, Land Developers and Homebuilders believe this leads to costly delays in the approval process.

4.2.3 Municipal Policies or Incentives for Improved Affordability

Improvements for affordability need not be limited to industry action. Another Survey question sought to determine what municipal initiatives could be introduced. The four most frequently cited *municipal policies or initiatives* are:

- improve processing times for development approval;
- introduce new or revised street design/construction standards;
- introduce alternative/revised lot/site servicing standards; and
- reduce development/assessment charges & taxes.

Only two incentives were suggested: Introducing the 'Density Bonus' is probably the more promising. This measure would involve a trade-off or exchange of benefits to the developer for designing for higher densities. While it would encourage the industry to produce more compact developments, it could also lead to the preservation and enhancement (through ecological land design practices) of the ecological environment in communities. A further advantage would include infrastructure efficiencies and the mitigation of other, deleterious environmental impacts typical of low density urban subdivisions.

Other innovative municipal initiatives can conceivably include: property tax concessions; land banking and land lease policies, public/private partnerships; regulatory actions; increases through residential capacity through zoning; and inclusionary housing zoning and development terms. (Hulchanski, Eberle, Lytton and Olds, 1990)

Figure 35 – (Question 9) *Municipal policies or incentives that could help the industry play a greater part in achieving improved affordability*

Municipal Policies or Initiatives Suggested by Respondents	Land Developers		Home-Builders	Consultants		Totals
	UDI	CHBA		Planners	Others	
Reduce or Relax Planning & Development Standards	1	2	3	2		66
Alternative (More Flexible) Planning and Zoning Approaches	4	2	1			7
New or revised street design/construction standards	3	1	1	6	3	14
Alternative/Revised Lot/Site Servicing Standards	3	2	2	3	2	12
Reduced/Revised street lighting standards	1				1	2
Reduce municipal reserves dedication	1			2		3
Reduce house design/construction standards/building codes	1		2	1		4
Increase residential housing densities		1		1	1	3
Reduce parking requirements/standards				1		1
Allow encroachment into easements	1					1
Innovation to Stormwater Systems					1	1
Improve Processing Times for Development Approval	5	2	3	4	3	17
Reduce Development/Assessment Charges & Taxes						12
Reduce fees	2	1	1			4
Reduce taxes/Tax Relief	1		2			3
Reduce acreage assessment charges	2		2		1	5
Provide Municipal Incentives				1		3
Cash incentives for developers				1		1
Density Bonus System - Greater open space and/or community facility provisions for higher density				1		1
Mandate a Greater Mix of Housing Types and Affordable Units						3
Include provisions for affordable housing in inner city developments				1		1
Require adequate supply/greater mix of housing types				2		2
Others:						2
Undertake cost analysis for policy implications on affordability				1		1
Greater level of public participation to develop wider array of affordable options				1		1

Two further observations might be made. It is interesting to note that almost all of the suggestions made by industry agents call for a relaxation or reduction in municipal planning regulation and control. This implies that most municipal government controls are primarily negative in their influence on affordability; the municipal administrators exercise the greatest influence on curbing and slowing the pace at which development occurs rather than promoting it. Second, a significant proportion of the suggestions (58 out of 93) call for some change to planning and development standards. Quite clearly, the most *significant constraints* imposed on the development-housing industry for improving affordability are the engineering-infrastructure and urban design standards used to regulate development.

Figure 36 – (Question 10) Percent who agree or disagree that the industry provides “an adequate choice of low to medium income housing” in the planning and designing of new communities

Type of Firm		Percent
UDI Land Developers	Disagree	8
	Agree	67
	Strongly Agree	25
CHBA Land Developers	Disagree	17
	Unsure	33
	Agree	33
	Strongly Agree	17
HomeBuilders	Strongly Disagree	5
	Disagree	5
	Unsure	20
	Agree	30
	Strongly Agree	28
	No Opinion	15
Community Planners	Strongly Disagree	6
	Disagree	6
	Unsure	33
	Agree	44
	Strongly Agree	11

More than half (58%) of all respondents agree; however a significant proportion are unsure: 1 in 5 Homebuilders and 1 in 3 planners and CHBA developers. It is not surprising that the industry does not deliver a more affordable housing product to the consumer; more than half agree that they already satisfy an adequate proportion. On the other hand, one has to wonder how those respondents who are unsure can be expected to advance affordability. Without – presumably – first knowing the situation of affordability, and without being familiar with the amount of affordable product currently provided to the consumer (see responses, Figure 33, in section 4.2.1 above) how can industry agents adopt changes to improve the situation? Perhaps affordability implies only those consumers targeted by the current marketing and profit expectations of the industry.

4.3 Industry Perceptions: *Sustainable Suburbs Study* Policies about Affordability

This section discusses findings from the expected policy outcomes questions (2d, 3a, 3c, 3d, and 4a).

Figure 37 – (Question 2d) The Schools and Open Space policies will result in cost efficiencies for the City and taxpayers because of more efficient land use and more compact urban form.

Type of Firm		Percent
UDI Land Developers	Strongly Disagree	42
	Disagree	42
	Unsure	8
	Agree	8
CHBA Land Developers	Disagree	17
	Unsure	50
	Agree	33
HomeBuilders	Disagree	35
	Unsure	30
	Agree	25
	Strongly Agree	10
Community Planners	Disagree	31
	Unsure	38
	Agree	25
	Strongly Agree	6

Figure 38 – (Question 3a) The Housing policy will result in reduced costs of public infrastructure for homebuyers.

Type of Firm		Percent
UDI Land Developers	Strongly Disagree	17
	Disagree	42
	Unsure	17
	Agree	25
CHBA Land Developers	Unsure	50
	Agree	50
HomeBuilders	Strongly Disagree	20
	Disagree	15
	Unsure	30
	Agree	25
Community Planners	Strongly Agree	10
	Disagree	24
	Unsure	47
	Agree	18
	Strongly Agree	12

Figure 37 shows that a significant majority of the UDI group disagree and the other groups are divided about the Open Space policies. Interestingly, almost one-third of the CHBA, Homebuilders, and Planners agree; but a significant proportion are unsure. Evidently, not all industry agents are as pessimistic as the UDI group. The high negativity expressed by the UDI developers is most likely attributable to the ongoing Calgary debate over Municipal Reserve dedications and the allocation of space for schools. (Refer to the KII's in Chapter 1.) It is a sore point that not all sites reserved for schools are being used by the Calgary Board in Education; developers argue that the land should be more productively used for residential developments instead.

Figure 38 indicates that all groups are divided on infrastructure costs. This spread of opinion may reflect a vagueness of the Study policy about how savings will be achieved. Savings are contingent on site development and engineering-infrastructure standards set by the City, and respondents may therefore be uncertain that administrators will permit relaxations in standards or reduce assessment charges. Also, industry agents may be indicating uncertainty as to whether or not savings in infrastructure achieved will necessarily be passed on to the consumer. Currently well-bolstered property values and a stable property-price structure in Calgary may be one reason why respondents don't foresee significant price savings for the consumer.

Figure 39 – (Question 3c) The Housing policies will result in increased affordability of housing.

Type of Firm		Percent
UDI Land Developers	Strongly Disagree	17
	Disagree	33
	Unsure	33
	Agree	17
CHBA Land Developers	Disagree	17
	Unsure	67
	Agree	17
HomeBuilders	Strongly Disagree	16
	Disagree	30
	Unsure	30
	Agree	20
	Strongly Agree	5
Community Planners	Disagree	39
	Unsure	44
	Agree	17

Figure 40 – (Question 3d) The Housing policies will result in more choice of housing for people of different household types, income levels and age groups in the neighborhoods.

Type of Firm		Percent
UDI Land Developers	Strongly Disagree	28
	Disagree	17
	Unsure	33
	Agree	17
	Strongly Agree	8
CHBA Land Developers	Disagree	17
	Unsure	17
	Agree	67
HomeBuilders	Disagree	5
	Unsure	30
	Agree	45
	Strongly Agree	20
Community Planners	Strongly Disagree	11
	Disagree	17
	Unsure	17
	Agree	50
	Strongly Agree	6

All five groups are divided as to whether the Housing policies will improve affordability; although there is a greater tendency to disagree than to agree. Highest agreement is expressed among the Homebuilders. A significant proportion of all five respondent groups, however, are unsure. Again, this spread of opinion may be attributable to the vagueness of the policies in achieving affordability or because improving affordability is believed to be more contingent on reduced/relaxed standards and reduced assessment charges.

Except for the UDI group, Figure 32 indicates that most respondents have a higher tendency to agree than disagree: 20% disagree, 26% are unsure, 54% agree. This is interesting, given that in figure 39 (Question 3c), the respondents tended to not agree that the housing policies will lead to improved affordability. How can these policies be thought to produce more inclusive communities (viz. diverse socio-economic groups) without improving the affordability of housing?

Figure 41 – (Question 4a) The Transportation policies will result in decreased costs for streets and roadways.

Type of Firm		Percent
UDI Land Developers	Strongly Disagree	42
	Disagree	8
	Unsure	25
	Agree	25
CHBA Land Developers	Strongly Disagree	20
	Unsure	40
	Agree	40
HomeBuilders	Disagree	45
	Unsure	20
	Agree	30
	Strongly Agree	8
Community Planners	Strongly Disagree	6
	Disagree	17
	Unsure	28
	Agree	44
	Strongly Agree	8

Among all respondents (Figure 41), 38% disagree, 25% are unsure, and 37% agree that the Transportation policies will result in decreased costs for streets and roadways. The strongest disagreement from UDI is no surprise, given Council's rejection of the Alternative Street Design Standards in March 1997, just 3 months earlier than the present Survey. However, one in four agree, and one in four are unsure. Interestingly, planners express the highest level of agreement (50%). The spread of opinion among and between all groups is surprising in light of City Council's decision to place a five-year moratorium on the issue of street standards.

4.4 Consumer Preferences and Market Studies

Conventional market research indicates the first order preference for new house-seekers is a single-family detached home located in a new suburb further out towards the city limits. (Angus Reid, 1995) This same research also indicates some willingness by consumers to consider purchasing homes with environmental features. According to Angus Reid, the most important energy/environmental features sought by potential homeowners are: more efficient windows (78%) and insulation (75%). Fewer mention water conservation appliances and fixtures (49%), efficient lighting (48%), computer-controlled air exchangers (30%), and the use of recyclable building materials (21%).

While conventional market research shows that consumers are amenable to certain environmental and resource conserving technologies⁴, most studies do not 'test' the consumers' receptivity along a

full range of affordability and sustainability features, designs, and technologies. Further, conventional market research focuses on consumers' preferences for discrete choices only, and does not measure consumers' willingness to accept a package of features where they might be willing to forego some features in favor of others.

An alternative marketing approach is "conjoint analysis", where:

Individuals evaluate more than attribute of a product at a time, or conjointly, rather than rating attributes one at a time as is done in typical surveys. Conjoint methods are well-suited to analyzing how people will make trade-offs among different features they want in a product, to predicting how people will respond to the introduction of new products in a field occupied by existing products, and to predicting market shares of new products.

(Green, Paul E. and V. Srinivasan, 1990 in Harris, et. al. 1995)

Three recent studies have employed this alternative method. They appear to demonstrate that the consumer is willing to make "trade-offs" when presented with a "package" of sustainability and/or affordability choices. The first, by Brethour Research Associates (1992) in Ottawa-Carleton set out to quantify potential market acceptance and demand for ADS ("Alternative Development Standards"). This survey revealed that consumers who are interested in the savings to be achieved by implementing one of the ADS components - e.g. lot width - are also interested in the savings to be achieved by incorporating all of the ADS components (the total package). The study also found that:

- 65.4 % of the respondents indicate that environmental communities were important or extremely important.
- 68% of respondents interested in single-detached homes say they are likely or extremely likely to purchase an ADS single.
- 71% of respondents interested in a townhome indicated intent to purchase an ADS home.

A second study – most complete for its 'conjoint' methodology – was conducted by the Seattle Office of Management and Planning (Harris, et. al., 1995). It set out to determine the trade-offs people would make if they cannot have all the things they want in a house and a neighborhood. The findings confirmed that

the physical improvements, zoning changes, and design standards proposed for Seattle's urban villages⁵ will substantially increase the attractiveness of city multifamily neighborhoods and will thereby contribute to the most important substantive goals of growth management. (Ibid., p.1)

The Seattle study concluded that consumers will choose to live in Intensified (i.e. more compact and affordable) inner city developments if their satisfactions for amenity-features, quality of life, travel, crime, and environmental stewardship can be fulfilled in the trade-off from the single-family, suburban model, and if medium density housing alternatives are readily available.

The third, most recent study, carried out by Perks and Wilton-Clark (1996) in Calgary, set out to test consumer receptivity to sustainability and affordability features – technologies as well as housing and land use planning practices. They sought to determine “consumer preferences under conditions of wide and diverse choices of house and community design – particularly in reference to choice that reflect sustainable development features, options and lifestyle opportunities”. Initial capital and mid-term operating cost-advantages were presented to the survey participants, covering selected features of house design, infrastructure, streets, etc. Although the results from this study are not statistically-firm accounts of market segments, its methodology, especially the use of a “Hyper-Media Tool” which provided the consumer an opportunity “visualize” the alternative designs, suggests marketing strategies and opportunities for testing consumer preferences prior to planning and construction.

Six major findings from the Perks/Wilton-Clark study were used in Survey Question 23 to determine the extent to which they are consistent with the local industry's experience, and whether or not industry agents do market research with similar intent. This question was also included to inform and educate the Survey respondents about this particular study and the alternative market research approaches demonstrated by it. (Refer to Question 23 in Findings, Appendix II)

Key Findings from Perks and Wilton-Clark Study (1996)	Findings from the Present Survey
<i>A vast majority of respondents would definitely choose the package of 8 sustainability and resource-conserving features in the home</i>	Interestingly, 82% say this finding is not consistent with their experience; however, 72% also indicated they do not test for these preferences.
<i>A vast majority of respondents strongly favour a package of 3 street and lot features – reduced street widths, reduced front yard depth, and calm street designs</i>	Half the respondents agree with this finding, although only 43% said they test for these features.
<i>A majority of respondents would want a second residential unit option for their own house</i>	One-third of respondents find consistency with this preference, and only one-third test for it.
<i>A significant majority of respondents would favour participating in the “front end” planning of their community and house design</i>	Strikingly, this finding is confirmed by half of the respondents for this question (and most do not test for it).
<i>A vast majority of respondents favour a community-level, neighborhood level facility and service for recycling</i>	Interestingly, three-quarters say it is consistent, while the same number do not test for it. One is forced to wonder how they can be so certain?
<i>A large majority favour the idea of a more compact (more dense) community, so that a vital community core with diverse services and civic places can be supported.</i>	While this finding is not consistent with most respondents' experience, most of them (59%) do not even test this proposition!
<i>A majority favour a predominantly grid street system with few cul de sacs</i>	While 87% report inconsistency, half don't test for this. That over 50% suggest they test this is suspect, given the only recent design experiment with a grid street pattern is McKenzie Towne.

Because the response rates varied for these questions – from a high of 53/66 to a low of 44/66 – these findings from Question 23 in the present Survey cannot be reported statistically. Nonetheless, it is important to note that half the respondents indicated consistency for alternative street designs and greater participation in the front-end planning of the community and house-design.

The overwhelming negativity expressed regarding more compact urban form is not surprising, given the industry's position about higher densities and Neo-Traditional Planning concepts. Responses for this question appear to be fairly consistent with the spread and polarization of the industry on specific urban development issues.

Some conclusions to be drawn on this aspect of the Survey are presented in Chapter 6.

Figure 42 – (Question 3e) The Housing policies will result in increased marketability and saleability of housing.

Type of Firm		Percent
UDI Land Developers	Strongly Disagree	88
	Disagree	25
	Unsure	8
	Agree	8
CHBA Land Developers	Disagree	33
	Unsure	60
	Agree	17
HomeBuilders	Strongly Disagree	25
	Disagree	10
	Unsure	45
	Agree	20
Community Planners	Strongly Disagree	24
	Disagree	47
	Unsure	12
	Agree	18

Figure 43 – (Question 3f) The Housing policies will result in increased marketability and saleability of the community.

Type of Firm		Percent
UDI Land Developers	Strongly Disagree	80
	Disagree	17
	Unsure	17
	Agree	17
CHBA Land Developers	Disagree	17
	Unsure	33
	Agree	50
HomeBuilders	Strongly Disagree	16
	Disagree	16
	Unsure	42
	Agree	21
	Strongly Agree	5
Community Planners	Strongly Disagree	17
	Disagree	28
	Unsure	39
	Agree	17

An overwhelming majority of the UDI developers disagree – more than half of them strongly – that the Housing policies will produce marketing and selling advantages. Most of the planners also disagree. Interestingly, a large proportion of homebuilders and CHBA developers are unsure; perhaps these groups are more candid about their state of knowledge regarding consumer preferences for higher densities, more compact developments, and innovative house designs. On the other hand, developers and planners may be more assertive because of the suppositions they have about existing development patterns and community design principles. To what extent the consumer's residential preferences are contingent on the community features and community design over house-design choices are also a matter for further investigation.

While a majority of the UDI group disagree, 34% are unsure or agree that the Housing policies will result increased marketability and saleability of the community. Although 45% of planners agree, a significant proportion (39%) are unsure. The other groups are also divided and *with high levels of*

uncertainty. The relatively large proportion who are “unsure” probably reflects a lack of certainty about the marketing and selling advantages of more ‘sustainable’ communities. On the other hand, they may reflect industry positioning about consumer preferences for lower density, ‘upper-scale’ residential communities.

Figure 44 – (Question 3g) The Housing policies will result in increased satisfaction of consumers and their preferences.

Type of Firm		Percent
UDI Land Developers	Strongly Disagree	33
	Disagree	42
	Unsure	17
	Agree	8
CHBA Land Developers	Unsure	80
	Strongly Agree	20
HomeBuilders	Strongly Disagree	20
	Disagree	15
	Unsure	48
	Agree	15
Community Planners	Strongly Agree	5
	Strongly Disagree	17
	Disagree	33
	Unsure	22
	Agree	28

Figure 45 – (Question 3h) The Housing policies will result in communities which are more responsive to market realities and buyer considerations.

Type of Firm		Percent
UDI Land Developers	Strongly Disagree	80
	Disagree	33
	Agree	17
CHBA Land Developers	Strongly Disagree	17
	Disagree	17
	Unsure	50
	Agree	17
HomeBuilders	Strongly Disagree	10
	Disagree	25
	Unsure	30
	Agree	30
	Strongly Agree	5
Community Planners	Strongly Disagree	24
	Disagree	29
	Unsure	18
	Agree	24
	Strongly Agree	6

Referring to Figure 44, levels of agreement are low for most land developers and homebuilders, but a significant number of planners agree. On the other hand, a significant proportion of all respondents – especially among homebuilders and planners – are unsure.

Responses from land developers may reflect a commonly-held assumption about consumer preferences for conventional, curvilinear, spread developments, but it doubtless points to inadequate market research and testing of consumer receptivity for sustainability features and more compact urban form. Low levels of agreement are also attributable to a general reaction to the Neo-Traditional principles articulated in the *Sustainable Suburbs Study*. (See KII's and Chapter 3 on Innovation).

Figure 45 shows that an overwhelming majority of UDI developers disagree that Housing policies will lead to communities which are more responsive to market realities and buyer considerations. Other groups appear divided. Interestingly, a significant proportion of homebuilders (35%) and community planners (30%) agree. Do they know something that the land developers are overlooking?

Uncertainty expressed by homebuilders may reflect inadequate information about consumer housing preferences (this was confirmed in Chapter 3 on innovation).

The overwhelming negativity expressed by the UDI group reflects a generalized industry positioning about residential community design and municipal involvement in general: viz. the assertion of consumer supremacy over all government interventions in the housing market. It also reflects an industry contra-positioning about the entrenchment of Neo-Traditional planning principles as a condition of future design and development. The industry opposes the Neo-Traditional because of evidence in some U.S. communities where projects have been poorly received by consumers. Tied to this, the industry expresses very strong opposition to the density requirement of 7 upa. They argue that the density goal is unrealistic given all the other constraints imposed on them – such as urban-design and engineering-infrastructure standards. (See Chapter 2 on innovation.)

Figure 46 – (Question 5f) The Environmental Issues Policies will lead to increased marketability and saleability of the community as an identifiable place with special qualities.

Type of Firm		Percent
UDI Land Developers	Strongly Disagree	25
	Disagree	42
	Unsure	33
CHBA Land Developers	Disagree	17
	Unsure	33
	Agree	50
HomeBuilders	Strongly Disagree	5
	Disagree	30
	Unsure	40
	Agree	18
	Strongly Agree	10
Community Planners	Disagree	33
	Unsure	28
	Agree	39

We see in Figure 46 that there is no stated agreement from the UDI group; two-thirds disagree. The other four groups are divided. Interestingly, half the CHBA group, one-quarter of homebuilders, and 39% of planners agree. While industry positioning on this issue appears consistent with other questions about the marketing and saleability advantages of communities, the level of disagreement and uncertainty among planners are somewhat lower, and their level of agreement on this particular issue is greater; 4 out of 10 planners apparently tend to believe that special or unique environmental qualities will produce marketing advantages or opportunities.

Endnotes for Chapter 4

¹ In 1997, CMHC reports that a total of 8,656 single-family houses and 2,559 multiple units were built; the multi-family are under 23% of the total. While the pace of single family home construction in Calgary was twice that of any other major city in Canada, its multi-family starts were fourth highest – compared with Toronto's 11,371, Vancouver's 11,265 and Montreal's 5,305. (Hope, Feb. 7, 1998)

² See *Calgary Herald* articles written by Marty Hope dated Feb. 7, 1998 and Feb., 14, 1998.

³ In the Calgary market, builders are presently introducing more "spec" housing – built with little or no customization allowed. (Hope, Sat., Dec.6, 1997) However, the improved affordability is only fortuitous; spec housing is intended to reduce construction and possession times by shortening the front-end planning process, and meet the demands of a "booming" Calgary residential housing market.

⁴ For example, see *Consumer Housing Preferences in the 1990s*, (CMHC, 1995:72) which found that "Canadians will continue to prefer energy-efficiency options and features when they buy or renovate", but, their decision is contingent on "economic considerations such as lower energy bills, the resale value of their homes, and short break-even periods for investments". The 'environmental' considerations of this study are limited to energy-efficiency and preferred heating systems, R2000 homes, economic considerations, and indoor air quality. This particular study does not ask consumers about the preferences for water conservation, trade-offs regarding house design and size, lot dimensions, energy-efficient appliances, or other 'sustainability' features identified by Perks and Wilton-Clark (1996).

⁵ A key organizing concept in Seattle's comprehensive plan is the urban village. Urban Villages are *largely self-contained residential and commercial neighborhoods dispersed throughout the city. Each urban village will have a unique identity in the larger urban environment, reflecting local history, natural features, and other sources of community pride. They will include a variety of housing types. Residential densities in urban villages will be high enough to support efficient transit service, encourage walking, and provide adequate markets for neighborhood stores. The commercial areas of the larger urban villages will contain many jobs. Most urban villages will contain community facilities such as schools, recreation centers, libraries, parks, human services, and open space, all within walking distance of the village core.* (Harris, et. al. p. 1)

Chapter 5: Development Industry Practices and Corporate Environmental Management

In this chapter we review the findings for Survey Questions 5, 24, 24a, and 25. These questions sought to investigate the present situation regarding a number of operating and environmental management practices for improved environmental performance and sustainability.

5.1 General Business-Corporate Practices

In light of the historical deleterious impacts of industrial activity, and in response to Sustainable Development, corporations and businesses are under considerable public scrutiny and pressure to improve the environmental performance and sustainability of their operating practices. (Thompson, 1995; Porter and van der Linde, 1996; Ilinitch and Schaltegger, 1995; Jackson 1996) As a result, Canadian corporations have developed strategies for improving organizational capacities and their positioning vis a vis Sustainable Development and 'environmental performance'.

A common strategy among the private sector involves the formulation of environmental management practices and operating procedures for monitoring, evaluating, and obviating adverse environmental impacts (e.g., Thompson and van Bakel, 1995; Jackson, 1996; Cascio, Woodside and Mitchell, 1996; Thompson, 1995). This approach involves the implementation of tools as part of a comprehensive system for environmental management. These tools may be applied singly or in combination, but they are most effective when applied as part of a complete Environmental Management System (EMS).

- Environmental Policy Statements
- Strategic Environmental Impact Assessments (SEIA's) and Strategic Planning
- Environmental Audits (EA's)
- Environmental Impact Assessments (EIA's)
- Environmental Performance Indicators
- Environmental Reporting
- Accounting Systems
- Product and Technology Assessments (PATA's)
- Life Cycle Assessment (LCA) and Lifecycle Costing
- Risk Management
- Organizational Structure and Decision-Making
- Education and Training

The present discussion does not offer a detailed examination of these tools; an overview can be found in a few key sources e.g. Thompson (1996), Thompson and van Bakel (1995); Cascio et. al. (1996), and Perks, Bilkhu and Thompson (1996).

In Canada, the Canadian Standards Association (CSA) is the lead promoter of EMS and has already published documents dealing with environmental labelling, life cycle assessment, auditing, terminology, site assessment, environmental purchasing guidelines, pollution, environmental management systems, stakeholder involvement and risk assessment. The CSA updating process

allows for 'continuous improvement' of these various environmental standards and procedures. It also brings together stakeholders from different sectors and different levels of government. (Perks, Bikhu and Thompson, 1996).

While businesses in other sectors – some 69% of firms surveyed by KPMG in 1996 – are reported to have an EMS in place, little or nothing is known about the situation in the land development-housing industry. (My own personal literature search was disappointing.) The preliminary KII's conducted in October-November 1996 for the present Study indicated that the level of awareness and implementation of environmental management tools are still scarce among industry firms in Calgary. Therefore, the survey sought to investigate and report on the current situation of environmental management practices and day-to-day operations.

5.2 Driving Forces for Improved Environmental Performance and Product Design

Question 26 asked respondents to rate nine factors that would likely influence – or have influenced their decisions to make their products and practices more environmentally-friendly. (Refer to Appendix II for complete findings.) The four *most influential* factors reported were:

- Senior or municipal government regulations and standards are increasingly requiring better environmental management practices in the industry;
- They can avoid or lower the risk of fines and liabilities relative to our products or practices;
- Better environmental management/sustainability practices improve corporate image, and therefore help consolidate market share; and
- Adopting environmental/sustainability practices can give firms a competitive advantage.

While Planners responses are generally consistent with the other industry agents, they identified one additional factor as somewhat more influential:

- Environmental management/sustainability practices will play a part in anticipating and reducing environmental impacts that are generally associated with the industry.

All five groups were more divided about the level of influence of the remaining factors surveyed:

- Financial and lending institutions require or like to see environmental considerations in our business plans
- Adopting better environmental practices can give us a competitive edge by raising barriers to entry for new competitors
- Better environmental management and sustainable design practices are a trend that our competitors are adopting
- Consumers expect us and our products to be more "environmentally-friendly" or meet sustainable development goals.

Clearly the most influential factors are senior government regulations, and fines and liabilities exacted by civil and (possibly) criminal legislation. However, to date, according to a recent pan-Canadian study (Perks, Bilkhu, and Thompson, 1996: 79), "none of the Alberta initiatives appears to have measurably improved the environmental-planning situation, or to have effectively addressed the related regulatory-procedural issues." At the municipal level in, "the EMS for the City of Calgary is not fully mature and requires further development". (Bilkhu, 1996: 123) One might infer, therefore, that the municipal government is currently in a weak position to effectively regulate, monitor, and advance environmental management systems as a matter of regular practice. This does not mean that the first two factors must be altogether discounted; they are simply not as effective as otherwise they might be. Thus, at the present time, "improved corporate image" and "competitive advantage" might be more significant drivers for change.

However, the degree to which effective EMS practices can offer competitive cost and market advantages in this sector has not yet been adequately researched. I am inclined to the view that evidence that demonstrates the market advantages and consumer preference-advantages of improved sustainability will provide the impetus for change in the Calgary delivery system.

5.3 Development Industry Practices

Table 47 – (Question 24) Percent of firms that have an environmental policy or standard operating procedure that considers environmental concerns

Type of Firm		Percent
UDI Land Developers	Yes	42
	No	33
	Don't Know	17
	No Opinion	8
CHBA Land Developers	Yes	50
	No	17
	No Opinion	33
HomeBuilders	No	80
	Don't Know	20
Community Planners	Yes	44
	No	44
	Don't Know	8
	No Opinion	8
Other Urban Consultants	Yes	25
	No	38
	Don't Know	25
	No Opinion	13

All Respondents	Percent
Yes	27
No	50
Don't Know	15
No Opinion	8

Notably, only 27% of all firms, and less than half of all Land Developers and Planners do not have an environmental policy statement or related operating procedures. Given the poor articulation of environmental policies (see below) and activities, the rather impressive rates of affirmative response

on this issue is suspect. Obviously, a consideration for environmental concerns does not form an important part of the management philosophy for a significant proportion of the industry. The response from homebuilders is not surprising, given the average size and scale of activity of these agents; they are also the only group that offered no response for Question 24a.

Question 24a asked respondents to summarize the main points of their corporate environmental policy or operating procedures.

For the most part, Land Developers (only 10 out of 18 responded) do not have clearly articulated and publicized environmental policy statements. The most commonly cited response is to undertake Phase I Environmental Assessments; however, these are almost always performed for "greenfield" sites. Therefore, the environmental practices are not really "strategic"; they do not *anticipate and predict* adverse impacts of development projects; nor do they take action to mitigate the environmental impacts of development projects. Only one respondent stated they undertake regular monitoring and reporting on development sites. Two other respondents suggested they consider environmental issues in development projects and are "sensitive to the retention of natural attractive features desirable in a new community."

Interestingly, none of the responses indicate action beyond municipal requirements. Obviously the industry has not yet recognized or unleashed the potential for economic and competitive opportunities from improved environmental management and performance.

The five planner responses were limited to employing one's "own insights and methods of design and development"; "using as much organic materials as possible"; "design based on ecological integrity"; and "incorporating as many sustainable design features without resulting in a time consuming approval process." One cannot help but wonder about the integrity of the affirmative responses provided for question 24 (i.e. firms having an environmental policy).

We can conclude that environmental policies are not formally instituted and are not a standard consideration for planning firms; this coincides with an overall apathy by the Calgary planners to innovate more ecologically-friendly and sustainable community plans and development projects. This situation is most likely attributable to the relatively weak regulatory environment for legislating EMS practices. Also, standard professional practice is slow to evolve; the professional association (AACIP) has only recently brought forward a discussion paper about Municipal Environmental Assessment (April, 1996).

5.4 Local Sustainability Practices in Housing Design

Other indicators are the regular design and construction and operating practices of industry firms. Whether or not certain sustainability initiatives are regularly performed indicates industry commitment for improved environmental performance and sustainability. This issue was investigated in the survey (Question 21) among the firms responsible for designing and building homes.

A number of sustainability initiatives and resource-conserving technologies identified by Natural Resources Canada publications were reviewed and selected for investigation¹. Industry firms were asked to indicate the frequency of practicing activities involving the implementation of these initiatives or technologies. The results are presented in Figure 48 below.

Figure 48 – (Question 21) Regular Implementation of Sustainability Practices in House Design and Construction

- Choose fixed windows with an ER rating of +2, and operable windows with an ER rating of -11 or better.
- Install *high-performance* windows instead of conventional ones.
- Perform regular waste audits
- Install *water-efficient* toilets rather than conventional ones
- Install *low-flow* shower heads and *low-flow* aerators on faucets.
- Install *high-efficiency* gas-fired furnaces over conventional ones.
- Install more *energy efficient* compact fluorescent lights instead of standard incandescents.
- Select appliances with the *lowest* EnerGuide label.
- Install *solar* panelling for heating homes.

Type of Firm	Question 21	a	b	c	d	e	f	g	h	i
		% Response								
CHBA Land Developers n=6	None of the time	0	0	0	0	0	0	0	0	80
	Some of the time	20	60	60	20	20	20	60	40	20
	Half of the time	20	20	20	0	0	0	40	40	0
	Most of the time	40	20	0	60	60	80	0	0	0
	All of the time	20	0	20	20	20	0	0	20	0
Homebuilders n=20	None of the time	25	16	37	25	25	21	37	22	90
	Some of the time	22	47	5	12	21	11	25	33	5
	Half of the time	33	25	25	17	11	11	21	11	0
	Most of the time	11	11	16	22	5	32	11	11	0
	All of the time	6	0	16	22	37	25	5	22	5

A significant majority (80%) of integrated firms (i.e. those who engage in land development and housebuilding) install water-efficient toilets, low-flow shower heads and aerators, and high-efficiency gas-fired furnaces over conventional ones *most or all of the time*. A majority of the CHBA group also chooses more energy-efficient windows (item a) over less efficient ones. However, very few from this group install more energy efficient lighting, and even fewer firms install solar paneling in any of their homes. A significant proportion of Homebuilders indicated they perform regular waste audits (32%), select appliances with the lowest EnerGuide label (33%) and install water-efficient toilets (44%), low-flow shower heads and aerators (42%), and high-efficiency gas-fired furnaces (58%) over

conventional ones *most or all of the time*. However, homebuilders are not as diligent choosing energy efficient windows, installing energy efficient lighting, and installing solar paneling in their homes.

While water-efficient toilets, low-flow shower-heads and aerators, and high-efficiency gas-fired furnaces are selected by at least 50% all respondents half-of-the-time, these rates of practice can certainly be improved. Policy E.6 – requiring that all homes in new communities should have manufactured water-saving fixtures will perhaps improve these numbers considerably. On the other hand, the *Sustainable Suburbs Study* has been formally published since July 1995, and these rates of practice reported in July-August 1996 clearly indicates “no mad rush” to come on side with the City’s policy.

It is surprising that very few numbers of firms perform regular waste audits and select appliances with the lowest EnerGuide label. If the lower EnerGuide label translates into higher capital costs for the builder, and subsequently the consumer, this might be one explanation. Movement towards low-cost spec homes (from question 19) also supports this conclusion. In addition, the industry is very competitive and is presently experiencing considerable amounts of growth in Calgary; these demands for construction-efficiency and deadlines for finished-products likely translate into decisions focussed strictly on price-competitiveness. On the other hand, if given a choice, consumers may be willing to pay slightly higher initial capital costs – if informed about the relative efficiencies of appliance technologies; but opportunities for the consumer to make such choices are apparently not offered in the Calgary market.

Policy E.1 “encourages” builders to ensure that all new buildings are audited for construction waste, but this is not a mandatory requirement; the loose wording of the policy doubtless translates into diffuse and indifferent application of the policy. The irregular performance of waste audits also points to an inconsistent or weak implementation of EMS in the industry.

5.5 Familiarity with Guidelines and Techniques for Improving Environmental Performance and Product Quality (Refer to Appendix II for Group Comparisons)

Question 25 sought to test industry awareness about guidelines and techniques for improving environmental performance and product quality. Respondents were asked to indicate their level of awareness about 7 environmental management guidelines and tools.

Figure 49 – (Question 25) Familiarity with Guidelines and Techniques for Improving Environmental Performance and Product Quality

- a) ISO 9000 Guidelines for Quality Management
- b) ISO 14000 Guidelines for Environmental Management
- c) Canadian Standards Association(CSA Z750-94) – A Voluntary Environmental Management System
- d) Urban Land Institute (ULI) – Principles for Environmentally Responsible Development
- e) Environmental Audits
- f) Lifecycle Costing
- g) Waste Audits

All Groups Combined	Question 25	a	b	c	d	e	f	g
n=65	Not at all Familiar	51	65	58	36	29	39	35
	Somewhat Familiar	20	20	28	26	19	15	25
	Moderately Familiar	16	13	5	25	24	33	23
	Considerably Familiar	10	2	3	11	21	8	15
	Very Familiar	3	0	2	0	6	5	2

One item in this question tests the "integrity" of responses; this is the "ULI Principles for Environmentally Responsible Development", an internal policy document not available at the time of the Survey for industry scrutiny. Interestingly, respondents from all groups (though not all respondents) indicated some level of awareness for this item. Therefore, the overall results for this question are likely somewhat skewed and, therefore, not entirely accurate. It seems fair to infer that responses for all questions are exaggerated to indicate greater familiarity than is actually the case.

A few observations warrant discussion. First, Homebuilders and Planners are more familiar with ISO Guidelines for Quality Management than the other groups. Given that Homebuilders are responsible for construction processes and practices, this is probably true. However, the relatively higher levels of familiarity expressed by planners are certainly not tied to their professional training or stake in the construction process; it is therefore open to question. Second, and more interesting, is the relatively higher levels of awareness about Environmental Audits, Lifecycle Costing, and Waste Audits. High awareness about these issues are probably attributable to the recent interest about them as a result of the Round Table process. Waste Audits are also specified by policy E.1 in the *Sustainable Suburbs Study*. Interestingly, none of these management practices was cited in Figure 49 (Question 25) above as part of the standard environmental operating procedures of firms.

5.6 Propensity for Improved Sustainability Practices and Resources Conservation

The *Sustainable Suburbs Study* policies and design guidelines are intended to achieve certain resource conservation objectives such as reducing waste and reducing water and energy consumption. Question 5 in the Survey sought to investigate industry opinions about whether or not the policy would achieve these.

Figure 50 – (Question 5) The Environmental Issues policies will result in:

- a) reduced waste materials during land development and building construction.
- b) reduced water consumption in the house.
- c) reduced overall (aggregate) water consumption in the City.
- d) recycling in the home (and in the community).
- g) reduced energy consumption in the house.

Type of Firm	Question 5	a	b	c	d	g
		% Response				
UDI Land Developers n=12	Strongly Disagree	0	8	8	8	8
	Disagree	42	17	17	25	33
	Unsure	8	8	8	17	17
	Agree	17	17	25	33	42
	Strongly Agree	33	50	42	17	0
CHBA Land Developers n=6	Strongly Disagree	17	0	0	0	0
	Disagree	33	0	0	0	0
	Unsure	17	67	50	33	50
	Agree	33	33	50	67	50
	Strongly Agree	0	0	0	0	0
Homebuilders n=20	Strongly Disagree	10	5	5	5	5
	Disagree	5	10	10	25	10
	Unsure	45	15	15	30	20
	Agree	40	50	50	30	55
	Strongly Agree	0	20	20	10	10
Community Planners n=18	Strongly Disagree	0	0	0	0	0
	Disagree	18	6	6	12	12
	Unsure	41	18	29	12	24
	Agree	35	71	53	65	59
	Strongly Agree	6	6	12	12	6

While all groups appear divided that the Environmental Issues policies will result in reduced waste materials during land development and building construction, agreement is highest among the UDI group and planners. Interestingly, half of the Homebuilders disagree, and 45% are unsure. That planners are obviously more certain and optimistic than the homebuilders, raises the question: why are the planners more knowledgeable and pragmatic about this issue?

All groups tend to agree that the Environmental Issues policies will result in reduced water consumption in the house and in the City; two-thirds of all respondents express agreement for both of these issues.

Overall, agreement is not as high for recycling and reduced energy consumption; however, all groups except UDI are more inclined to agree than disagree. Interestingly, levels of uncertainty are higher about reduced energy consumption than recycling among the CHBA group and planners.

It is also significant that a majority of planners (nearly two-thirds) agree that the Environmental Issues policies will lead to reduced energy consumption and three-quarters believe they will lead to increased recycling. Evidently, the planners are more enthusiastic than any other group on these issues; they express the highest levels of agreement about them.

Chapter 5 Endnotes

¹ For example, the *Consumer's Guide to Buying Energy-Efficient Windows and Doors* (1994) and the *Consumer's Guide to Keeping the Heat In* (1996) provided the ER ratings for energy-efficient windows, doors, and insulation.

Chapter 6: Conclusions and Inferences for the Calgary Delivery System

6.1 The Calgary Sustainable Suburbs Study

Clearly, the City did not achieve a consensus during the Sustainable Suburbs Round Table and more work is needed to sell sustainability practices to the industry and municipally-elected officials. Implementing sustainability practices and principles across all of the Delivery System agents will require greater support and commitment than have been given to date.

A number of factors contribute to the skepticism and negativity expressed by a significant proportion of industry agents. First, the Round Table process did not have adequate participation and input from homebuilders and homebuyers. The disaffection with the process is confirmed by the extent of dissemination of the policy document, not to mention the inadequacies of the definition of sustainability as seen by a significant proportion of the respondents. Second, there is a lack of consensus about the specific issues addressed by the policy. For example, there is a misperception about the situation of affordability in Calgary and the intended affordability benefits of the *Sustainable Suburbs Study*. Third, the (assumed) cost savings and market advantages of the policy were poorly investigated by the municipal administration. Fourth, the policy fails to offer industry incentives for implementing these policies; and similarly, no sanctions for resisting them. Finally, the effective force of the policies is reflected in the timidity of the language by which a good number of the policies and design guidelines are framed. Possibilities for enforcing the policy are undermined by lack of timelines, phase-in periods, and sanctions when industry agents hesitate or fail to implement.

The industry offers a number of reasons why the Round Table process and the policy document did not achieve a fair and considerate balance of interests among all stakeholders. First, the Round Table process was manipulated to produce an anticipated outcome. Second, the respondents tend to believe that the policies will lead to the design and development of communities that imitate McKenzie Towne; Neo-Traditional with New England urban form idioms. Third, municipal administrators either oppose the policies, or are not fully committed to ensuring the successful application of them. Fourth, the costs of the policies were not anticipated or demonstrated to improve the situation of affordability. Fifth, the policies do not encourage sustainability in established neighborhoods. Sixth, it is argued that consumer interests were not represented. Finally, the policy is poorly operationalized.

Thus, in Calgary the institutionalization of urban sustainability has yielded very limited approval. The industry is skeptical and uncertain about the benefits and market receptivity of sustainability choices and preferences. At the same time, the industry is quick to adopt an antagonistic position without

having itself introduced or tested innovations for improved sustainability and environmental performance.

One can conclude therefore, that the approach adopted for advancing urban sustainability principles and practices in Calgary was poorly strategized. Why the Planning Department chose to establish a City-wide policy instead of a program of gradualism whereby the cooperation of agents favorable and amenable to testing sustainability choices in a partnership demonstration-build program remains unanswered. (A proposal first advanced by Perks and Van Vliet in 1992-93.) A more successful strategy may well have been to plan, design and build a demonstration project on a site on Calgary, to garner industry and consumer support, and to investigate the merits of particular sustainability practices. Instead, the Planning Department has elected a jump in fashion – the 'New Urbanism' or 'Neo-Traditional' 'stylistic' approach to sustainable urban form; a style that is not by any means fully exemplary of the sustainability goals the City has reached for.

The rejection of the *Alternative Street Standards Study* was a clear signal to the industry about the City's lack of support and commitment to sustainability in Calgary. In fact, it flies in the face of all the sustainability goals and policies developed in the Study document. Without altering the "excessive" municipal roadway and site development standards, the industry cannot achieve the higher densities called for in the Sustainable Suburbs Study. Evidence of the ongoing density debate also appears in the *Midnapore III Community Plan* where policies for residential density of 17.3 units per gross developable hectare (7.0 upa) and variety of dwelling units other than single detached are qualified by a caveat stating

Further refinements to these policies, as well as ways of achieving these objectives, will be added pursuant to the findings of the joint City/JDI Study aimed at developing implementation strategies to achieve the Sustainable Suburbs Study objectives. (p.11)

Furthermore, the City has still not prepared an Affordable Housing Policy or finalized its sustainability indicators for establishing comparative baseline data and for monitoring the merits of sustainability initiatives in new communities. The argument offered by the Planning Department is that there are currently no communities to monitor, so there is no hurry to produce the indicators. Perhaps the real reason for not releasing the indicators information is to avoid public scrutiny.

6.2 Innovation for Affordability and Sustainability

The introduction in innovation has been driven primarily by increased competition for consumer satisfaction and improved affordability. However, it appears that most industry firms are competing for a larger share of the same market. To what extent the industry captures all housing markets in Calgary should be further investigated. Also, the extent to which competition among industry firms

really drives innovation - for affordability and sustainability, not just luxury - also warrants further study. The introduction of innovations for improved sustainability and environmental performance, such as "green building" practices are not readily apparent in Calgary. The marketing and productivity advantages of introducing such innovations still remain somewhat of an under-exploited opportunity.

The present Study indicates that research and development expenditures play a very limited role in the marketing strategies of land development and housing firms. Levels of knowledge and awareness about innovative projects, programs, studies and demonstrations are very low among industry agents. One can infer from this that industry firms do not actively update their knowledge even about readily available, and widely promoted CMHC programs and research-design projects. The lack of municipally-promoted demonstration projects in Calgary, a lack of ecological-design culture and professional expertise, and a system of incentives for innovations to improve urban sustainability further contribute to the problem. (See for e.g., Perks and Van Vliet, 1993) Perhaps the most effective strategy for raising awareness, testing the merits of economic-ecological-social initiatives, and heightening support for innovations is to undertake a public-private demonstration project.

The housing policies do little to attack the problem of affordability. Policies aimed at diversifying housing types and socio-economic mix of population in a community are presently ineffective at improving the availability of housing for low to mid household income groups. Moreover, the Policy does not prescribe proportions of land and housing units expected to be a particular type and intensity; thereby propagating the existing industry practice of diversifying single-family lot dimensions to satisfy diversity. Stricter requirements for phasing of house-types and variant multi-family forms early-on in the development would likely satisfy the diversity and affordability criteria.

The Sustainable Suburbs Study policies express only pious hopes regarding affordability; and, indeed, they may well worsen the situation. Innovations for sustainability are also not readily apparent in Calgary. While the Calgary Home Builders Association is currently undertaking a recycling study, its results and propensity for widespread recycling initiatives across the Housing industry is not yet evident. The Neo-Traditional design precepts employed in McKenzie Towne have limited hopes for duplication in Calgary; its absorption rates are lower than what land developers are experiencing with other communities in Calgary and, general receptivity among the industry is limited.

Two significant innovations prescribed by the *Sustainable Suburbs Study* warrant discussion. The first is the preservation of wetlands. Although wetlands provide storm and sewer water-treatment

alternatives, the preservation and construction of artificial wetlands are treated as marketing and luxury amenity features in upscale communities. For example, the wetland in the subdivision of Bridlewood is touted as a "natural and virtually unspoiled wetland amenity", surrounded by housing and lots priced between \$150,000 and \$200,000. (King, Sat., Oct. 4, 1997). Another example is the established community of Edgemont. The second innovation is the creation of Homeowners Associations. While the City can (and in places has) devolve maintenance responsibilities to the community, the Associations can become (and some are becoming) a way for passing on higher per unit capital and operating costs to houseseekers in search of upscale or "gated" communities. Therefore, these two initiatives can in some situations actually worsen the affordability ingredient to sustainability, even though they may improve it from the perspective of the municipality.

That the *Sustainable Suburbs Study* has not been well received by a *significant* proportion of Housing Delivery agents, especially by land developers, does not mean sustainability policies and practices must be altogether abandoned. Rather, the Delivery System agents must work harder to develop innovative solutions to advance urban sustainability in Calgary. Three categories of innovation that could possibly achieve desirable results are: innovations that redefine product and production; those that define markets and marketing; and those that redefine roles and responsibilities. (Vredenburg and Westley, 1994) For example, one firm is already attempting to position itself to capture a niche market and introduce innovations for improved environmental performance and sustainability in Calgary. Lincolnberg Homes is constructing an EnviroHome in Hidden Valley and estimates that 50 will be built in Calgary. Among the benefits these homes offer are "cleaner air, more recycled materials, better heat conservation, less off-gassing of potentially harmful chemicals, and better air circulation." (King, Sat., Feb. 14, 1998)

6.3 Regulation and the Market

Industry reaction to the *Sustainable Suburbs Study* is based on a long standing (and somewhat embittered) experience with a 'challenge and response' type development approvals system, in which innovations are heavily regulated and constrained by municipal regulatory processes and urban development standards. Changes must be negotiated among a diverse range of inter-municipal departments (each with individual agendas and interests) and therefore, do not always come about. A recent example is the politicization and rejection of the *Alternative Street Standards Study* by City Council in March 1997.

Tabled at the Canadian Home Builders' Association's 55th annual conference is a report about regulatory problems relating to innovative housing ideas. According to John Kerward, chief operating officer of the CHBA, this report "points out that while builders are trying to be innovative or unconventional in housing designs, they are constantly running up against a regulatory system that

creates obstacles." Regulatory obstacles have a negative effect on self-contained residences designed and engineered to operate independent of municipal water or electric services and "healthy houses", for people with allergies. (Hope, Sat., Feb. 7, 1998) Thus, the Homebuilding industry has already begun attacking 'rigid' regulations from a sustainability front.

According to Porter and van der Linde (1995), Principles of regulatory design that will promote innovation, resource productivity, and competitiveness are:

- *Focus on outcomes, not technologies.*
- *Enact strict rather than lax regulation.*
- *Regulate as close to the end-user as practical, while encouraging upstream solutions.*
- *Employ phase-in periods.*
- *Use market incentives.*
- *Harmonize or converge regulations in associated fields.*
- *Make the regulatory process more stable and predictable.*
- *Require industry participation in setting standards from the beginning.*
- *Develop strong technical capabilities among regulators.*
- *Minimize the time and resources consumed in the regulatory process itself.*

(Michael E. Porter and Claas van der Linde, 1995)

That the *Sustainable Suburbs Study* does not satisfy a single one of these criteria¹ reflects the inexperience and lack of expertise among municipal policymakers for formulating environmental regulations. To date, municipal authorities have established the urban development and engineering-infrastructure standards, with little flexibility, and limited opportunity for change. However, improved sustainability requires greater cooperation and consensus between public and private agencies with a stake in the outcome of planning processes. This means that increased consumer participation in the front-end planning of communities and housing is also required: a change opposite to the existing industry practices and trends regarding "spec" housing.

6.4 Environmental Management Practices (EMS)

While the *Sustainable Suburbs Study* asks the industry to adopt some EMS practices such as waste audits, it does not prescribe the implementation of a complete system of corporate environmental management. Also, there is no requirement that developers and homebuilders use a checklist or do impact studies. (Perks, Bilkhu, Thompson, 1996: 80)

At the present time consideration for environmental concerns does not form an important part of the management philosophy for a significant proportion of the industry. Existing environmental practices are not really "strategic"; they do not *anticipate and predict* adverse impacts of development projects; nor do they take action to mitigate the environmental impacts of development projects. The degree to which effective EMS practices can offer competitive cost and market advantages in this sector has not yet been adequately researched.

6.5 Areas for Further Study

A number of questions that emerged during this Master's Degree Project remain unanswered, and are open to further investigation. For example, Why does the industry not prepare subdivision plans to include greater proportions of attached forms of housing? To what extent do planning and designing communities, and residential environments, meet the income-affordability and housing needs of all market segments in Calgary? To what extent do community plans and designs reflect general socio-economic conditions, trends in demographics, general employment characteristics, household types and needs, ecological pressures and constraints, technological evolutions, and consumers' lifestyle preferences? What kind of EMS for land development and housebuilding firms could be developed? What types of environmental quality considerations should be anticipated and strategically addressed by the development industry when building new subdivisions?

Further research about the cost implications of implementing the sustainability policies and design guidelines are needed to appease the industry and begin a new dialogue for finding new ways of reducing the costs of municipal infrastructure. An investigation of consumer preferences for alternative urban design and development standards, and the trade-offs consumers (at least in specific housing markets) are willing to make for advancing urban sustainability would help to design and plan communities that are tailored to meet specific preferences and choices of housesekers in Calgary.

6.5 Concluding Remarks

While a paradigm shift has occurred in policy, it has yet to materialize in practice. The limited receptivity for the *Sustainable Suburbs Study* is evidence that it is still too early to institutionalize Citywide sustainability policies and design guidelines. Moreover, the lack of well-developed performance standards for improving social-economic-ecological conditions in Calgary retards the operationalization and specificity with which solutions for advancing sustainability can be proposed. However, the present situation can be improved by developing innovative policies and practices.

"Innovation is aided by breaking down barriers in order to reconceptualize product, market and organization. A context for innovation is one where organizational actors are brought together in partnerships and new combinations." (Vredenburg and Westley, 1994) The Sustainable Suburbs Round Table could have laid the foundation for developing greater intersectoral and community support – among public and private agencies and new homebuyers and City of Calgary residents – for cultivating and fortifying interest in sustainability initiatives. Unfortunately, a poor vision, circumscribed participatory process, and lack of conviction to follow through with sustainability goals has led to a watered down policy which has become simply another regulatory requirement for development approval.

Endnotes Chapter 6

¹ Through the Corporate and Effective Planning Applications Review Process (CEPAR), the City is attempting to improve the efficiency of planning and development approval processes. What implications the CEPAR review process has for innovations and meeting the *Sustainable Suburbs* goals are not yet evident.

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<http://www.carma.ca>
- Center for Renewable Energy and Technology (CREST) – Solstice
<http://solstice.crest.org/Index.shtml>
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<http://www.ebuild.com/index.html>
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<http://www.epa.gov/>
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<http://greenbuilding.ca/>
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<http://www.uli.org>

Appendix I: Survey Questionnaire

SURVEY QUESTIONNAIRE, JULY 1997

SUSTAINABLE COMMUNITY DESIGN AND DEVELOPMENT INDUSTRY PERCEPTIONS AND PRACTICES

This survey questionnaire is addressed to some 150 senior managers, homebuilders, and consultants in the Housing and Development industry in Calgary. It is carried out with the cooperation of the Urban Development Institute, Calgary Chapter, and the Calgary Home Builders Association.

This is a first study of its kind that seeks input from the development industry in Calgary about a number of policy and technology changes that are emerging around "environment", "sustainability" and "affordability". The project follows up and expands on the six interviews with industry managers, carried out in late 1996 by the undersigned researcher.

Background to the Survey:

- 1) Following a broadly representative Round Table exercise in 1994-95, the City of Calgary *Sustainable Suburbs Study* was published in July, 1995. *Sustainable Suburbs* sets out planning policies and design guidelines for the industry, and for the City's community planning, environment, transportation, and urban development operations.
- 2) Throughout business and industry in the past decade, corporate policies on environmental and sustainable development practices have been steadily implemented. Not much is known, however, about the nature or extent of similar advancements within the planning, land development, and homebuilding sectors.
- 3) There is considerable information available about "housing preferences" as expressed within the context of conventional planning, development and marketing

strategies. However, very little is known about how consumers would respond to communities and housing that are designed to satisfy a full package of sustainability and resource-conserving features that are incorporated in residential communities. As reported in *Testing Consumer Receptivity to Sustainable Community Design*, (April, 1996), the industry might expect a generally positive response to sustainable community design.

You will be contacted by phone to confirm that you have received the survey. It will take you approximately 30-40 minutes to complete the questionnaire. Please read page 2 before proceeding. If you have any questions, you may contact the researcher at 220-6997 or 293-0373.

The results of this survey should be of considerable interest to your firm as well as the development industry and public officials in Calgary. The results will be made available to you approximately six weeks after all questionnaires have been returned. Thank you.


Murad Shivji
Researcher


William T. Perks
Professor Emeritus
Faculty of Environmental Design


Harrie Vredenburg
Professor
Faculty of Management

Alternative and Sustainable Housing: Situation and Challenges for the Delivery System in Calgary

Researcher: Murad Shivji (M.E.Des. Candidate)

You are invited to participate in a study dealing with the planning-designing and building of residential communities in Calgary. The participants in the study include development firms, homebuilders, architects, and planning consultants.

Please take the time to read this page and to understand any accompanying information. If you would like more detail about something mentioned here, or information not included, please direct your questions to the researcher.

The purpose is to inquire about industry perceptions and investigate current practices in the planning-designing and building of residential communities in Calgary. Specific reference is made to the *Sustainable Suburbs Study*. The questionnaire has five (5) sections:

1. Sustainable Suburbs
2. Innovation in the Housing and Development Industry
3. The Market: Consumer Preferences for Sustainability Features
4. Business Practices and the Environment
5. Innovative Projects for Sustainable Community Design

All information you provide will be kept strictly confidential. Only general conclusions and interpretations by respondents will be revealed in the final research report. If any quotes are used, they will not be attributed to individuals. Six months after the conclusion of the project, all data will be destroyed.

Your participation in this project will provide useful information to the industry and the planning authorities responsible for producing and administering policies, and regulating the planning, designing, and construction of residential communities

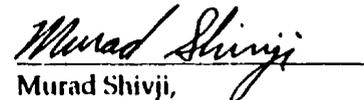
and housing in Calgary (with possible wider application to the development industry in Canada). This study will give you an opportunity to think about the possible implications of the *Sustainable Suburbs Study* and innovative approaches to housing and community planning and design.

It should take approximately 30 to 40 minutes to complete the questionnaire. The questionnaire will be mailed to you, followed by a phone call from the researcher. You will be provided with a postage paid return envelope so that the questionnaire can be mailed back to the researcher at:

c/o Murad Shivji
The Faculty of Environmental Design
The University of Calgary
2500 University Drive N.W.
T2N 1N2
Ph# 220-6997, Fax# 284-4399

Your decision to complete and return this questionnaire will be interpreted as an indication of your consent to participate. In no way does this waive your legal rights nor release the investigators, sponsors, or involved institutions from their legal and professional responsibilities. Your participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation. If you have further questions, please contact Murad Shivji at 293-0373 or 220-6997. You may also contact the Local Area Research Ethics Committee and ask for Dr. Richard Revel at 220-3622.

Sincerely,


Murad Shivji,
Researcher
Faculty of Environmental Design

SURVEY QUESTIONNAIRE, JULY 1997

SUSTAINABLE COMUNITY DESIGN AND DEVELOPMENT INDUSTRY PERCEPTIONS AND PRACTICES

Before proceeding with the survey, please answer the following:

Please indicate the type of work your company engages in: (check off as many as are applicable):

<input type="checkbox"/> land development	<input type="checkbox"/> urban design
<input type="checkbox"/> single-family homebuilding	<input type="checkbox"/> house design
<input type="checkbox"/> community planning	<input type="checkbox"/> subdivision planning
<input type="checkbox"/> engineering	<input type="checkbox"/> market research
<input type="checkbox"/> construction	<input type="checkbox"/> multi-unit building
<input type="checkbox"/> architecture	<input type="checkbox"/> other _____

Please indicate *your* title and position or area of responsibility within the company you represent:

How long has your company been involved in planning, designing or building of residential communities (or housing) in Calgary?

0-2 years _____	11-15 years _____
3-5 years _____	16-20 years _____
6-10 yrs _____	21-25 years _____
Other _____	

Please indicate how many persons are (or will be) directly employed by your firm in the period January-October 30, 1997 (including administrative, managerial, designers, sales, marketing, accounting, etc.):

Full-time personnel: _____

Part-time personnel: _____

Seasonal staff: _____

Section A. Sustainable Suburbs

The City's *Sustainable Suburbs Study* sets out 28 policies and guidelines that are intended to shape the content, functions, form and general character of a "Community Plan" prepared by the development industry. The policies of the *Sustainable Suburbs Study* are organized into five sections: *Community Centres, Schools and Open Space, Housing, Transportation, and Environmental Issues*. Questions 1 to 17 seek to obtain your opinions and perceptions on various aspects of these policies.

For your reference, the *Sustainable Suburbs Study* policies are reprinted on page 23.

1. Community Centres and Neighborhood Nodes

Each community must have a community/public activity centre and neighborhood nodes and must encourage pedestrian and bicycle access and transit use. (A community is expected to be about 12,000 population.)

Please indicate your level of agreement/disagreement with the following statements:

	Strongly Disagree	Strongly Agree
<p>The Community Centres and Neighborhood Nodes policies will result in:</p> <p>(a) Increased use of alternate forms of transportation in new communities such as walking, cycling, & public transit use</p> <p>(b) More employment opportunities within new residential communities</p> <p>(c) A significant mix of public and commercial activities in the community to satisfy resident needs for shopping and services (30,000 sq. ft. community centre with food store)</p> <p>(d) Reduced trips to work and shopping outside the community</p>	<p>1 2 3 4 5</p>	

2. Schools and Open Space

Existing natural systems must be integrated into new communities and built open space must be located, sized and configured to create places that are functional, safe, flexible and form a linked open space system. Joint/shared use sites should be located in proximity to the community centre or neighborhood nodes, on the transit route and close to daycare and other services.

Please indicate your level of agreement/disagreement with the following statements.

The Schools and Open Space policies will result in:	Strongly Disagree	1	2	3	4	5	Strongly Agree
(a) Better or more protection of natural and environmentally sensitive areas	1	2	3	4	5		
(b) Greater passive recreational areas than are now available in existing suburban communities	1	2	3	4	5		
(c) Improved pedestrian and cyclist movement within the community	1	2	3	4	5		
(d) Cost efficiencies for the City and taxpayers because of more efficient land use and more compact urban form	1	2	3	4	5		
(e) Increased community and user-participation in the planning and design of open space and recreational amenities	1	2	3	4	5		

Appendix I: Survey-Questionnaire

3. Housing

New communities must be capable of achieving a minimum density of 7 upa, provide a wide choice of housing types, provide adequate choice of affordable housing, and focus multi-family housing near community centres, neighborhood nodes, recreational areas, other public amenities, and be close to transit stops.

Please indicate your level of agreement/disagreement with the following statements.

The Housing policies will result in:	Strongly Disagree				Strongly Agree
(a) Reduced costs of public infrastructure for homebuyers	1	2	3	4	5
(b) More journeys to work, etc. by walking, transit, or bicycle	1	2	3	4	5
(c) Increased affordability of housing	1	2	3	4	5
(d) More choice of housing for people of different household types, income levels and age groups in the neighborhood	1	2	3	4	5
(e) Increased marketability and saleability of housing	1	2	3	4	5
(f) Increased marketability and saleability of the community	1	2	3	4	5
(g) Increased satisfaction of consumers and their preferences	1	2	3	4	5
(h) Communities which are <i>more</i> responsive to market realities and buyer considerations	1	2	3	4	5
(i) Innovations in infrastructure designs and technologies for improved efficiencies and reduced maintenance costs	1	2	3	4	5

Appendix 1: Survey-Questionnaire

4. Transportation

The transit system must be integrated into the community design and be a key component of the community centre, neighborhood nodes and other community focal points. New street design standards must be developed to meet the needs of pedestrians, cyclists, and transit users, while continuing to provide for vehicular transportation. Connector (based on a grid pattern) versus collector roadway networks should be considered.

Please indicate your level of agreement/disagreement with the following statements.

	Strongly Disagree	Strongly Agree
The Transportation policies will result in:		
(a) Decreased costs for streets and roadways	1	5
(b) More pedestrian & bicycling modes of access to centres and services within the community	1	5
(c) Safer and more pedestrian-oriented streets	1	5
(d) Alternative street design standards for decreasing capital and maintenance costs	1	5

5. Environmental Issues

Builders are encouraged to: ensure that all new buildings in new communities are audited for construction; use recycled materials in the construction of new buildings when supplies are available, existing standards allow, and the cost of materials is feasible; equip all buildings (residential, commercial, and institutional) in new communities with bins for sorting recyclable dry waste (paper, plastic, metal and glass) and to locate a permanent composter on site for degradable wet waste and yard waste; encouraged to design, locate and construct all buildings in new communities with the objective of reducing energy consumption. All homes in new communities should have water metres and manufactured water-saving fixtures.

Please indicate your level of agreement/disagreement with the following statements.

The Environmental Issues policies will result in:	Strongly Disagree	1	2	3	4	5	Strongly Agree
(a) Reduced waste materials during land development and building construction	1	2	3	4	5		
(b) Reduced water consumption in the house	1	2	3	4	5		
(c) Reduced overall (aggregate) water consumption in the City	1	2	3	4	5		
(d) Recycling in the home (and in the community)	1	2	3	4	5		
(e) Housing and communities that are more environmentally-friendly and designed with sustainability features	1	2	3	4	5		
(f) Increased marketability and salesability of the community as an identifiable place with special qualities.	1	2	3	4	5		
(g) Reduced energy consumption in the house	1	2	3	4	5		

Appendix I: Survey-Questionnaire

6.0 The Sustainable Suburbs Process

Please indicate your level of agreement/disagreement with the following statements.

By and large, the Sustainable Suburbs Round Table (1994-95) had adequate participation and input from...	Strongly Disagree	Strongly Agree
(a) The Development industry	1	5
(b) Homebuilders	1	5
(c) Potential home-buyers/consumers	1	5
(d) City municipal officials/departments	1	5
(e) Other relevant experts (architects, planning consultants, researchers, experts on sustainable development, sustainable community design, etc.)	1	5
Others: _____	1	5

7. Please indicate your level of agreement/disagreement with the following statement:

The *Sustainable Suburbs Study* and its 28 policies achieved a fair and considerate balance of *all* interests - current and potential home buyers, land developers, homebuilders, the City municipal departments, private consultants.

Strongly Disagree 1 2 3 4 5 Strongly Agree _____ No Opinion

7a. If you responded 1 or 2 above, please explain: _____

8. "Affordability" is referred to in the *Sustainable Suburbs Study*, and the industry is urged to advance affordability. Please indicate your position on the following statement:

At this time and for the near future, there is *little or nothing the industry itself* can or should do to bring a more affordable community and housing product onto the market.

Strongly Disagree 1 2 3 4 5 Strongly Agree _____ No Opinion

8a. If you responded 1 or 2 above, what *could the development industry do* to deliver a more affordable community and housing onto the market?

- _____
- _____
- _____

9. What would be the key *municipal* policies or incentives that would have to be put in place (or changed) to help the industry play a *greater* part in achieving improved affordability.

- _____
- _____
- _____

10. To what extent do you agree or disagree that the industry provides "*an adequate choice of low to medium income housing*" in the planning and design of new communities?

Strongly Disagree 1 2 3 4 5 Strongly Agree _____ No Opinion

10a. If you answered 4 or 5 above, why do you think the City included a housing policy (H.3) for low to medium income housing in new communities? _____

11. In your present business plans and marketing strategy, what proportion of your *total housing production and/or development plans* are dedicated to supplying housing (ownership or rental) for the following household income categories: (HOME BUILDERS PLEASE FILL IN TOTAL PERCENT OF HOUSING UNITS. DEVELOPERS AND CONSULTANTS PLEASE FILL IN PERCENT OF LAND DEDICATED TO HOUSING.)

<i>Household Income categories:</i>	<i>% of total housing units</i>	<i>% of land dedicated to housing in plans</i>
(a) \$10,000-\$19,999	_____	_____
(b) \$20,000-\$29,999	_____	_____
(c) \$30,000-\$44,999	_____	_____
(d) \$45,000-\$59,999	_____	_____
(e) \$60,000-\$74,999	_____	_____
(f) \$75,000-\$120,000	_____	_____
(g) Over \$120,000	_____	_____
	<i>Total 100%</i>	<i>Total 100%</i>

12. Over the last 10 years, the average real income of households has decreased or, at best, remained stable. At the same time construction costs, property taxation, assessment charges and other related costs of development and housing construction have increased. In your opinion, has the situation of “affordability” in Calgary become *better or worse* in this period?

Better _____ Worse _____ Don't Know _____ No Opinion _____

12a. If you answered *better*, what have been the 3 most important factors of development and housing production (independent of more favorable interest rates in recent years) that improved affordability?

- (i) _____
- (ii) _____
- (iii) _____

13. What do you think were the main reasons why the joint proposals of UDI and The Planning and Building Department on *Alternative Street Design Standards* were not approved by City Council?

- (i) _____
- (ii) _____
- (iii) _____
- (iv) No Opinion _____

14. *The Community Design and Planning Process*

The *Sustainable Suburbs Study* outlines a new “Hierarchy of Plans” designed to establish a more cooperative process between developers, builders and the City, and to “simplify, speed up and improve the Community Plan preparation process”. Such improvements could conceivably include more effective input from potential homebuyers and community groups in the planning and designing of new communities.

Please indicate your opinion regarding the following statements:

The City's new Community Plan Process will...	Strongly Disagree					Strongly Agree
(a) lead to greater efficiencies in the development approval process	1	2	3	4	5	5
(b) lead to better input of public and consumer interests in the planning-design phase of new residential communities	1	2	3	4	5	5
(c) add to the customary costs of doing business	1	2	3	4	5	5
(d) lead to improved overall environmental and sustainable qualities of new residential communities in Calgary	1	2	3	4	5	5
(e) provide opportunities to experiment with alternative site development standards for affordable and sustainable communities	1	2	3	4	5	5

Appendix I: Survey-Questionnaire

15. Do you foresee the new Community Plan process as encouraging or discouraging industry innovation?

Encouraging _____ Discouraging _____ No Opinion _____

15a. Please explain: _____

The City of Calgary defines *Sustainable Suburbs* as: ... "communities that are capable of being sustained far into the future...

- financially:** the costs of building, operating and maintaining new communities and their supportive infrastructure and services are affordable, having regard to other spending priorities, and will not become a burden on future generations;
- socially:** communities are designed to be socially diverse, adaptable to changing lifestyles and to further the objective of providing all Calgarians with access to affordable housing, education, health care, essential goods, public amenities and services, such that their basic needs are met;
- environmentally:** communities are designed to minimize air, water, and soil pollution, reduce resource consumption and waste, and protect natural systems that support life."

16. Is this definition of "sustainable community" adequate? -- Does it include all of what you might include for planning, designing, and building sustainable communities in Calgary?

Yes _____ No _____ No Opinion _____

16a. If you answered No, what would you add to the definition?

17. Do you have (own) a copy of the City's *Sustainable Suburbs Study*? Yes _____ No _____

Section B. Innovation in the Housing and Development Industry

18. From an industry perspective, what would you say are the most significant constraints to introducing innovations in the planning-designing and building of residential communities in Calgary?

- (i) _____
- (ii) _____
- (iii) _____

19. What are the most significant innovations that your company has introduced in recent years that delivered a better housing product or better community environment to the consumer?

- (i) _____
- (ii) _____
- (iii) _____

19a. What would you say was the impetus or "driving force" for each of the innovations you listed? (Check off as many as are applicable)

Innovations from question #19	Driving Forces							
	Consumer demand or preferences	Municipal bylaw, policies, procedure or provincial regulation (please indicate which ones)	UDI, ULI, CHBA, or FCM advisory or research documents (please indicate which ones)	Innovative community design projects built in North America	Consumer feedback on one or more of your previously-finished projects	Growing consumer awareness and concerns for environmental protection and improvements	Municipal or senior government programs/incentives	Improved cost efficiencies of your business
(i)	1		a					
(ii)	2		b					
(iii)	3		c					

Municipal bylaw, policy, procedure or Provincial Regulation:

- 1. _____ 2. _____ 3. _____
- a. _____ b. _____ c. _____

Appendix I: Survey-Questionnaire

20. Does your firm have a designated budget category and activity for Research and Development (R&D)?

Yes _____ No _____ Don't Know _____

20a. If you responded Yes, please indicate the percentage (%) of annual gross expenditures - operating and capital - dedicated to R&D:

0-0.5% _____ 0.6-1.0% _____ 1.1-3.0% _____ 3.1-6.0% _____ More than 6% _____

21. THIS QUESTION IS FOR RESPONDENTS WHO DESIGN OR BUILD HOMES.

Please indicate how often you practice the activities listed below.

	<i>None of the time</i>				<i>All of the time</i>
(a) When selecting windows, choose fixed windows with an ER rating of +2, and operable windows with an ER rating of -11 or better.	1	2	3	4	5
(b) Install <i>high-performance</i> windows - <i>low-E</i> coatings, inert gas fills, and insulated frame and edge components - instead of conventional ones.	1	2	3	4	5
(c) Perform regular <i>waste audits</i> - keeping track of what goes into the waste bins at your work sites over a period of time.	1	2	3	4	5
(d) Install <i>water-efficient</i> (low volume) toilets over conventional toilets in the homes you design or build.	1	2	3	4	5
(e) Install <i>low-flow</i> shower heads and <i>low-flow aerators</i> to faucets in the homes you design or build.	1	2	3	4	5
(f) Install <i>high-efficiency</i> gas-fired furnaces over conventional gas-fired furnaces.	1	2	3	4	5
(g) Install more <i>energy efficient</i> compact fluorescent lights instead of standard incandescents for the homes you design or build.	1	2	3	4	5
(h) When choosing among various appliances for homes, selecting appliances with the <i>lowest</i> EnerGuide label.	1	2	3	4	5
(i) Install <i>solar panelling</i> for heating the homes you design or build	1	2	3	4	5
(j) Other(s)? _____	1	2	3	4	5

Appendix 1: Survey-Questionnaire

22. Please indicate what *degree of influence* your business has for introducing innovations for "Affordability", "Sustainability" and "Resources Conservation" in projects where you are involved in community planning, subdivision, urban design and/or design or construction of housing.

PLEASE DO NOT RESPOND FOR ITEMS NOT APPLICABLE TO YOUR FIRM.

	No Influence at all	1	2	3	4	5	Strong or Decisive
(a) House design(s) and technologies for optimal energy and water consumption							
(b) Community plan/urban design for compact form and overall higher density							
(c) Greater ecological sensitivity in the overall physical environment of a new community project.							
(d) The design of housing -- for e.g. home-office, second unit, flexibility for expansion...							
(e) Sizes of the homes in a new community project							
(f) Sizes (and dimensions) of the lots in a community project							
(g) Configuration and orientation of the streets and lots for optimal solar/climatic response (subdivision)							
(h) Xeriscaping for home lots and public areas							
(i) Street design standards							
(j) Pedestrian/cyclist access and circulation system in a community							
(k) Choice of construction materials for housing -- low-embodied energy, recycled materials, etc.							
(l) Number, percentage and location of single-family and multi-unit and attached housing in a new community project.							
(m) Diversity of housing choice and prices for all income groups in a new community project							

Appendix I: Survey-Questionnaire

Section C. The Market: Consumer Preferences for Sustainability Features

In 1996 CMHC published a project report titled *Testing Consumer Receptivity to Sustainable Community Design: Designing an Alternative for the Residential Suburb in Calgary and Seeking the Consumer's Opinions and Choices*.

In the study consumers were asked what they think about possibilities for environmental improvement and resources conservation, and better affordability and housing choice that can be offered when a community is designed to achieve sustainable development goals. The study included visualization of design and land use alternatives. Information was provided to respondents about capital and operating costs for alternative technologies in house design and community infrastructure. This project also included an illustrative 'redesign' of an existing community, with neighborhood densities ranging between 7 and 10 units per acre.

23. A selection of findings from the Testing Consumer Receptivity are listed below. Are these findings consistent with your experience? Do your market studies "test" for these preferences? (PLEASE CHECK OFF YES OR NO.)

	Consistent with your experience?		Do you "test" such preferences?	
	Yes	No	Yes	No
(a) A vast majority of respondents would definitely choose the package of 8 sustainability and resource-conserving features in the home *	Yes	No	Yes	No
(b) A vast majority of respondents strongly favour a package of 3 street and lot features - reduced street widths, reduced front yard depth, and calm street designs	Yes	No	Yes	No
(c) A majority of respondents would want a second residential unit option for their own house	Yes	No	Yes	No
(d) A significant majority of respondents would favour participating in the "front end" planning of their community and house design	Yes	No	Yes	No
(e) A vast majority of respondents favour a community-level, neighborhood level facility and service for recycling	Yes	No	Yes	No
(f) A large majority favour the idea of a more compact (more dense) community, so that a vital community core with diverse services and civic places can be supported.	Yes	No	Yes	No
(g) A majority favour a predominantly grid street system with few cul de sacs	Yes	No	Yes	No

* The 8 home features were: energy efficient building envelope, energy and water conserving interior fixtures, district heating, "dry landscaping", recycle & re-use grey water, collecting and re-using rain water, recycling & composting in the home, permeable surfacing for driveways and patios.

Section D. Business Practices and the Environment

24. Does your firm have an environmental policy or standard operating procedure that considers environmental concerns?

____ Yes ____ No ____ Don't Know ____ No Opinion

24a. If yes, please summarize the main points (OR please enclose a copy of the policy document) _____

25. How would you rate your familiarity with the following guidelines and techniques for improving a company's environmental performance and product quality?

	<i>Not at all Familiar</i>				<i>Very Familiar</i>
(a) ISO 9000 Guidelines - for quality management	1	2	3	4	5
(b) ISO 14000 Guidelines - for environmental management	1	2	3	4	5
(c) Canadian Standards Association (CSA Z750-94) - A Voluntary Environmental Management System	1	2	3	4	5
(d) Urban Land Institute (ULI) - Principles for Environmentally Responsible Development	1	2	3	4	5
(e) Environmental Audits	1	2	3	4	5
(f) Lifecycle Costing	1	2	3	4	5
(g) Waste Audits	1	2	3	4	5

Appendix I: Survey-Questionnaire

26. Assuming that your organization is or will be considering adopting (or has already adopted) business practices for making your product(s) and operating practices more environmentally-friendly. Please rate the following factors that would likely influence (or have influenced) your business decisions.

	<i>Not at all Influential</i>				<i>Extremely Influential</i>
(a) Financial and lending institutions require or like to see environmental considerations in our business plans.	1	2	3	4	5
(b) Adopting environmental/sustainability practices and products can give us a competitive advantage.	1	2	3	4	5
(c) Environmental management/sustainability practices will play a part in anticipating and reducing environmental impacts that are (generally) associated with our industry.	1	2	3	4	5
(d) Senior or municipal government regulations and standards are increasingly requiring better environmental management practices in our industry.	1	2	3	4	5
(e) We can avoid or lower the risk of fines and liabilities relative to our product or practices.	1	2	3	4	5
(f) Adopting better environmental practices can give us a competitive advantage by raising barriers to entry for new competitors.	1	2	3	4	5
(g) Better environmental management/sustainability practices improve corporate image, and therefore help consolidate or improve our market share.	1	2	3	4	5
(h) Better environmental management and sustainable design practices are a trend that our competitors are adopting.	1	2	3	4	5
(i) Consumers expect us and our products to be more "environmentally-friendly" or meet sustainable development goals.	1	2	3	4	5

Section E. Innovative Projects for Sustainable Community Design

27. A number of governmental and non-governmental agencies have been experimenting with innovative products, designs, and standards for improving the quality, affordability, and environmental performance of housing. Please indicate your degree of familiarity with the following innovation and research-design studies, projects or programs:

	<i>Not at all Familiar Familiar</i>				<i>Very</i>
(a) "Edgemont II" - A Study in Sustainable Community Form	1	2	3	4	5
(b) Sprout: the versatile, dynamic house	1	2	3	4	5
(c) Affordability and Choice Today (ACT) - Regulatory Reform Activities to Improve Housing	1	2	3	4	5
(d) Healthy House (Vancouver, Toronto, Montreal)	1	2	3	4	5
(e) The "Grow Home"	1	2	3	4	5
(f) R2000 Homes	1	2	3	4	5
(g) Autonomous Sustainable House (ASH) in Calgary	1	2	3	4	5
(h) EnviroHome demonstration program/projects	1	2	3	4	5
(i) Assessment of Built Projects for Sustainable Communities	1	2	3	4	5

28. Have you implemented any concepts, ideas or design practices listed in question 27 in any of your residential communities or house-building projects?

Yes, Many _____ Yes, Some of them _____ No, None _____

28a. If you responded Yes, briefly describe what idea(s) you used and which project/location it was used: _____

Appendix I: Survey-Questionnaire

29. Please indicate your degree of familiarity with the content of each of the following research publications and technical reports about housing design, technologies, market trends listed below.

	Not at all Familiar	1	2	3	4	5
(a) <i>Infrastructure Costs Associated with Conventional and Alternative Development Patterns, Summary Report</i> , Essiembre-Phillips-Desjardins Associates Ltd., 1995, CMHC, Regional Municipality of Ottawa-Carleton.	1	2	3	4	5	5
(b) <i>Testing Consumer Receptivity to Sustainable Community Design: Designing An Alternative for the Residential Suburb in Calgary and Seeking the Consumer's Opinions and Choices</i> , William T. Petks and Andrea Wilton-Clark, 1996, CMHC.	1	2	3	4	5	5
(c) <i>Sustainable Residential Developments: Planning, Design and Construction Principles ("Greening the Grow Home")</i> , Avi Friedman, Affordable Homes Program, School of Architecture, September 1993.	1	2	3	4	5	5
(d) <i>Planning for Telework and Home-based Employment: A Canadian Survey on Integrating Work into Residential Environments</i> , David Marlor, March 1995, CMHC.	1	2	3	4	5	5
(e) <i>Innovative Site Development Standards and Practices: Review of Industry Perceptions</i> , Final Report, March 1993, Alberta Municipal Affairs: Edmonton, Alberta.	1	2	3	4	5	5
(f) <i>Residential Preferences, Growth Management, and Urban Policy</i> , Peter Harris, et. al., February 1995, Seattle Office of Management and Planning: Seattle, Washington.	1	2	3	4	5	5
(g) <i>Opportunities for Accelerating Implementation of Environmentally Sustainable High Performance Housing</i> , Peter Booth and Peter S. Keitlenbeil, December 1994, CMHC.	1	2	3	4	5	5
(h) <i>Construction and the Environment: New Home Builders and Renovators Can Help Build a green Future</i> , 1993, CMHC.	1	2	3	4	5	5
(i) <i>Achieving Infrastructure Cost Efficiency/Effectiveness Through Alternative Planning Approaches</i> , Marshall Macklin Monaghan Ltd., 1992, CMHC.	1	2	3	4	5	5
(j) <i>Future Trends in Housing: Attitudes of Potential Home Buyers Towards Housing</i> , Angus Reid Group, 1995.	1	2	3	4	5	5
(k) <i>Towns and Town-Making Principles</i> , Andres Duany and Elizabeth Plater-Zyberk, 1992, Harvard University Graduate School of Design.	1	2	3	4	5	5
(l) <i>Canadians and their Housing Expenditures, 1978-1992</i> , John Engeland, 1994, CMHC.	1	2	3	4	5	5

Thank you for completing the questionnaire!

**PLEASE MAIL BACK THE QUESTIONNAIRE IN THE
ENCLOSED POSTAGE-PAID ENVELOPE.**

To:

**Murad Shivji
Faculty of Environmental Design
The University of Calgary
2500 University Drive N.W.
Calgary, Alberta
T2N 1N4**

**Have you remembered to enclose documents or information that you would
like us to have?**

Sustainable Suburbs Study Policies and Guidelines

Community Centres

C.1 Mixed use public activity centres must be located in all communities in the form of a community centre and a number of neighbourhood nodes.

C.2 The community centre and neighbourhood nodes must be located strategically and should be as central as possible, while recognizing topographical constraints.

C.3 A mix of both public and private activities must be located in and around the community centre and neighbourhood nodes.

C.4 Community Centre and neighbourhood node site design must encourage pedestrian and bicycle access and transit use.

C.5 Compatible home occupations should be encouraged. C.6 Community centre and neighbourhood node sites may be developed with interim uses, provided that the eventual development of the preferred mix of uses is not precluded.

Schools and Open Space

OS.1 Existing natural systems (including significant environmentally sensitive areas) must be integrated into new communities and will form part of a comprehensive and contiguous regional open space system.

OS.2 Built open space (including joint-use sites) must be located, sized and configured to create places that are functional, safe, flexible and form a linked open space system.

OS.3 Local open space must provide a variety of opportunities for people of all ages, interests, and abilities.

OS.4 Joint use sites (elementary and/or junior high school sites and playfields) should be located in proximity to the community centre or neighbourhood nodes, on the transit route and close to daycare and other services.

OS.5 The community centre must accommodate a community hall or similar facilities and contain functional public open space.

OS.6 Opportunities for long-term community financing and involvement in the design, construction, operation and maintenance of community facilities or local open space should be pursued.

OS.7 Opportunities for shared use of sites and/or buildings for public facilities (e.g. fire, emergency services, library, police, schools, community facilities, social services, health services, etc.) should be pursued.

Housing

H.1 All communities must achieve a minimum density of 17.3 units per gross ha (7 units per acre).

H.2 All communities must provide a wide choice of housing types in addition to single family. Buildings should be predominantly oriented to the street and be compatible in architectural style and finish.

H.3 Policies and guidelines ensuring that an adequate choice of low to medium housing is provided in suburban communities shall be developed as part of a new comprehensive city-wide package of policies on affordable housing.

H.4 Most multi-family housing should be located near transit use. C.5 Compatible home occupations should be encouraged. C.6 Community centre and neighbourhood node sites may be developed with interim uses, provided that the eventual development of the preferred mix of uses is not precluded.

Transportation

T.1 The street system in a community must provide all residents with direct links between key community focal points (community centre, neighbourhood nodes, schools, open spaces, major arterials).

T.2 The transit system must be integrated into the community design and be a key component of the community centre, neighbourhood nodes and other community focal points.

T.3 A new package of street design standards (road hierarchy, width, right-of-way, boulevard and intersection design, landscaping) must be developed to meet the needs of pedestrian, cyclists, and transit users, while continuing to provide for vehicular transportation.

Environmental Issues

E.1 Builders are encouraged to ensure that all new buildings in new communities are audited for construction waste.

E.2 Builders are encouraged to use recycled materials in the construction of new buildings when supplies are available, existing standards allow, and the cost of materials is feasible.

E.3 Provision for a recycling depot must be included in the design of the community centre.

E.4 Builders are encouraged to equip all buildings (residential, commercial, and institutional) in new communities with bins for sorting recyclable dry waste (paper, plastic, metal and glass) and to locate a permanent compost on site for degradable wet waste and yard waste.

E.5 As part of the Future Integrated Solid Waste Management Plan, the feasibility of waste limits and/or yard waste bans will be determined.

E.6 All homes in new communities should have water metres and manufactured water-saving fixtures.

E.7 Alternative methods to traditional stormwater management techniques must be examined, in terms of appropriateness and cost, for use in communities.

E.8 Builders are encouraged to design, locate and construct all buildings in new communities with the objective of reducing energy consumption.

Appendix II: Preliminary Survey Findings

SURVEY QUESTIONNAIRE RESULTS:

SUSTAINABLE COMMUNITY DESIGN AND DEVELOPMENT INDUSTRY PERCEPTIONS AND PRACTICES

This document contains the preliminary data compilations for the survey conducted in July 1997 in Calgary. This information is part of a work in progress by Murad Shivji and cannot be reproduced or published without the permission of the author. If you have any requests about publication, reproduction, or distribution, you may contact the author at (403) 293-0373.

The survey was addressed to senior managers of land development and homebuilding firms, and urban consultants (planners, engineers, architects, designers, etc.) engaged in the planning, designing, and building of residential communities. The purpose is to seek input from the development industry about a number of policy and technology changes that are emerging around "environment", "sustainability", and "affordability". The City of Calgary Planning and Building Department instituted a policy entitled, *The Sustainable Suburbs Study*, in July 1995, which sets out planning principles and design criteria for the creation of more sustainable residential communities. The survey was designed to gauge industry perceptions about this policy document.

The project was funded in part by UDI Calgary (The Urban Development Institute) and the City of Calgary Planning and Building Department. Support was also provided by CHBA (The Calgary Home Builders Association). The author thanks these organizations for their initial and continued support in making this project a success. This survey would not have been possible without the help and cooperation of UDI, The City of Calgary Planning and Building Department, and CHBA.

Altogether 119 surveys were distributed; 66 were returned. (The response rate was 55%.) The breakdown of respondents is in the table below.

Type of Firm	Frequency	Percent
UDI Land Developers	12	18
CHBA Land Developers	6	9
HomeBuilders	20	30
Community Planners	18	27
Other Urban Consultants	10	15
Total	66	100

Firms selected for the survey questionnaire came from membership lists obtained from the two major industry associations, UDI and CHBA. Further, Urban and Regional Planning consultants were taken from the Telus Yellow Pages for Calgary.

The questionnaire was organized in five sections:

1. *Sustainable Suburbs*
2. Innovation in the Housing and Development Industry
3. The Market: Consumer Preferences for Sustainability Features
4. Business Practices and the Environment
5. Innovative Projects for Sustainable Community Design

This data compilation and response summary follows the same order and lists the survey questions that were addressed by the respondents. If you wish to share your comments or suggestions about the survey results or format of this document, please do not hesitate to contact the author. Any helpful comments, criticisms, or recommendations will be appreciated.

Survey Section A – Sustainable Suburbs

Community Centres and Neighborhood Nodes

This section of the survey was designed to probe members of the industry and obtain their opinions about the likely outcomes of the various policies contained in the *Sustainable Suburbs Study*. Responses are categorized by five groups of respondents: UDI Developer Member, CHBA Developer Member, CHBA Homebuilder, Urban Consultants (includes engineers, architects, landscape architects) and Community Planners.

Each community must have a community/public activity centre and neighborhood nodes and must encourage pedestrian and bicycle access and transit use. (A community is expected to be about 12,000 population.)

Q1. The Community Centres and Neighborhood Nodes Policies will result in:

- a) increased use of alternate forms of transportation in new communities such as walking, cycling, & public transit use.
- b) more employment opportunities within new Residential communities.
- c) a significant mix of public and commercial activities in the community to satisfy resident needs for shopping and services (30,000 sq. ft. community centre with food store).
- d) reduced trips to work and shopping outside the community.

Type of Firm	Question 1	a	b	c	d
		% Response			
UDI Land Developers n=12	Strongly Disagree	17	17	18	25
	Disagree	42	50	36	17
	Unsure	25	17	18	33
	Agree	17	8	9	25
	Strongly Agree	0	8	18	0
CHBA Land Developers n=6	Strongly Disagree	0	0	17	0
	Disagree	17	50	33	50
	Unsure	17	50	33	33
	Agree	67	0	17	17
	Strongly Agree	0	0	0	0
Homebuilders n=20	Strongly Disagree	0	0	0	0
	Disagree	30	25	0	50
	Unsure	20	40	45	15
	Agree	45	30	40	30
	Strongly Agree	5	5	15	0
Community Planners n=18	Strongly Disagree	6	6	12	6
	Disagree	22	33	24	44
	Unsure	22	28	29	11
	Agree	33	17	35	39
	Strongly Agree	17	17	0	0
Other Urban Consultants n=10	Strongly Disagree	10	0	0	0
	Disagree	10	0	10	50
	Unsure	50	60	40	40
	Agree	20	30	40	10
	Strongly Agree	10	10	10	0

All Groups Combined n=66	Question 1	a	b	c	d
	Strongly Disagree	6	5	8	6
Disagree	28	30	17	42	
Unsure	26	36	34	23	
Agree	35	20	31	27	
Strongly Agree	8	9	9	2	

Schools and Open Space

Existing natural systems must be integrated into new communities and built open space must be located, sized and configured to create places that are functional, safe, flexible and form a linked open space system. Joint/shared use sites should be located in proximity to the community centre or neighborhood nodes, on the transit route and close to daycare and other services.

Q.2 The Schools and Open Space policies will result in:

- a) better or more protection of natural and environmentally sensitive areas.
- b) greater passive recreational areas than are now available in existing suburban communities.
- c) improved pedestrian and cyclist movement within the community.
- d) cost efficiencies for the City and taxpayers because of more efficient land use and more compact urban form.
- e) increased community and user participation in the planning and design of open space and recreational amenities.

Type of Firm	Question 2	a	b	c	d	e
		% Response				
UDI Land Developers n=12	Strongly Disagree	17	25	8	42	17
	Disagree	25	33	33	42	25
	Unsure	25	17	8	8	33
	Agree	25	17	50	8	17
	Strongly Agree	8	8	0	0	8
CHBA Land Developers n=6	Strongly Disagree	17	0	0	0	0
	Disagree	0	0	0	17	20
	Unsure	17	33	33	50	20
	Agree	67	67	67	33	60
	Strongly Agree	0	0	0	0	0
Homebuilders n=20	Strongly Disagree	5	5	0	0	0
	Disagree	5	21	0	35	26
	Unsure	35	16	25	30	11
	Agree	40	47	50	25	47
	Strongly Agree	15	11	25	10	16
Community Planners n=18	Strongly Disagree	11	11	0	0	6
	Disagree	28	22	6	31	39
	Unsure	28	33	39	38	44
	Agree	33	33	33	25	11
	Strongly Agree	0	0	22	6	0
Other Urban Consultants n=10	Strongly Disagree	11	0	0	22	0
	Disagree	28	22	11	33	50
	Unsure	28	44	22	11	38
	Agree	33	22	67	22	13
	Strongly Agree	0	11	0	11	0

All Groups Combined n=65	Question 2	a	b	c	d	e
	Strongly Disagree	9	9	2	11	5
Disagree	22	22	9	33	32	
Unsure	25	27	26	27	29	
Agree	35	36	49	22	27	
Strongly Agree	9	6	14	6	6	

New communities must be capable of achieving a minimum density of 7 upa, provide a wide choice of housing types, provide adequate choice of affordable housing, and focus multi-family housing near community centres, neighborhood nodes, recreational areas, other public amenities, and be close to transit stops.

Q.3 The housing policies will result in:

- a) reduced costs of public infrastructure for homebuyers.
- b) more journeys to work, etc. by walking, transit, or bicycle.
- c) increased affordability of housing.
- d) more choice of housing for people of different household types, income levels and age groups in the neighborhood.
- e) increased marketability and salability of housing.
- f) increased marketability and salability of the community.
- g) increased satisfaction of consumers and their preferences.
- h) communities which are more responsive to market realities and buyer considerations.
- i) innovations in infrastructure designs and technologies for improved efficiencies and reduced maintenance costs.

Type of Firm	Question 3	% Response								
		a	b	c	d	e	f	g	h	i
UDI Land Developers n=12	Strongly Disagree	17	25	17	25	58	50	33	50	17
	Disagree	42	42	33	17	25	17	42	33	42
	Unsure	17	25	33	33	8	17	17	0	33
	Agree	25	8	17	17	8	17	8	17	8
	Strongly Agree	0	0	0	8	0	0	0	0	0
CHBA Land Developers n=6	Strongly Disagree	0	0	0	0	0	0	0	17	0
	Disagree	0	33	17	17	33	17	0	17	0
	Unsure	50	50	67	17	50	33	80	50	67
	Agree	50	17	17	67	17	50	0	17	33
	Strongly Agree	0	0	0	0	0	0	20	0	0
Homebuilders n=20	Strongly Disagree	20	20	15	0	25	16	20	10	15
	Disagree	15	30	30	5	10	16	15	25	10
	Unsure	30	30	30	30	45	42	45	30	25
	Agree	25	20	20	45	20	21	15	30	40
	Strongly Agree	10	0	5	20	0	5	5	5	10
Community Planners n=18	Strongly Disagree	0	17	0	11	24	17	17	24	0
	Disagree	24	39	39	17	47	28	33	29	24
	Unsure	47	28	44	17	12	39	22	18	35
	Agree	18	17	17	50	18	17	28	24	35
	Strongly Agree	12	0	0	6	0	0	0	6	6
Other Urban Consultants n=10	Strongly Disagree	0	0	10	0	22	10	0	0	11
	Disagree	11	80	20	10	22	10	40	20	22
	Unsure	44	20	50	30	33	50	30	60	33
	Agree	44	0	20	60	11	30	20	20	33
	Strongly Agree	0	0	0	0	11	0	10	0	0

All Groups Combined n=66	Question 3	a	b	c	d	e	f	g	h	i
		Strongly Disagree	9	15	9	8	28	20	17	20
Disagree	20	42	30	12	27	18	28	26	20	
Unsure	36	29	41	26	28	37	34	28	34	
Agree	28	14	18	45	16	23	17	23	31	
Strongly Agree	6	0	2	9	2	2	5	3	5	

Transportation

The transit system must be integrated into the community design and be a key component of the community centre, neighborhood nodes and other community focal points. New street design standards must be developed to meet the needs of pedestrians, cyclists, and transit users, while continuing to provide for vehicular transportation. Connector (based on a grid pattern) versus collector roadway networks should be considered.

Q4. The Transportation policies will result in:

- a) decreased costs for streets and roadways.
- b) more pedestrian & bicycling modes of access to centers and services within the community.
- c) safer and more pedestrian oriented streets.
- d) alternative street design standards for decreasing capital and maintenance costs.

Type of Firm	Question 4	a	b	c	d
		% Response			
UDI Land Developers n=12	Strongly Disagree	42	17	8	17
	Disagree	8	25	25	33
	Unsure	25	25	33	17
	Agree	25	33	17	25
	Strongly Agree	0	0	17	8
CHBA Land Developers n=6	Strongly Disagree	20	0	0	0
	Disagree	0	0	0	20
	Unsure	40	17	17	20
	Agree	40	67	83	80
	Strongly Agree	0	17	0	0
Homebuilders n=20	Strongly Disagree	0	5	5	0
	Disagree	45	5	20	10
	Unsure	20	35	30	45
	Agree	30	45	35	30
	Strongly Agree	5	10	10	15
Community Planners n=18	Strongly Disagree	6	0	0	12
	Disagree	17	11	11	6
	Unsure	28	11	22	53
	Agree	44	72	67	18
	Strongly Agree	6	6	0	12
Other Urban Consultants n=10	Strongly Disagree	10	0	0	0
	Disagree	40	0	20	20
	Unsure	20	10	20	30
	Agree	30	90	40	40
	Strongly Agree	0	0	20	10

All Groups Combined n=66	Question 4	a	b	c	d
	Strongly Disagree	12	5	3	6
Disagree	26	9	17	16	
Unsure	25	21	26	38	
Agree	34	59	45	30	
Strongly Agree	3	6	9	11	

Builders are encouraged to: ensure that all new buildings in new communities are audited for construction; use recycled materials in the construction of new buildings when supplies are available, existing standards allow, and the cost of materials is feasible; equip all buildings (residential, commercial, and institutional) in new communities with bins for sorting recyclable dry waste (paper, plastic, metal and glass) and to locate a permanent compost on site for degradable wet waste and yard waste; encouraged to design, locate and construct all buildings in new communities with the objective of reducing energy consumption. All homes in new communities should have water meters and manufactured water-saving fixtures.

Q5. The Environmental Issues policies will result in:

- a) reduced waste materials during land development and building construction.
- b) reduced water consumption in the house.
- c) reduced overall (aggregate) water consumption in the City.
- d) recycling in the home (and in the community).
- e) housing and communities that are more environmentally-friendly and designed with sustainability features.
- f) increased marketability and salability of the community as an identifiable place with special qualities.
- g) reduced energy consumption in the house.

Type of Firm	Question 5					% Response						
	Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree	a	b	c	d	e	f	g
UDI Land Developers n=12	0	42	8	8	17	0	8	17	25	42	0	0
CHBA Land Developers n=6	17	33	17	33	0	0	0	0	33	33	17	0
Homebuilders n=20	10	5	10	15	45	5	5	10	25	30	40	10
Community Planners n=18	0	18	41	16	6	0	6	12	28	33	39	6
Other Urban Consultants n=10	0	25	25	22	22	0	0	13	25	22	44	0

All Groups Combined n=66	Question 5					% Response						
	Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree	a	b	c	d	e	f	g
3	21	8	20	42	22	5	3	9	22	42	17	3
17	31	17	29	17	10	6	6	17	29	42	25	3
52	23	17	23	33	10	10	22	42	48	23	52	5

The Sustainable Suburbs Round Table Process

Q6. By and large, the Sustainable Suburbs Round Table had adequate participation and input from:

- a) The Development Industry.
- b) Homebuilders.
- c) Potential home-buyers/consumers.
- d) City municipal officials/departments.
- e) Other relevant experts (architects, planning consultants, researchers, experts on sustainable development, sustainable community design, etc.).
- f) Others?

Type of Firm	Question 6	% Response				
		a	b	c	d	e
UDI Land Developers n=12	Strongly Disagree	17	8	25	0	8
	Disagree	25	42	42	0	8
	Unsure	25	33	17	0	33
	Agree	25	17	17	58	42
	Strongly Agree	8	0	0	42	8
CHBA Land Developers n=6	Strongly Disagree	0	0	0	0	0
	Disagree	17	0	17	0	0
	Unsure	84	100	67	50	67
	Agree	0	0	17	33	17
	Strongly Agree	0	0	0	17	17
Homebuilders n=20	Strongly Disagree	0	6	6	0	0
	Disagree	0	25	13	0	6
	Unsure	56	31	56	31	38
	Agree	38	31	25	63	50
	Strongly Agree	6	6	0	6	6
Community Planners n=18	Strongly Disagree	0	0	21	0	0
	Disagree	14	29	36	0	43
	Unsure	50	36	43	7	43
	Agree	21	29	0	50	14
	Strongly Agree	14	7	0	43	0
Other Urban Consultants n=10	Strongly Disagree	0	0	0	0	0
	Disagree	11	11	56	0	11
	Unsure	56	67	44	22	67
	Agree	33	22	0	44	22
	Strongly Agree	0	0	0	33	0

All Groups Combined n=66	Question 6	a	b	c	d	e
	Strongly Disagree	4	4	12	0	2
Disagree	12	25	32	0	16	
Unsure	51	46	44	19	46	
Agree	25	23	12	53	32	
Strongly Agree	7	4	0	28	5	

f) Others having "adequate participation and input in the Sustainable Suburbs Round Table (1994-95)"

	Frequency	Opinion
Realtors/Real Estate Industry	2	Disagree
Calgary Community Associations	1	Agree
Financial Considerations	1	Strongly Disagree
Special Interest Groups	1	Strongly Agree
Elected Officials	1	Strongly Disagree
Total	6	

Q7. The *Sustainable Suburbs Study* and its 28 policies achieved a fair and considerate balance of *all* interests – current and potential homebuyers, land developers, homebuilders, the City municipal departments, private consultants.

Type of Firm		Percent
UDI Land Developers	Strongly Disagree	33
	Disagree	50
	Unsure	8
	No Opinion	8
CHBA Land Developers	Strongly Disagree	17
	Unsure	33
	No Opinion	50
HomeBuilders	Strongly Disagree	12
	Disagree	6
	Unsure	18
	Agree	18
	No Opinion	47
Community Planners	Disagree	35
	Unsure	24
	Agree	18
	No Opinion	24
Other Urban Consultants	Disagree	30
	Agree	50
	No Opinion	20

Q7a. If you responded Strongly Disagree or Disagree to question 7 (i.e. that the *Sustainable Suburbs Study* achieved a fair and considerate balance of *all* interests – current and potential homeowners, land developers, homebuilders, the City municipal departments, private consultants), please explain:

Land Developers and Homebuilders

The most frequently cited reason by developers is that the *Sustainable Suburbs Study* fails to represent consumer preferences and "market realities":

The study and process repeatedly ignored "the market" and its realities in pursuit of a utopian, dated (this is 1970's planning theory) planning concept.

The process was weighted in favor of ideology and took very little account in the wants and needs of the marketplace.

Concern was expressed about density required by *Sustainable Suburbs*:

What if no one wants to live in a 7 upa neighborhood?

Other reasons for disagreement include:

The Sustainable Suburbs Study will create unattractive identical boring communities and increase demand for older traditional developments.

Municipal officials and politicians not committed to support recommended changes – want 7 upa without required changes in standards.

A small land developer (50 acres) cannot be expected to develop under the same guidelines as a company holding a site consisting of 400 acres or more.

Not all City departments appear to have bought in. Also, the consumer is very "unaware" of the implications.

All new communities will be forced to be the same, which is definitely not what the consumer is looking for. Not all consumers want to live in small lot, multi-family communities

The exercise was too academic. Not enough weight given to the actual costs of these policies. Not enough experienced practitioners involved.

Some consideration needs to be given on how to incorporate current communities into new zoning and expectations.

It was manipulated to a predetermined outcome by those controlling the process.

Total emphasis was on new areas. Many people who prefer higher density accommodation or are better served by it, (i.e. seniors & lower income) either cannot or will not live in outer suburbia of new subdivisions. The sustainable suburban goals cannot be properly reached without the accompanying consideration of urban renewal.

The re-sale market was (and is) not informed enough. Therefore the initial homeowner is led into buying based on re-sale information given to them by an uninformed realtor. The realtors are extremely conventional. (This respondent felt that the real estate industry was under-represented in the process.)

Community Planners

More than the other groups, Community Planners presented explanations for disagreement that touch on the policy process. Respondents suggested that the process did not adequately represent the interests of *non-human residents*, potential homebuyers, and some design professionals. However, one respondent stated that:

If you have a "fair and considerate balance of all interest" you usually have a watered down, vague policy that you never really know if you're achieving anything.

Concern over the implementation and operationalization of the policy was expressed:

The process breaks down going from the theory "Sustainable Suburbs" to policy/implementation (community plans)

One respondent expressed disagreement because:

The policy objectives were predicated on public sector objectives of increasing transit ridership and decreasing the reliance on the automobiles – through intervention in the marketplace without a review of the fiscal implications or the cumulative impacts on the delivery of cost effective development of housing.

Other Urban Consultants

The two respondents both suggested that the *Sustainable Suburbs* policies must be accepted by consumers as a matter of choice, not impressed upon them:

"Sustainable Suburbs" should come from consumer demand and not forced upon them. If they don't agree with higher density, will move to smaller Towns, or older neighborhoods. You can't force higher density on consumers. If consumers move to surrounding towns, transportation problems will increase rather than decrease. Sustainable Suburbs should be one of many options. By making it mandatory you are showing disrespect for the rights of consumers to have a choice.

Q8. "Affordability" is referred to in the *Sustainable Suburbs Study*, and the industry is urged to advance affordability. Please indicate your position on the following statement:

At this time and for the near future, there is little or nothing the industry itself can or should do to bring a more affordable community and housing product onto the market.

Type of Firm		Percent
UDI Land Developers	Strongly Disagree	33
	Disagree	25
	Agree	25
	Strongly Agree	17
CHBA Land Developers	Disagree	20
	Unsure	20
	Agree	40
	No Opinion	20
HomeBuilders	Strongly Disagree	20
	Disagree	10
	Unsure	20
	Agree	25
	Strongly Agree	10
	No Opinion	15
Community Planners	Strongly Disagree	18
	Disagree	29
	Unsure	24
	Agree	24
	Strongly Agree	6
Other Urban Consultants	Strongly Disagree	10
	Disagree	30
	Unsure	30
	Agree	10
	Strongly Agree	10
	No Opinion	10

Q8a. If you responded Strongly Disagree or Disagree for question 8, what *could the development industry* do to deliver a more affordable community and housing onto the market?

Land Developers and Homebuilders

Recommendations made by respondents include: reduce maintenance requirements; produce more efficient infrastructure; achieve higher density; modify road standards and design criteria; "provide quality without lots of expensive extras"; "reduce lot prices through size and access and dedication"; and work with municipalities to provide affordable housing.

Developers and homebuilders propose innovations in community design and subdivision so that:

Planning of whole communities and land allocation supports a variety of housing types and prices. Maintaining more mix of product.

Community Planners and Other Urban Consultants

Planners suggestions for industry efforts at improving affordability are: achieve higher development density, reduce features and amenities, reduce quality, reduce street pavement widths in local streets, reduce size of houses, build further out to decrease land costs, offer a wider variety of housing options, plan affordable housing in inner city communities that already have adequate levels of public services and amenities, and ensuring a higher level of public participation for developing more choice.

Other consultants reiterated suggestions made by planners that "amenities could be sacrificed to reduce costs".

Q9. What could be the key *municipal* policies or incentives that would have to be put in place (or changed) to help the industry play a *greater* part in achieving improved affordability?

Municipal Policies or Initiatives Suggested by Respondents	Land Developers		Homebuilders	Consultants		Totals
	UDI	CHBA		Planners	Others	
Reduce or Relax Planning & Development Standards	1	2	3	2		8
Alternative (More Flexible) Planning and Zoning Approaches	4	2	1			7
New or revised street design/construction standards	3	1	1	6	3	14
Alternative/Revised Lot/Site Servicing Standards	3	2	2	3	2	12
Reduced/Revised street lighting standards	1				1	2
Reduce municipal reserves dedication	1			2		3
Reduce house design/construction standards/building codes	1		2	1		4
Increase residential housing densities		1		1	1	3
Reduce parking requirements/standards				1		1
Allow encroachment into easements	1					1
Innovation to Stormwater Systems					1	1
Improve Processing Times for Development Approval	5	2	3	4	3	17
Reduce Development/Assessment Charges & Taxes						
Reduce fees	2	1	1			4
Reduce taxes/Tax Relief	1		2			3
Reduce sewage assessment charges	2		2		1	2
Provide Municipal Incentives				1		1
Cash incentives for developers				1		1
Density bonus System - Greater open space and/or community facility provisions for higher density				1		1
Mandate a Greater Mix of Housing Types and Affordable Units						
Include provisions for affordable housing in inner city developments				1		1
Require adequate supply/greater mix of housing types				2		2
Others:						
Undertake cost analysis for policy implications on affordability				1		1
Greater level of public participation to develop wider array of affordable options				1		1

Q10. To what extent do you agree or disagree that the industry provides "an adequate choice of low to medium income housing" in the planning and designing of new communities?

Type of Firm		Percent
UDI Land Developers	Disagree	8
	Agree	67
	Strongly Agree	25
CHBA Land Developers	Disagree	17
	Unsure	33
	Agree	33
	Strongly Agree	17
HomeBuilders	Strongly Disagree	5
	Disagree	5
	Unsure	20
	Agree	30
	Strongly Agree	25
	No Opinion	15
Community Planners	Strongly Disagree	8
	Disagree	8
	Unsure	33
	Agree	44
	Strongly Agree	11
Other Urban Consultants	Disagree	20
	Unsure	40
	Agree	20
	No Opinion	20

Q10a. If you answered Agree or Strongly Agree for question 10, why do you think the City included a housing policy (H.3) for low to medium income housing in new communities?

Land Developers and Homebuilders

The primary reason cited for the City's housing policy is to mandate greater diversity and supply of housing for lower income groups in residential communities:

They want every community to have the same mix of low to high income housing

The City is looking for each community to offer all ranges of house prices

To ensure that as properties grow, and the economy continues to move ahead there are still opportunities to provide this housing and it remains economically feasible so that market is not left behind.

So that lower income housing would be spread throughout the city, rather than congregating in one sector.

The City's efforts at instituting a housing policy are characterized as:

- *Social engineering objectives;*
- *Trying to achieve what can not exist;*
- *Trying to legislate a community rather than letting natural evolution determine the mix;*
- *A misguided belief that everyone should have equal access to each new community regardless of ability to pay.*

resistance from the middle income consumers to low income housing in close proximity to higher quality housing

and therefore, "Low to medium income housing is provided city wide – but not always in all communities".

Some respondents suggested that the industry provides affordable housing independent of the policy because

It is not the industry's role to provide adequate choice of low to medium housing. However, it does provide an adequate choice, not because of any policies or corporate goodwill, but because the market dictates. Low and medium income housing generally sells faster than higher income housing.

Other reasons provided for the institution of the housing policy include:

- *To ensure a supply of affordable housing*
- *Low to medium income housing is provided city wide – but not always in all communities. Presumably the city wants a range in every community.*
- *For the smaller quick hit developers that come to town in a boom*
- *Because they didn't look to see it is already there*
- *To ensure that as properties grow, and the economy continues to move ahead there are still opportunities to provide this housing and it remains economically feasible so that market is not left behind.*
- *Reducing capital costs when densities increase*
- *Trying to legislate a community rather than letting natural evolution determine the mix*
- *As younger people form family units they must be able to afford housing for their family (the origin of society)*

Community Planners and Other Consultants

Besides suggesting that the housing policy was instituted to "include social housing", "produce a more balanced mix of housing options" and "produce a more uniform mix of socio-economic classes", this group feels it was adopted because:

- *of Political reasons – public consumption and appearance*
- *the City wants to control location of low/moderate price housing*
- *of an Ideological objection to free market*

Q11. In your present business plans and marketing strategy, what proportion of your *total housing production and/or development plans* are dedicated to supplying housing (ownership or rental) for the following household income categories:

- a) \$10,000-\$19,999 b) \$20,000-\$29,999 c) \$30,000-\$44,999
d) \$ 45,000-\$59,999 e) \$60,000-\$74,999 f) \$75,000-\$120,000 g) Over \$120,000

Percent of total housing units	Number of respondents* who build housing for income category						
	a	b	c	d	e	f	g
1-10%	2	2	8	2	1	9	4
11-20%	0	1	4	4	7	1	0
21-30%	0	2	4	4	6	4	4
31-40%	0	1	0	6	3	1	0
41-50%	0	0	1	4	2	0	0
51-60%	0	0	1	1	1	0	0
61-70%	0	0	0	1	2	0	0
71-80%	0	0	0	0	0	0	0
81-90%	0	0	0	0	0	1	0
91-100%	0	0	0	0	0	0	2
<i>Totals</i>	2	6	18	22	22	16	10

* 27 respondents provided information for this question

Percent of land dedicated to housing in plans	Number of respondents** who dedicate land for housing for income category						
	a	b	c	d	e	f	g
1-10%	1	6	7	2	4	9	11
11-20%	0	2	5	7	8	3	2
21-30%	0	0	5	7	8	3	4
31-40%	0	0	2	1	6	5	1
41-50%	0	0	2	4	0	0	0
51-60%	0	0	0	2	0	0	0
61-70%	0	0	0	1	1	0	0
71-80%	0	0	0	0	1	1	0
81-90%	0	0	0	0	0	0	0
91-100%	0	0	0	0	0	0	1
<i>Totals</i>	1	8	21	24	28	21	19

** 29 respondents provided information for this question

Appendix II: Survey Findings

Q12. Over the last 10 years, the average real income of household has decreased or, at best, remained stable. At the same time construction costs, property taxation, assessment charges and other related costs of development have increased. In your opinion, has the situation of "affordability" in Calgary become *better or worse* in this period?

Type of Firm		Percent
UDI Land Developers	Better	58
	Worse	25
	Don't Know	8
	No Opinion	8
CHBA Land Developers	Better	50
	Worse	50
HomeBuilders	Better	68
	Worse	21
	Don't Know	11
Community Planners	Better	44
	Worse	22
	Don't Know	28
	No Opinion	6
Other Urban Consultants	Better	11
	Worse	33
	Don't Know	22
	No Opinion	33

Q12a. If you answered *better*, what have been the 3 most important factors of development and housing production (independent of more favorable interest rates in recent years) that improved affordability?

All groups except Other Urban Consultants provided responses for this question. Responses were combined for all respondents. Key factors identified by the respondents are ranked by frequency of occurrence.

Key Factors that improved affordability include:	Respondents citing:
1. Increased competition (in the industry)	10
2. Production of smaller homes	10
3. Smaller or narrower lot sizes	9
4. Improved efficiency in production and within firms.	7
5. Lower/Stable labor, materials, and construction costs.	6
6. Higher densities and more multi-family housing production.	5
7. Greater supply and diversity of product/Better product design.	5
8. Consumer confidence (in Calgary economy, etc.)	4
9. Lowered profit margins by developers and builders	3

Others: (only one respondent cited)

- Satellite communities
- Better public transportation
- Closer amenities
- CMHC policies regarding first time buyers
- Abundant land supply has kept lot costs equitable
- Development industry listening to market demands
- For Buyers, aging and equity growth have improved affordability
- The only place we have improved affordability has been in energy consumption and reduced wastage by using alternative building products - i.e. composite materials rather than raw wood (K-3 or MDF board or Finger-joined wood)

Alternative Street Design Standards

Q13. What do you think were the main reasons why the joint proposals of UDI and the Planning and building Department on *Alternative Street Design Standards* were not approved by City Council?

Reasons why Alternative Street Standards not approved by Council	Number of respondents from each category who cited reason					Totals
	Land Developers		Homebuilders	Consultants		
	UDI	CHBA		Planners	Others	
Lack of understanding by City Council	5	2	2	3	0	12
City Politics/Political Reasons (Fear of constituents' backlash, lawsuits, etc.)	3	1	2	5	1	12
Perception that Alternative Development Standards are lower	1	1	1	6	1	10
"Poor sell" by Administrators to Council	2	0	0	3	4	9
Lack of commitment by City Admin. to change and reducing costs, Technical counter-arguments from civic depts.	6	1	1	6	2	16
Concern over future maintenance costs	3	0	0	0	0	3

Others:

- City council not willing to take the time to explore total alternatives fully.
- Perception that development industry involvement inappropriate
- Timing – unusually bad weather with heavy snowfall (and snow removal complaints) and bad P.R. which gave public the impression that the new standards would make things worse.
- Opinion of the vocal minority.
- Fools in government
- poorly defined and understood objectives of administration and development industry; i.e. was the goal cost savings or improved streetscape or both
- lack of unanimous support from development industry
- City Council took an adversarial approach to the industry's initiation
- UDI was not consistent with their support and endorsement
- Benefits did not outweigh costs

The Community Design and Planning Process

Q14. The *Sustainable Suburbs Study* outlines a new "Hierarchy of Plans" designed to establish a more cooperative process between developers, builders and the City, and to "simplify, speed up and improve the Community Plan preparation process". Such improvements could conceivably include more effective input from potential homebuyers and community groups in the planning and designing of new communities.

The City's new Community Plan Process will:

- a) lead to greater efficiencies in the development approval process.
- b) lead to better input of public and consumer interests in the planning-design phase of new residential communities.
- c) add to the customary costs of doing business.
- d) lead to improved overall environmental and sustainable qualities of new residential communities in Calgary.
- e) provide opportunities to experiment with alternative site development standards for affordable and sustainable communities.

Type of Firm	Question 14	a	b	c	d	e
		% Response				
UDI Land Developers n=12	Strongly Disagree	17	25	0	17	50
	Disagree	50	33	17	50	8
	Unsure	17	8	0	25	25
	Agree	17	33	50	8	17
	Strongly Agree	0	0	33	0	0
CHBA Land Developers n=6	Strongly Disagree	50	0	0	0	0
	Disagree	0	17	17	0	0
	Unsure	17	50	17	50	60
	Agree	33	33	33	50	40
	Strongly Agree	0	0	33	0	0
Homebuilders n=20	Strongly Disagree	11	0	0	0	6
	Disagree	22	11	6	22	0
	Unsure	39	44	44	44	44
	Agree	28	39	33	22	44
	Strongly Agree	0	6	17	11	6
Community Planners n=18	Strongly Disagree	12	0	0	6	13
	Disagree	41	35	25	41	44
	Unsure	29	35	31	24	19
	Agree	18	29	31	29	25
	Strongly Agree	0	0	13	0	0
Other Urban Consultants n=10	Strongly Disagree	11	0	0	0	0
	Disagree	22	33	13	11	0
	Unsure	56	33	50	56	56
	Agree	11	33	38	33	33
	Strongly Agree	0	0	0	0	11

Q15. Do you foresee the new Community Plan process as encouraging or discouraging industry innovation?

Type of Firm		Percent
UDI Land Developers	Encouraging	33
	Discouraging	67
CHBA Land Developers	Encouraging	33
	Discouraging	33
	No Opinion	33
HomeBuilders	Encouraging	39
	Discouraging	22
	No Opinion	39
Community Planners	Encouraging	47
	Discouraging	33
	No Opinion	13
	No Impact	7
Other Urban Consultants	Encouraging	56
	No Opinion	44

Land Developers Only	Percent
Encouraging	33
Discouraging	56
No Opinion	11

All Respondents	Percent
Encouraging	42
Discouraging	32
No Opinion	25
No Impact	2

Q15a. Please explain.

Land Developers and Homebuilders

Most developers remain pessimistic that the Community Plan Process will encourage innovation. However, respondents who expressed optimism, suggest the new process: "will alert developers to consumer attitudes and changing preferences"; provide "marketable feedback from the end-user"; and "speed things up overall". One homebuilder suggested that innovation would occur because:

As industry perceives an environment receptive to new innovation and opportunity, it will respond positively to such a positive environment.

Reasons why the process will discourage innovation are:

The Sustainable Suburbs criteria are fixed:

Planning Department is stuck on a fixed template or design as to what all new communities should look like.

All new communities must now conform to the same "cookie-cutter design".

The policy does not address changes to existing development standards and regulations:

Until all standards, zoning regulations, etc. change – little innovation will occur.

Greater community involvement in the process will lead to delays and escalate costs:

Any time you slow down the process of approving new community plans – you increase the cost to the consumer – the industry then begins to build only what is most easily approved.

Too many cooks spoil the broth! An all inclusive planning process suggests the involvement of those with no vested interests with nothing to risk, being given a say in how privately owned land is developed.

An inclusive process will bring about community opposition to change

More community involvement will lead to more NIMBY attitudes thus discouraging any and all types of innovation.

Three respondents suggested that innovation would occur independent of the process because:

The market place will ultimately be the dominating force to encourage or discourage innovation - not the well-meaning but of ten uninformed wishful thinking of "wannabe" planners. When consumers are convinced of the necessity for innovation, they will exert pressure to obtain. (For example, "Air Bags" in the auto industry.)

Industry innovation is driven by individual companies not a cast of community regs or City Planners. The Community Plan seeks a standard solution to all problems and hopes to eliminate any one individual concern.

Community Planners and Other Consultants

Most respondents from these groups believe the process will encourage innovation. Planners and consultants are optimistic that the process: generates "more flexible attitudes at the conceptual planning level", "develops unique solutions", is an all inclusive process; encourages dialogue and "allows a forum of explanation for innovations".

In addition, opportunities for innovation are foreseen because

It [Sustainable Suburbs] encourages developers to consider alternatives to the design concepts which were considered "tried and true".

Process encourages the exploration of different options by having the public involved and meeting with City departments together.

Since it is non-statutory, there should be more room for discussion of non-traditional approaches, reasonably close to the development design stage.

Planners and consultants who believe innovation will not occur, suggest

Municipal administrators are not committed to change:

While the process, in theory, is forward thinking, many of the stakeholders are not to date prepared to relinquish the status quo and/or trade off their position for the greater good – process is also very prescriptive.

Developers will produce plans that appease municipal administrators, not innovative ones:

Obtaining approvals for innovative planning is very time consuming and developers are simply not willing to hold land off the market while approvals are obtained. This results in many taking 'the path of least resistance' to obtain approvals meaning innovation is sacrificed. This problem will be further compounded as housing markets 'heat-up'.

Sustainable Suburbs policy is inflexible

Preconceived "community model" underlying all community plans, although somewhat different than present development, nevertheless, encourages stereotype development and inhibits creativity.

Defining Sustainable Communities

Q16. Is the City of Calgary's definition of "sustainable community" adequate? – Does it include *all* of what you might include for planning, designing, and building sustainable communities in Calgary?

Type of Firm		Percent
UDI Land Developers	Yes	30
	No	40
	No Opinion	30
CHBA Land Developers	Yes	50
	No Opinion	50
HomeBuilders	Yes	45
	No	20
	No Opinion	35
Community Planners	Yes	44
	No	39
	No Opinion	17
Other Urban Consultants	Yes	33
	No	33
	No Opinion	33

All Respondents	Percent
Yes	41
No	29
No Opinion	30

Q16a. If you answered No, what would you add to the definition?

UDI and CHBA Land Developers

Responses were very limited. The only suggestions made by UDI land developers were that the definition should include some reference to the market and consumer preferences, and requirements for recycling. One respondent indicated the definition is too broad and does not need elaboration.

CHBA land developers had nothing more to add except that the definition should include some reference to flexibility and size of development projects.

One respondent stated that

The land owner should have the flexibility to design large or small cells of different price bands of house as the market defaults.

Homebuilders

Homebuilders presented more specific recommendations: the concept of lifecycle costing; crime, security, and "sense" of community; and provisions for old as well as new communities to share the costs of development and growth in urban municipalities.

One respondent suggested the definition is contradictory unless weighting favors either fiscal or social criteria for sustainable communities. Another argued that *Sustainable Suburbs* "will be hindered" unless

the city changes its policy of building freeways and overpasses to facilitate easy automobile movement from one community to another for work, entertainment, shopping, etc.

Community Planners and Other Urban Consultants

The Planners altogether would like to see additional considerations embodied in the sustainability concept: retail and office (business), transportation, evolution over time, beauty, urban design and

character, humanly-scaled communities that enhance quality of life and sense of community, regional (and landscape) perspective, and protection of natural systems.

Only two responses were received from other consultants: "sustainable development implies self-sufficiency but the word 'minimize' does not"; and, "communities must promote neighbourliness and pride of ownership so that they can flourish".

Q17. Do you have (own) a copy of the City's Sustainable Suburbs Study?

Type of Firm		Percent
UDI Land Developers	Yes	82
	No	8
CHBA Land Developers	Yes	50
	No	50
HomeBuilders	Yes	30
	No	70
Community Planners	Yes	83
	No	17
Other Urban Consultants	Yes	56
	No	44

All Respondents	Percent
Yes	62
No	38

Survey Section B – Innovation in the Housing and Development Industry

18. From an industry perspective, what would you say are the *most significant constraints to introducing innovations* in the planning-designing and building of residential communities in Calgary?

Most Significant Constraints to Introducing Innovations	Land Developers		Homebuilders	Consultants		Totals
	UDI	CHBA		Planners	Others	
Municipal Regulations, Policies, and Development Standards						
Rigid/Inflexible application of existing policies, regulations, and standards:		2	2	3	4	11
Excessive municipal bylaws, engineering and street standards, servicing and infrastructure requirements, and Building Code requirements	8	3	3	5	3	20
Densities in excess of market acceptance/consumer preferences			1	1		2
Grid pattern of Subdivision design/Sustainable Suburban Guidelines	1			1		2
Site planning (front street for people, land for utilities)				1		1
Municipal Administrators and Politicians						
City Council/Elected Officials "resistance to change"	1	1	2	5	1	10
Mind set ("old thinking") of city administrators and politicians	7		2	1		10
City intervention in the marketplace		1				1
Interference of politicians in the process		1				1
City is afraid to take innovative steps because of liability issues			1			1
Poor staff in the city				1		1
Fear of change				1		1
Lack of commitment and "positive will-power" by city politicians and administration			1			1
"Over-controlling municipal social engineers"				1		1
Delays in the Development Approval Process						
Slow and inefficient development approval process	1	1	3	1	1	7
Additional costs related to time delays in development approval	1		1			2
Additional delays for approving "non-traditional" standards or new products	2			1		3
Consumer Preferences/Market Trends						
Existing consumer perceptions and attitudes regarding property values		2				2
Community/Public resistance or unwillingness to accept change		1	2	3	2	8
Overcoming consumers' mindset regarding what they will give up			1			1
The public has only been exposed to traditional building types				1		1
Existing markets and patterns of development			2			2
Cost						
Consumer sensitivity and resistance to cost increases	2		1	1		3
High cost of infrastructure		1				1
Community Involvement/Public Participation						
		1	2	2		5
Risk/Developers "playing it safe"						
			1	3	1	5
Time Constraints						
	1		1			2

Others:

- Outside M.D.S. gaining strength and will offer alternative land development opportunities
- Ingrained attitudes of developers and builders - afraid to try real new ideas
- Inertia in the industry and engineering, transportation departments.
- The City Planning Department, developers, builders, planning consultants, consumers.
- Lack of regional planning
- Weather – i.e. snow and snow removal
- Ignorance to the current and future changes to the demographics of Calgary and all Canadian Cities
- Uni-City Concept – the continued suburban expansion growth form is not compatible with innovation.
- Safety
- Visibility

19. What are the most significant innovations that your company has introduced in recent years that delivered a better housing product or better community environment to the consumer?

19a. What would you say was the impetus or "driving force" for each of the innovations you listed?

Most Significant Innovations Introduced in Recent Years	Number of times innovation was mentioned	Driving Forces							
		Consumer demand or preferences	Municipal bylaws, policies, procedures or provincial regulation	UDI, ULI, CHBA or FCM advisory or research documents	Innovative community design projects built in North America	Consumer Feedback on one or more of your previously finished projects	Growing consumer awareness and concerns for environmental protection and improvements	Municipal or senior government programs/incentives	Improved cost efficiencies of your business
Process Construction									
Maintenance (Low) Free Estimator Finish	5	5	1	2		2		2	
Engineered (Better) Floor System (reduce timber)	2	2			1	1		1	
Improved Construction Standards or Practices	4	2	3	1	1	2	1	3	
Use of alternative "manufacturing" products	1			1			1	1	
Better Mechanical Systems	2	1	2			2	1	1	
Better insulation	1	1	1		1	1	1	1	
Master Wall Systems (reduced energy consumption)	1	1				1			
Factory Built Housing	1							1	
Process Design									
New or Innovative House Designs to Improve Quality, quality or affordability	10	10	1		3	3	4	7	
Architectural styling of entire home product	1	1				1			
Basement Room Plans	1	1			1	1			
Environmentally Friendly (ASH) in Specific Areas	1						1		
Introduction of "NO FRILLS" low cost spec home	1	1							
Lot Size/Configuration									
Smaller/Narrower lots to improve affordability	6	4		1	1	1		3	
Smaller, under use	1	1			1	1	1	1	
Higher Density and Lots of Housing									
Improved Mix/variety of Housing Type (Greater Choice, multi-family, and seniors housing)	6	4	1		2	3	1		
Higher density development (7-7.5 u.p.s.)	2	2		1	1				
Open Space, Parks, Community Amenities									
Integrate/Retain natural wetlands	3				1		2	1	
Well storm ponds linked to open space and trail systems	1						1	1	
Convert dry pond into a park with extra trees and landscaping	1	1			1				
Protection of ER and natural landscaped areas	2	1				1	1		
Improved park design	2	1			1	1			
Alternative/More Functional Open Space	3	3	1		3		2	1	
Stormwater management facilities built on golf course	1							1	
Linear (linked) Open Space Concept	3	2	1		2	1	2	1	
Homeowner's Association/Community Activity Centre									
Homeowners Association	3	1	1	1	1				
Neighborhood Activity Centre (built at early development stage)	3	3			2	2		1	
"Upfront" community amenities	1	1				1			
Street Design and Layout									
Street Score	1	1			1	1			
Streets designed to reduce traffic/improve circulation	2	2				2	2		
Reduced street standards (using "bare land corridor")	1				1	1			
Variation in road patterns and layouts	1	1			1				
Added street amenities e.g. street trees, passive park	1	1					1		
Minimizing setbacks	1	1							
Community/Project Design									
Multi-family at centre of community (McKenzie Towne)	1			1	1				
Bare Land Condominium	1		1						
Traditional neighbourhood (Near Urbanism) Development	2	1		1	1	1			
Improve overall quality and "community feel" of projects	3	2		1	1	1	1	1	
Use inner city principles in suburb	1	1			1				
Design medium to High End community to ensure cash/other property investment	1	1			1				
Improved Community Entrance Features	1				1				
Zoning Applications									
Great Centre Zoning of a R1 and R2E Housing Project	1	1			1			1	
Using more R1A	1	1			1				
Integration of landscape and utility easements	1								
Request zoning permitting basement suites	1								
Others									
States Constraints centre on site	1	1			1	1			
Front Yard Sodding	1	1				1			
Recycled Vinyl Screening Fences	1		1		1	1			
Recycled Waste Products	1			1			1	1	
Totals for Driving Forces	84	84	14	11	28	34	26	4	

The 3 most frequently cited driving forces for introducing innovations are:

1. Consumer demand or preferences
2. Innovative community design projects built in North America
3. Consumer feedback on one or more of your previously-finished projects.

The least referred to driving forces are: (1) Municipal or senior government programs/incentives; (2) UDI, ULI, CHBA or FCM advisory or research documents; and (3) Municipal bylaws, policies, procedures, or provincial regulation.

20. Does your firm have a designated budget category and activity for Research and Development (R&D)?

Type of Firm		Percent
UDI Land Developers	Yes	17
	No	83
CHBA Land Developers	Yes	33
	No	67
HomeBuilders	Yes	11
	No	84
	Don't Know	5
Community Planners	Yes	24
	No	71
	Don't Know	6
Other Urban Consultants	Yes	25
	No	75

20a. If you responded Yes, please indicate the percentage (%) of annual gross expenditures – operating and capital – dedicated to R&D:

Type of Firm		Frequency
UDI Land Developers	0.6-1.0%	1
	Total	1
CHBA Land Developers	1.1-3.0%	2
	Total	2
HomeBuilders	0-0.5%	2
	1.1-3.0%	1
	Total	3
Community Planners	1.1-3.0%	2
	3.1-6.0%	1
	More than 6.0%	1
	Total	4
Other Urban Consultants	0.6-1.0%	2
	Total	2

21. Please indicate how often you practice the activities listed below. (For respondents who design or build homes).

a) Choose fixed windows with an ER rating of +2, and operable windows with an ER rating of -11 or better.

Type of Firm		Percent
CHBA Land Developers	Some of the time	20
	Half of the time	20
	Most of the time	40
	All of the time	20
HomeBuilders	None of the time	28
	Some of the time	22
	Half of the time	33
	Most of the time	11
	All of the time	6

c) Perform regular waste audits

Type of Firm		Percent
CHBA Land Developers	Some of the time	60
	Half of the time	20
	All of the time	20
HomeBuilders	None of the time	37
	Some of the time	5
	Half of the time	28
	Most of the time	16
	All of the time	16

e) Install low-flow shower heads and low-flow aerators on faucets.

Type of Firm		Percent
CHBA Land Developers	Some of the time	20
	Most of the time	60
	All of the time	20
HomeBuilders	None of the time	26
	Some of the time	21
	Half of the time	11
	Most of the time	5
	All of the time	37

g) Install more energy efficient compact fluorescent lights instead of standard incandescents.

Type of Firm		Percent
CHBA Land Developers	Some of the time	60
	Half of the time	40
HomeBuilders	None of the time	37
	Some of the time	26
	Half of the time	21
	Most of the time	11
	All of the time	5

b) Install high-performance windows instead of conventional ones.

Type of Firm		Percent
CHBA Land Developers	Some of the time	60
	Half of the time	20
	Most of the time	20
HomeBuilders	None of the time	16
	Some of the time	47
	Half of the time	26
	Most of the time	11

d) Install water-efficient toilets rather than conventional ones.

Type of Firm		Percent
CHBA Land Developers	Some of the time	20
	Most of the time	60
	All of the time	20
HomeBuilders	None of the time	28
	Some of the time	11
	Half of the time	17
	Most of the time	22
	All of the time	22

f) Install high-efficiency gas-fired furnaces over conventional ones.

Type of Firm		Percent
CHBA Land Developers	Some of the time	20
	Most of the time	80
HomeBuilders	None of the time	21
	Some of the time	11
	Half of the time	11
	Most of the time	32
	All of the time	26

h) Select appliances with the lowest EnerGuide label.

Type of Firm		Percent
CHBA Land Developers	Some of the time	40
	Half of the time	40
	All of the time	20
HomeBuilders	None of the time	22
	Some of the time	33
	Half of the time	11
	Most of the time	11
	All of the time	22

1) Install solar paneling for heating homes.

Type of Firm	Percent
CHBA Land Developers	80
HomeBuilders	89
Some of the time	5
All of the time	5

22. Please indicate what degree of influence your business has for introducing innovations for "Affordability", "Sustainability", and "Resources Conservation" in projects where you are involved in the community planning, subdivision, urban design and/or construction of housing.

- a) House design(s) and technologies for optimal energy and water consumption
- b) Community plan/urban design for compact form and overall higher density
- c) Greater ecological sensitivity in the overall physical environment of a new community project.
- d) The design of housing - for e.g. home-office, second unit, flexibility for expansion...
- e) Sizes of the homes in a new community project.
- f) Sizes (and dimensions) of the lots in a new community project.
- g) Configuration and orientation of the streets and lots for optimal solar/climatic response (subdivision)
- h) Xeriscaping for home lots and public areas
- i) Street design standards
- j) Pedestrian/cyclist access and circulation system in a community
- k) Choice of construction materials for housing - low embodied energy, recycled materials, etc.
- l) Number, percentage, and location of single-family and multi-unit and attached housing in a new community project.
- m) Diversity of housing choice and prices for all income groups in a new community project.

Type of Firm	Question 22	% Response													
		a	b	c	d	e	f	g	h	i	j	k	l	m	
UDI Land Developers n=12	No influence at all	56	9	9	11	0	0	0	0	0	0	0	0	0	0
	Marginal influence	22	0	0	22	0	0	0	0	0	0	0	0	0	0
	Considerable influence	0	9	36	18	22	27	27	29	27	27	27	27	27	27
	Strong or Decisive influence	11	46	27	0	55	73	18	14	9	8	9	0	0	9
CHBA Land Developers n=6	No influence at all	0	20	25	0	0	0	0	0	0	0	0	0	0	0
	Marginal influence	50	0	0	20	0	25	0	0	0	0	0	0	0	0
	Considerable influence	0	20	25	40	75	75	25	25	0	0	0	0	0	0
	Strong or Decisive influence	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HomeBuilders n=20	No influence at all	33	33	42	0	0	0	0	0	0	0	0	0	0	0
	Marginal influence	33	6	25	6	6	16	7	9	9	21	14	18	18	18
	Considerable influence	13	17	8	25	8	16	7	7	7	0	0	0	0	0
	Strong or Decisive influence	7	25	17	31	61	37	21	7	7	7	7	7	7	7
Community Planners n=18	No influence at all	38	0	0	0	0	0	0	0	0	0	0	0	0	0
	Marginal influence	0	0	0	0	42	17	17	0	0	0	0	0	0	0
	Considerable influence	13	33	36	0	8	25	50	29	33	33	33	33	33	33
	Strong or Decisive influence	0	40	43	0	50	42	21	11	11	13	13	13	13	13
Other Urban Consultants n=10	No influence at all	50	0	22	50	20	0	0	0	0	0	0	0	0	0
	Marginal influence	25	29	0	17	0	14	14	14	14	14	14	14	14	14
	Considerable influence	0	14	33	0	0	0	0	0	0	0	0	0	0	0
	Strong or Decisive influence	0	43	44	0	40	40	57	57	57	57	57	57	57	57

Survey Section C - Consumer Preferences for Sustainability Features

In 1996 CMHC published a project report titled *Testing Consumer Receptivity to Sustainable Community Design: Designing an Alternative for the Residential Suburb in Calgary and Seeking the Consumer's Opinions and Choices*.

In the study consumers were asked what they think about possibilities for environmental improvement and resources conservation, and better affordability and housing choice that can be offered when a community is designed to achieve sustainable development goals. The study included visualization of design and land use alternatives. Information was provided to respondents about capital and operating costs for alternative technologies in house design and community infrastructure. This project also included an illustrative 'redesign' of an existing community, with neighborhood densities ranging between 7 and 10 units per acre.

23. A selection of findings from the *Testing Consumer Receptivity* are listed below. Are these findings consistent with your experience? Do your market studies "test" for these preferences?

- (a) *A vast majority of respondents would definitely choose the package of 8 sustainability and resource-conserving features in the home**

* The 8 home features were: energy efficient building envelope, energy and water conserving interior fixtures, district heating, "dry landscaping", recycle & re-use grey water, collecting and re-using rain water, recycling & composting in the home, permeable surfacing for driveways and patios.

Consistent with your experience?

	Percent
Yes	18
No	82

Do you test such preferences?

	Percent
Yes	28
No	72

- (b) *A vast majority of respondents strongly favour a package of 3 street and lot features - reduced street widths, reduced front yard depth, and calm street designs*

Consistent with your experience?

	Percent
Yes	51
No	49

Do you test such preferences?

	Percent
Yes	43
No	57

- (c) *A majority of respondents would want a second residential unit option for their own house*

Consistent with your experience?

	Percent
Yes	31
No	69

Do you test such preferences?

	Percent
Yes	33
No	67

- (d) *A significant majority of respondents would favour participating in the "front end" planning of their community and house design*

Consistent with your experience?

	Percent
Yes	52
No	48

Do you test such preferences?

	Percent
Yes	38
No	62

- (e) *A vast majority of respondents favour a community-level, neighborhood level facility and service for recycling*

Consistent with your experience?

	Percent
Yes	77
No	23

Do you test such preferences?

	Percent
Yes	27
No	73

- (f) *A large majority favour the idea of a more compact (more dense) community, so that a vital community core with diverse services and civic places can be supported.*

Consistent with your experience?

	Percent
Yes	12
No	88

Do you test such preferences?

	Percent
Yes	41
No	59

- (g) *A majority favour a predominantly grid street system with few cul de sacs*

Consistent with your experience?

	Percent
Yes	13
No	87

Do you test such preferences?

	Percent
Yes	48
No	52

Survey Section D – Business Practices and the Environment

24. Does your firm have an environmental policy or standard operating procedure that considers environmental concerns?

Type of Firm		Percent
UDI Land Developers	Yes	42
	No	33
	Don't Know	17
	No Opinion	8
CHBA Land Developers	Yes	50
	No	17
	No Opinion	33
HomeBuilders	No	80
	Don't Know	20
Community Planners	Yes	44
	No	44
	Don't Know	6
	No Opinion	6
Other Urban Consultants	Yes	25
	No	38
	Don't Know	25
	No Opinion	13

All Respondents	Percent
Yes	27
No	50
Don't Know	15
No Opinion	8

24a. If yes, please summarize the main points:

UDI LAND DEVELOPERS

- Level I Environmental Assessment report on all property.
- Regular monitoring and reporting on lands
- Environmental issues are considered in planning new projects

CHBA LAND DEVELOPERS

- Level I Environmental Assessment required for all lands we purchase
- Carry out Environmental Phase I reports on all land. Sensitive to the retention of natural attractive features desirable in a new community.
- We do what we can e.g. recycle waste materials
- Follow City Standards
- We will be the first subdivision in Calgary to work at re-cycling. This is a CHBA project in conjunction with builder waste from construction of homes.
- Follow standard environmental guidelines.

COMMUNITY PLANNERS

- It is our policy to reduce environmental impact for all scales of development (community to individual homes)
- My own insights and methods of design and development.
- Use organic materials, usage as much as possible, insulate for high efficiency.
- We design based upon ecological integrity, sense of place, environmental fit. This is far too broad a question to answer.
- (1) To incorporate as many sustainable design features as possible without resulting in a time consuming approval process. (2) Company purchases must be toward the more environmentally-friendly product/service. (3) Recycling, energy conservation.

OTHER URBAN CONSULTANTS

- It is inherent in the day to day activities rather than a fixed policy or procedure
- Use of recycled materials; Recycling materials
- Landscape architecture deals specifically with environmental issues design requirements and practices.

25. How would you rate your familiarity with the following guidelines and techniques for improving a company's environmental performance and product quality?

- a) ISO 9000 Guidelines for Quality Management
- b) ISO 14000 Guidelines for Environmental Management
- c) Canadian Standards Association(CSA Z750-94) – A Voluntary Environmental Management System
- d) Urban Land Institute (ULI) – Principles for Environmentally Responsible Development
- e) Environmental Audits
- f) Lifecycle Costing
- g) Waste Audits

Type of Firm	Question 25	a	b	c	d	e	f	g
		% Response						
UDI Land Developers n=12	Not at all Familiar	60	60	40	27	9	30	30
	Somewhat Familiar	20	30	50	18	27	0	20
	Moderately Familiar	20	10	10	36	27	40	30
	Considerably Familiar	0	0	0	18	18	20	20
	Very Familiar	0	0	0	0	18	10	0
CHBA Land Developers n=6	Not at all Familiar	67	83	67	17	17	17	17
	Somewhat Familiar	17	17	17	33	33	0	33
	Moderately Familiar	0	0	17	33	0	67	0
	Considerably Familiar	17	0	0	17	33	17	50
	Very Familiar	0	0	0	0	17	0	0
Homebuilders n=20	Not at all Familiar	45	65	55	55	55	65	45
	Somewhat Familiar	15	15	25	30	15	20	15
	Moderately Familiar	25	20	10	10	10	15	25
	Considerably Familiar	10	0	5	5	20	0	15
	Very Familiar	5	0	0	0	0	0	0
Community Planners n=18	Not at all Familiar	47	53	63	25	24	29	29
	Somewhat Familiar	18	24	25	25	6	18	29
	Moderately Familiar	18	18	6	31	35	35	29
	Considerably Familiar	12	6	6	19	29	6	6
	Very Familiar	6	0	0	0	6	12	6
Other Urban Consultants n=10	Not at all Familiar	50	88	75	38	13	25	43
	Somewhat Familiar	38	13	25	25	38	25	43
	Moderately Familiar	0	0	0	38	50	38	14
	Considerably Familiar	13	0	0	0	0	13	0
	Very Familiar	0	0	0	0	0	0	0

All Groups Combined n=66	Question 25	a	b	c	d	e	f	g
	Not at all Familiar	51	66	58	36	29	39	35
Somewhat Familiar	20	20	28	26	19	15	25	
Moderately Familiar	16	13	5	26	24	33	23	
Considerably Familiar	10	2	3	11	21	8	15	
Very Familiar	3	0	2	0	6	5	2	

26. Assuming that your organization is or will be considering adopting (or has already adopted) business practices for making your product(s) and operating practices more environmentally-friendly. Please rate the following factors that *would likely influence* (or have influenced) your business decisions.

- (a) Financial and lending institutions require or like to see environmental considerations in our business plans.
- (b) Adopting environmental/sustainability practices and products can give us a competitive advantage.
- (c) Environmental management/sustainability practices will play a part in anticipating and reducing environmental impacts that are (generally) associated with our industry.
- (d) Senior or municipal government regulations and standards are increasingly requiring better environmental management practices in our industry.
- (e) We can avoid or lower the risk of fines and liabilities relative to our product or practices.
- (f) Adopting better environmental practices can give us a competitive advantage by raising barriers to entry for new competitors.
- (g) Better environmental management/sustainability practices improve corporate image, and therefore help consolidate or improve our market share.
- (h) Better environmental management and sustainable design practices are a trend that our competitors are adopting.
- (i) Consumers expect us and our products to be more "environmentally-friendly" or meet sustainable development goals.

Type of Firm	Question 26	a	b	c	d	e	f	g	h	i
		% Response								
UDI Land Developers n=12	Not at all Influential	40	10	0	0	20	0	0	10	0
	Marginally Influential	10	40	30	10	10	80	20	30	40
	Moderately Influential	10	20	40	30	10	20	40	60	30
	Considerably Influential	30	10	30	50	50	10	30	0	30
	Extremely Influential	10	20	0	10	10	10	10	0	0
CHBA Land Developers n=6	Not at all Influential	17	0	0	17	33	17	17	17	17
	Marginally Influential	17	0	17	17	0	17	0	0	17
	Moderately Influential	33	50	33	33	33	50	50	67	33
	Considerably Influential	17	33	50	17	17	17	17	17	0
	Extremely Influential	17	17	0	17	17	0	17	0	33
Homebuilders n=20	Not at all Influential	26	11	5	0	11	26	5	26	11
	Marginally Influential	11	11	21	11	16	16	11	11	16
	Moderately Influential	21	21	47	53	37	16	37	32	26
	Considerably Influential	26	42	26	21	21	37	37	26	42
	Extremely Influential	16	16	0	16	16	5	11	5	5
Community Planners n=18	Not at all Influential	23	0	6	0	0	13	6	7	6
	Marginally Influential	23	13	6	6	6	33	13	13	19
	Moderately Influential	15	31	44	31	42	27	25	47	38
	Considerably Influential	31	44	38	56	33	13	44	33	25
	Extremely Influential	6	13	6	6	17	13	13	0	13
Other Urban Consultants n=10	Not at all Influential	33	0	17	14	14	14	14	0	0
	Marginally Influential	0	14	0	14	14	14	14	0	14
	Moderately Influential	33	29	50	29	14	14	14	43	29
	Considerably Influential	33	57	33	43	57	57	71	57	57
	Extremely Influential	0	0	0	0	0	0	0	0	0

All Groups Combined n=66	Question 26	a	b	c	d	e	f	g	h	i
		% Response								
	Not at all Influential	28	5	5	3	13	16	7	14	7
	Marginally Influential	13	16	16	10	11	28	10	12	21
	Moderately Influential	20	28	44	38	30	23	33	46	31
	Considerably Influential	28	38	33	38	33	28	40	26	33
	Extremely Influential	11	14	2	10	13	7	10	2	9

Survey Section E - Innovative Projects for Sustainable Community Design

27. A number of governmental and non-governmental agencies have been experimenting with innovative products, designs, and standards for improving the quality, affordability, and environmental performance of housing. Please indicate your degree of familiarity with the following innovation and research-design studies, projects or programs:

- a) "Edgemont II" - A Study in Sustainable Community Form
- b) Sprout: the versatile, dynamic house
- c) Affordability and Choice Today (ACT) - Regulatory Reform Activities to Improve Housing
- d) Healthy House (Vancouver, Toronto, Montreal)
- e) The "Grow Home"
- f) R2000 Homes
- g) Autonomous Sustainable House (ASH) in Calgary
- h) EnviroHome demonstration program/projects
- i) Assessment of Built Projects for Sustainable Communities

Type of Firm	Question 27	a	b	c	d	e	f	g	h	i
		% Response								
UDI Land Developers n=12	Not at all Familiar	33	58	67	33	42	0	50	46	50
	Somewhat Familiar	17	25	17	25	17	17	17	36	50
	Moderately Familiar	8	17	8	17	17	17	25	18	0
	Considerably Familiar	17	0	8	17	17	33	8	0	0
	Very Familiar	25	0	0	8	8	33	0	0	0
CHBA Land Developers n=6	Not at all Familiar	63	33	33	17	33	0	33	33	50
	Somewhat Familiar	0	33	33	17	17	17	33	33	33
	Moderately Familiar	17	0	17	50	17	0	17	33	0
	Considerably Familiar	0	17	17	0	17	67	0	0	17
	Very Familiar	0	17	0	17	17	17	17	0	0
Homebuilders n=20	Not at all Familiar	70	80	70	55	55	0	70	40	70
	Somewhat Familiar	10	10	10	20	10	5	15	25	20
	Moderately Familiar	15	5	5	10	10	20	5	15	10
	Considerably Familiar	5	5	5	10	25	50	5	10	0
	Very Familiar	0	0	10	5	0	25	5	10	0
Community Planners n=18	Not at all Familiar	20	67	67	29	33	7	40	53	67
	Somewhat Familiar	7	27	13	7	13	7	40	33	7
	Moderately Familiar	40	0	0	29	20	27	7	13	20
	Considerably Familiar	20	7	0	14	27	40	7	0	7
	Very Familiar	13	0	0	21	7	20	7	0	0
Other Urban Consultants n=10	Not at all Familiar	38	100	100	63	71	0	63	68	66
	Somewhat Familiar	13	0	0	25	14	29	0	0	14
	Moderately Familiar	13	0	0	0	0	57	13	0	0
	Considerably Familiar	38	0	0	13	14	0	0	0	0
	Very Familiar	0	0	0	0	0	14	25	13	0

All Groups Combined n=66	Question 27	a	b	c	d	e	f	g	h	i
		Not at all Familiar	48	70	74	42	47	2	54	50
Somewhat Familiar	10	18	13	18	13	12	21	27	23	
Moderately Familiar	20	5	5	18	13	23	11	15	8	
Considerably Familiar	15	5	5	12	22	40	5	3	3	
Very Familiar	8	2	3	10	5	23	8	5	0	

28. Have you implemented any concepts, ideas or design practices listed in question 27 in any of your residential communities or house-building projects?

Type of Firm		Percent
UDI Land Developers	Yes, Some	33
	No, None	67
CHBA Land Developers	Yes, Some	67
	No, None	33
HomeBuilders	Yes, Some	40
	No, None	60
Community Planners	Yes, Many	15
	Yes, Some	38
	No, None	46

All Respondents	Percent
Yes, Many	3
Yes, Some	36
No, None	60

28a. If you responded Yes, briefly describe what idea(s) you used and which project/location it was used:

Responses for this question were few and not specific with respect to the type of innovation and project location. However, of those who did respond, four indicated that R2000 standards were applied and 2 respondents said they have built a "Grow Home" in Calgary. Resource-conserving type innovations – such as more energy efficient windows - were also cited by some.

29. Please indicate your degree of familiarity with the content of each of the following research publications and technical reports about housing design, technologies, market trends listed below.

- (a) *Infrastructure Costs Associated with Conventional and Alternative Development Patterns, Summary Report*, Essiembre-Phillips-Desjardins Associates Ltd., 1995, CMHC, Regional Municipality of Ottawa-Carleton.
- (b) *Testing Consumer Receptivity to Sustainable Community Design: Designing An Alternative for the Residential Suburb in Calgary and Seeking the Consumer's Opinions and Choices*, William T. Perks and Andrea Wilton-Clark, 1996, CMHC.
- (c) *Sustainable Residential Developments: Planning, Design and Construction Principles ("Greening the Grow Home")*, Avi Friedman, Affordable Homes Program, School of Architecture, September 1993.
- (d) *Planning for Telework and Home-based Employment: A Canadian Survey on Integrating Work into Residential Environments*, David Marlor, March 1995, CMHC.
- (e) *Innovative Site Development Standards and Practices: Review of Industry Perceptions*, Final Report, March 1993, Alberta Municipal Affairs: Edmonton, Alberta.
- (f) *Residential Preferences, Growth Management, and Urban Policy*, Peter Harris, et. al., February 1995, Seattle Office of Management and Planning: Seattle, Washington.
- (g) *Opportunities for Accelerating Implementation of Environmentally Sustainable High Performance Housing*, Peter Booth and Peter S. Kettenbell, December 1994, CMHC.
- (h) *Construction and the Environment: New Home Builders and Renovators Can Help Build a green Future*, 1993, CMHC.
- (i) *Achieving Infrastructure Cost Efficiency/Effectiveness Through Alternative Planning Approaches*, Marshall Macklin Monaghan Ltd., 1992, CMHC.
- (j) *Future Trends in Housing: Attitudes of Potential Home Buyers Towards Housing*, Angus Reid Group, 1995.
- (k) *Towns and Town-Making Principles*, Andres Duany and Elizabeth Plater-Zyberk, 1992, Harvard University Graduate School of Design.
- (l) *Canadians and their Housing Expenditures, 1978-1992*, John Engeland, 1994, CMHC.

Type of Firm	Question 29	a	b	c	d	e	f	g	h	i	j	k	l	
		% Response												
UDI Land Developers n=12	Not at all Familiar	38	18	55	36	36	55	73	55	46	18	70		
	Somewhat Familiar	9	55	18	55	0	36	27	36	9	27	9	20	
	Moderately Familiar	18	18	9	9	27	0	0	0	0	9	18	10	
	Considerably Familiar	18	0	9	0	27	9	0	9	36	9	27	0	
	Very Familiar	18	9	9	0	9	0	0	0	0	9	27	0	
CHBA Land Developers n=6	Not at all Familiar	83	80	83	83	87	83	83	83	83	0	87	83	
	Somewhat Familiar	0	20	17	17	17	0	17	17	0	33	0	17	
	Moderately Familiar	17	0	0	0	0	17	0	0	0	17	50	17	0
	Considerably Familiar	0	0	0	0	17	0	0	0	0	0	17	0	0
	Very Familiar	0	0	0	0	0	0	0	0	0	0	0	17	0
Homebuilders n=20	Not at all Familiar	95	80	80	70	85	90	90	75	95	40	70	74	
	Somewhat Familiar	5	5	0	10	10	5	10	5	0	10	10	5	
	Moderately Familiar	0	10	10	10	5	5	0	15	5	15	15	11	
	Considerably Familiar	0	0	5	10	0	0	0	5	0	25	5	5	
	Very Familiar	0	5	5	0	0	0	0	0	0	10	0	5	
Community Planners n=18	Not at all Familiar	60	50	47	88	50	79	86	79	64	57	21	86	
	Somewhat Familiar	27	19	13	8	14	0	14	0	7	7	14	7	
	Moderately Familiar	7	8	33	8	14	14	0	14	14	21	14	0	
	Considerably Familiar	7	13	7	0	14	7	0	7	14	14	29	7	
	Very Familiar	0	13	0	0	7	0	0	0	0	0	21	0	
Other Urban Consultants n=10	Not at all Familiar	88	88	75	75	83	88	100	100	100	63	44	86	
	Somewhat Familiar	13	13	13	13	0	0	0	0	0	13	22	14	
	Moderately Familiar	0	0	0	13	38	13	0	0	0	25	0	0	
	Considerably Familiar	0	0	13	0	0	0	0	0	0	0	22	0	
	Very Familiar	0	0	0	0	0	0	0	0	0	0	11	0	

All Groups Combined n=68	Question 29	a	b	c	d	e	f	g	h	i	j	k	l
		Not at all Familiar	73	62	67	70	63	80	86	76	80	44	45
Somewhat Familiar	12	20	10	18	8	8	14	10	3	15	12	11	
Moderately Familiar	7	8	13	8	15	8	0	8	7	20	13	5	
Considerably Familiar	5	3	7	3	10	3	0	5	10	15	17	4	
Very Familiar	3	7	3	0	3	0	0	0	0	5	13	2	

Appendix III: Sustainable Suburbs Study Policies and Design Guidelines

Policy Statement	Design Guidelines
<p>C.1 Mixed use public activity centres must be located in all communities in the form of a community centre and a number of neighborhood nodes.</p>	<p>a) Plan for up to 1 sq m of commercial development per resident in the community b) New sector and regional centres be planned a minimum of 3.2 km driving distance from any community centre c) 5,500 to 7,400 sq m of commercial space is recommended on a 1.2 to 2.4 ha site. d) Offices and public uses will require additional acreage at the community centre.</p>
<p>C.2 The community centre and neighborhood nodes must be located strategically and should be as central as possible, while recognizing topographical constraints.</p>	<p>a) Local streets leading to the community centre and neighborhood nodes should be as pedestrian-friendly as possible b) There should be a number of direct linkages that allow residents a choice of routes to community centres, as opposed to a hierarchy of streets that funnel traffic onto a collector loop.</p>
<p>C.3 A mix of both public and private activities must be located in and around the community centre and neighborhood nodes.</p>	<p>a) The key component to community centre viability is a range and mix of uses to attract residents to the site for a variety of purposes. In planning the site, consideration should be given as to how the mix of uses might vary if, after the community is substantially built-out, there proves to be insufficient demand for all the recommended retail. b) Opportunities for housing should be explored. c) Permitted Uses, Certainty of Use, and a Direct Control designation for specific uses should be considered as ways to encourage the mix of activities. d) Higher density housing should be located around the community centre and neighborhood nodes in order to maximize the number of residents within the shortest walking distance. Higher density around transit facilities is also desirable.</p>
<p>C.4 Community centre and neighborhood node site designs must encourage pedestrian and bicycle access and transit use.</p>	<p>a) Supermarkets in the community centres should have side or rear parking whenever possible in order to maintain the continuity of the pedestrian street environment. b) Shared and/or on-street parking should be considered where there is a mix of uses with a staggered peak period of demand. Commercial on-street parking should not be allowed on streets with residential frontages. c) Site design should be such that pedestrians do not have to cross a parking lot to get from a sidewalk or transit stop to shops and services. d) In a main-street configuration, building frontage should be continuous and pedestrian-unfriendly gaps, such as wide parking lots, avoided. e) Community centre and neighborhood nodes should be at the hub of local roads. f) Storefronts should be narrow, incorporating window frontage, awnings for shelter, and recessed doorways g) Exterior landscaping should be provided for pedestrian shelter and visual relief. h) Bicycle parking should be provided on-site. i) At the community centre, sidewalk widths should be as follows: - a minimum of 2 m where street parking is parallel - minimum of 2.5 m where parking is angled at 90 degrees j) Street frontage building height should be no more than the right-of-way width on which it fronts.</p>
<p>C.5 Compatible home occupation should be encouraged.</p>	<p>No specific design guidelines</p>
<p>C.6 Community centre and neighborhood node sites may be developed with interim uses, provided that the eventual development of the preferred mix of uses is not precluded.</p>	<p>a) Interim uses could include temporary buildings, temporary uses in permanent buildings, or some permanent uses in temporary facilities. b) Other uses might be a tree nursery, community gardens, farmers' market, a central community mailbox, etc. c) The City should use its resources to encourage interim uses.</p>
<p>OS.1 Existing natural systems (including significant environmentally sensitive areas) must be integrated into new communities and will form part of a comprehensive and contiguous regional open space system.</p>	<p>a) Various components of an open space system, utility rights-of-way, linear parks, etc. may be used to ensure that a contiguous regional open space system is maintained. b) Components of the regional pathway system should follow off-street linear parks to ensure a safe, viable option for transportation and recreation. c) Channelization, utility crossings, etc., within natural areas should be minimized.</p>

<p>OS.2 Built open space (including joint use sites) must be located, sized and configured to create places that are functional, safe, flexible and form a linked open space system.</p>	<p>a) Sub-neighborhood, neighborhood and community parks should be distributed so that all community residents have access to some public activity areas.</p> <p>b) Park configuration and design should respect and reinforce views and linkages to streets and other public spaces and buildings.</p> <p>c) Joint use sites should facilitate safe, efficient pedestrian movement to major attractions. Joint use sites may represent the major land use in a neighborhood node if there is little commercial development, but their design and configuration must not detract from the accessibility and effectiveness of the transit stop or other activities.</p> <p>d) Parks and joint-use sites should be bounded by local streets. These can make public areas safer because they are visible from the surrounding streets and the residences fronting on the streets. Further, it provides for greater on-street parking and reduces traffic problems associated with these facilities.</p> <p>e) Small single-use parks should be avoided and their function (e.g. play areas) incorporated into larger multi-use parks.</p> <p>f) Local open space elements should be linked, but not necessarily contiguous. Linkages in the open space system should be provided through the use of: street systems; components of the regional pathway system; linear parks; and utility rights-of-way.</p> <p>g) The local pedestrian and cyclist systems within the community should primarily follow the enhanced street system (which has residential frontages). Local streets must be designed to safely accommodate cyclists as well as cars.</p> <p>h) Local open space linkages through parking lots or along the rear of residential developments (which duplicates the street system) should be avoided.</p> <p>i) Components of the regional pathway system should follow safe, off-street connections through linear parks. If it is necessary to follow the street system, the street design should accommodate regional pathway users.</p> <p>j) Parks should be designed to accommodate the anticipated intensity of use through appropriate configuration and use of materials. Where possible, natural vegetation should be retained.</p>
<p>OS.3 Local open space must provide a variety of opportunities for people of all ages, interests and abilities.</p>	<p>a) Large, engineered stormwater facilities which limit recreational opportunities should be discouraged. Engineered stormwater facilities should be aesthetically pleasing and integrated into the open space system.</p> <p>b) Stormwater ponds should incorporate natural elements such as varied topography and native plant material which can enhance the recreational opportunities of the site and improve water quality.</p> <p>c) Consider a broad range of possible activities (e.g. community gardens) in addition to the more common recreational pursuits.</p>
<p>OS.4 Joint use sites (elementary and/or junior high school sites and playfields) should be located in close proximity to the community centre or neighborhood nodes, on the transit route and close to daycare and other services.</p>	<p>a) Work with the Site Planning Team to assess the community's needs in terms of joint use sites.</p> <p>b) Schools should be in a location that maximizes the number of students who can walk to school.</p> <p>c) Joint use sites should be bounded by streets to provide adequate road frontage and access to meet the needs of bus and vehicle loading in a safe and efficient manner.</p> <p>d) Large joint use sites (that accommodate schools, playfields and community facilities) can undermine efforts to achieve higher residential densities around the community centre. Not all playfields are required for the school curriculum; therefore, separation non-essential playfields from these joint use sites should be considered. These playfields will be provided elsewhere in the community at locations which will minimize residential/sportsfield conflicts.</p>

<p>OS.5 The community centre must accommodate a community hall or similar facilities and contain functional public open space.</p>	<p>a) Provide a site for a community facility in the community centre. The type of facility may vary, depending on the needs of residents and their involvement in designing, operating and maintaining the facility. Further, its location may depend on opportunities for shared use of sites and/or buildings.</p> <p>b) Where possible, the residents of developing communities should be involved in the planning of the community facility.</p> <p>c) Provide a commons or central park in the community centre with opportunities for both active and passive recreation (e.g. skating, tennis, basketball, play area, seating, fountains, gardens, etc.). While this may incorporate a hard-surfaced plaza, the emphasis should be on providing a green, treed area for social interaction, relaxation, recreation and visual relief.</p> <p>d) Neighborhood nodes may contain a smaller public open space component.</p> <p>d) Large joint use sites can undermine the efforts to achieve higher residential densities around the community centre. Separation of non-essential playfields from these sites, and their relocation elsewhere in the community, should be considered.</p>
<p>OS.6 Opportunities for long-term community financing and involvement in the design, construction, operation and maintenance of community facilities or local open space should be pursued.</p>	<p>a) During preparation of Community Plans, consider how community facilities or special open space features or amenities could be financed. All developers/landowners should work with the City Administration to jointly determine and assess options for possible solutions (e.g. developers could finance the cost of the community building, additional tree planting, etc., by a small additional charge on each lot).</p> <p>b) Consider establishing a homeowners' association where residents contribute directly to the cost of managing and maintaining open space features or amenities. No homeowners within the community shall be excluded, but the long-term implications of mandatory or optional membership and participation should be evaluated.</p> <p>c) Community facilities may be the first structures in the community centre and could play an important role in creating a community focal point and triggering further development.</p>
<p>OS.7 Opportunities for shared use of sites and/or buildings for public facilities (e.g. Fire, emergency services, library, police, schools, community facilities, social services, health services, etc.) should be pursued.</p>	<p>a) Work with the Shared Use of Facilities Committee (and the Federation of Calgary Communities for community facilities) to determine options and possible solutions during preparation for GRAMPS for:</p> <ul style="list-style-type: none"> - shared use of a site to take advantage of parking opportunities, land efficiencies, location, etc., and; - shared use of a building to take advantage of land efficiencies, shared/lower construction and maintenance costs, etc.
<p>H.1 All communities must achieve a minimum density of 17.3 units per gross ha (7 units per gross ac).</p>	<p>No specific guidelines.</p>
<p>H.2 All communities must provide a wide choice of housing types in addition to single-family. Buildings should be predominantly oriented to the street and be compatible in architectural style and finish.</p>	<p>a) See policy H.4 guidelines regarding location of multi-family housing.</p> <p>b) The garage and driveway should not be the dominant architectural feature. Front drive garages should not protrude far in front of the house. Garages located at the rear of the lot with lane access are encouraged. This issue is especially important with narrow-lot housing.</p> <p>c) Front porches, bays and balconies are semi-private spaces that should be encouraged to provide interaction with pedestrians and 'eyes on the street' security.</p> <p>d) Blank walls, fences or rows of garage doors fronting the street, which provide minimal access or visual interest, should be avoided.</p> <p>e) Small front yard setbacks are encouraged to bring houses close to the street and to provide human scale and visual interest. This allows a greater portion of the lot to be private backyard (provided lot depth remains the same).</p> <p>f) Additional dwelling units in basements, lofts, or over garages (with proper insulation against fumes) should be provided, particularly in locations close to transit stops, the community centre and neighborhood nodes.</p> <p>g) Housing should be constructed and landscaped in accordance with the recommendations of Section 4.7.</p> <p>h) Walled residential areas, which segregate parts of communities, should be avoided.</p>

<p>H.3 Policies and guidelines ensuring that an adequate choice of low to medium income housing is provided in suburban communities shall be developed as part of a new comprehensive city-wide package of policies on affordable housing.</p>	<p>As an interim measure, pending the introduction of the proposed policy on affordable housing, developers are encouraged to target a minimum of approximately 10 percent of all dwelling units (any type, excluding additional dwelling units) in a community at households earning more than the median Calgary household income.¹</p>
<p>H.4 Most multi-family housing should be located near community centres, neighborhood nodes, recreational areas or other public amenities, and be close to transit stops.</p>	<p>a) Multi-family housing should be located on attractive sites, comparable to conventional single family housing, and enjoy similar amenities. It does not have to be on the best but it should not be placed in marginal locations or used as a buffer against road noise, industrial development, etc. b) Large areas of multi-family housing are best avoided. Sites of 1.2 ha (3 ac) or less, and designs where all units have street frontage, fit better predominantly single family areas and are preferred.</p>
<p>T.1 The street system in a community must provide all residents with direct links between key community focal points (community centre, neighborhood nodes, schools, open spaces, major entrances).</p>	<p>a) The street layout should be based on a system of 'connector streets' that link the major destinations. b) Connector streets should be designed without barriers (e.g. fences, medians, etc.) to pedestrians and cyclists. c) Features that moderate vehicle speed to make walking and cycling safe and comfortable should be incorporated in street design. Examples include narrower pavement where low traffic volume is expected, shorter blocks and reduced corner curb radii (See Policy T.3) d) Use of rear lanes as part of the pedestrian and cyclist system should be avoided. e) Consideration should be given to a grid or modified grid pattern for residential streets to support the alternative routes provided by the connectors, and to improve emergency vehicle access. f) Where short-cutting traffic may become a problem, consideration should be given to modifying the street layout to discourage vehicle traffic, while still maintaining efficient pedestrian, cyclist and transit routes.</p>
<p>T.2 The transit system must be integrated into the community design and be a key component of the community centre, neighborhood nodes and other community focal points.</p>	<p>a) Transit stops should be incorporated into the community centre and neighborhood nodes and should be attractive structures, architecturally compatible with adjoining buildings. They should provide shelter and seating for pedestrians, convenient passenger loading/unloading zones, telephones, adequate lighting, and secure bicycle storage. If development of the community centre is delayed, temporary transit shelters should still be provided at appropriate locations. The City should try to find ways of providing such shelters, perhaps in conjunction with other uses. b) Transit stops not located in the community centre or neighborhood nodes should be similarly designed, but may contain fewer features. c) Large open areas, park'n'ride and other parking facilities should be designed so as not to create a large separation between transit stops and transit-users.</p>
<p>T.3 A new package of street design standards (road hierarchy, width, right-of-way, boulevard and intersection design, landscaping) must be developed to meet the needs of pedestrians, cyclists and transit-users, while continuing to provide for vehicle transportation.</p>	<p>a) The streetscape should incorporate features that are aesthetically pleasing and provide more of a public presence ('eyes on the street'): buildings which front on the street, porches, front-windows, small front yard setbacks and shade trees along the street. b) Rear lanes and/or shared driveways should be considered in residential areas for garage access. c) Where possible, streets should frame vistas of the community centre, parks and natural features. d) Pedestrian routes should be bordered by residential frontages, public parks, plazas or commercial uses. e) Local pedestrian and cyclist routes on the street are preferred to rear and sideyard pathways.</p>

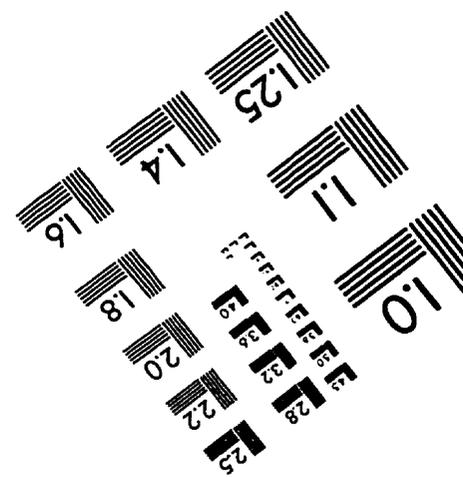
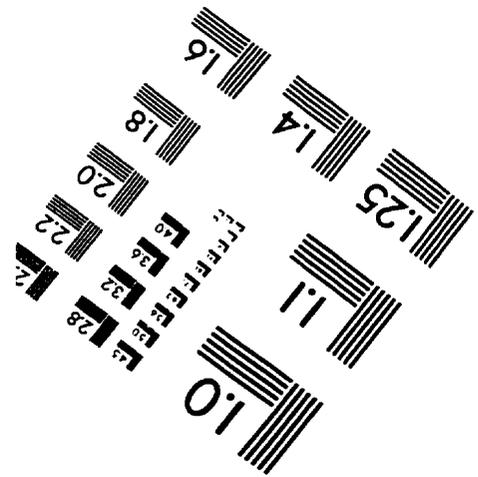
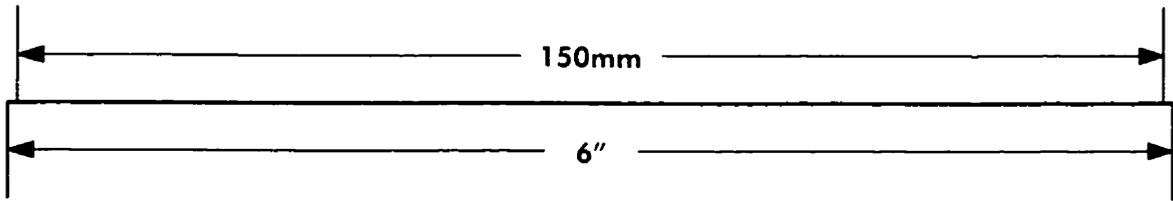
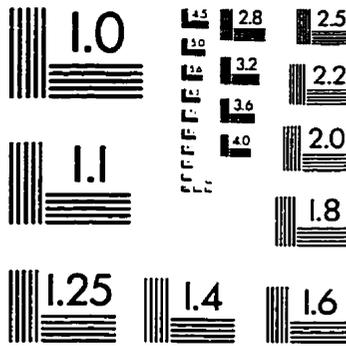
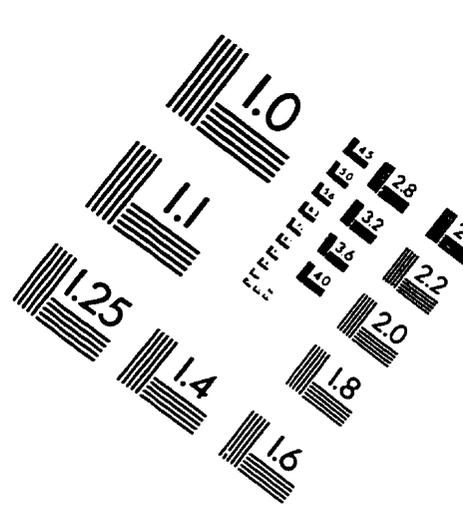
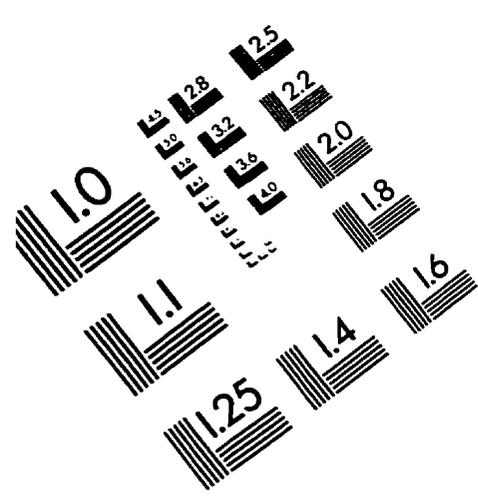
<p>E.1 Builders are encouraged to ensure that all new buildings in new communities are audited for construction waste.</p>	<p>a) A waste audit should address the following waste categories:</p> <ul style="list-style-type: none"> - Dimensional Lumber - Drywall - Masonry and Tile - Manufactured Wood - Corrugated Cardboard - Asphalt - Fibreglass - Metal - Plastic and Foam - Other Packaging <p>b) A wood shedder should be provided on construction sites to shred wood products for use in landscaping public areas.</p>
<p>E.2 Builders are encouraged to use recycled materials in the construction of new buildings when supplies are available, existing standards allow, and the cost of materials is feasible.</p>	<p>a) Builders should identify the suppliers of recycled products and make this information available to home buyers so that informed choices can be made on product selection.</p>
<p>E.3 Provision for a recycling depot must be included in the design of the community centre.</p>	<p>a) Parking at the depot, for purposes other than the drop-off of recyclables, should be restricted</p> <p>b) Community associations should establish a collection program for recyclables aimed those who cannot, or choose not to drive to the recycling depots.</p>
<p>E.4 Builders are encouraged to equip all buildings (residential, commercial and institutional) in new communities with bins for sorting recyclable dry waste (paper, plastic, metal and glass) and to locate a permanent composter on site for degradable wet waste and yard waste.</p>	<p>a) Measure: should be considered for the alternative storage and collection of compostable materials destined for centralized composting units.</p> <p>b) Community associations should coordinate recycling programs, bottle drives, book drives, etc., as a source of revenue for community improvement projects.</p> <p>c) Community associations should promote and assist, where appropriate, the endeavours of agencies collecting used household goods, such as appliances, furniture, clothing, etc.</p> <p>d) Commercial/retail outlets in new subdivisions should be encouraged to promote the use of biodegradable or recycled products (e.g., paper bags, cloth bags, recycled plastic, etc.)</p>
<p>E.5 As part of the future Integrated Solid Waste Management plan, the feasibility of waste limits and/or yard waste bans will be determined.</p>	<p>a) In conjunction with the provision of composters on all residential, commercial and institutional sites in new communities, a yard waste ban should also be considered, regardless of whether general waste limits are also imposed.</p>
<p>E.6 All homes in new communities should have water meters and manufactured water-saving fixtures.</p>	<p>a) 'Ecological landscaping' or 'xenscape'² should be used as a means to reduce water consumption and fertilizer and pesticide use.</p> <p>b) Rain water should be collected to supplement residential watering.</p> <p>c) Community associations should work with Calgary parks and Recreation and public health agencies to determine the feasibility of using recycled or 'grey water' for irrigation on public spaces.</p>
<p>E.7 Alternative methods to traditional stormwater management techniques must be examined, in terms of appropriateness and cost, for use in new communities.</p>	<p>a) Natural drainage systems should be used instead of artificial stormwater management systems, where site conditions allow. Water quality and/or flow levels should remain at pre-development levels, so that the natural integrity of the system is not jeopardized.</p> <p>b) The location and configuration of stormwater management facilities, particularly retention facilities, should complement the open space system, reinforce views and accommodate public access for social interaction and passive recreational use.</p> <p>c) Native vegetation should be used to enhance water quality, provide passive recreation use and control public access to the water's edge, where necessary.</p> <p>d) The area of impervious surfaces (pavement, asphalt, cement) should be reduced and alternative materials that allow water percolation should be used wherever possible.</p>

<p>E.8 Builders are encouraged to design, locate and construct all buildings in new communities with the objective of reducing energy consumption.</p>	<ul style="list-style-type: none"> a) Houses should be positioned, where appropriate, to reduce sun blockage. b) Attached greenhouses are encouraged to trap and redistribute passive solar heat. c) Buildings should have vestibules/mud rooms to minimize the amount of heat loss through entering and exiting. d) Energy-saving appliances and lighting fixtures should be incorporated in all buildings. e) The surface exterior of buildings should be minimized. f) Buildings should incorporate air barriers and vapour retarders to prevent heat loss from air leaks. g) Buildings should have an open area plan to allow for maximum distribution of sunlight. h) Buildings should have large south/southeast facing windows and incorporate skylights to maximize natural lighting. i) Buildings should incorporate radiant floor heating versus forced air heating systems. j) Heating systems should be appropriately sized for the building. k) Buildings should incorporate centralized mechanical ventilation in conjunction with airtight design techniques.
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¹ Encouraging developers to provide approximately one in ten suburban homes to be affordable by half of all Calgary households, addresses affordable home ownership in a modest way. (p.49)

² The terms 'ecological landscaping' or 'xeriscape' relate to the use of native and drought-hardy plant material rather than the conventional lawns and ornamental plants, which typically have higher water demand. (p.66) Toilets consume approximately 25 percent of the total household water using 23-37 litres of water per flush. Manufactured low volume toilets can reduce the amount of water used by approximately 50 percent (12-14 l per flush).

IMAGE EVALUATION TEST TARGET (QA-3)



APPLIED IMAGE, Inc
1653 East Main Street
Rochester, NY 14609 USA
Phone: 716/482-0300
Fax: 716/288-5989

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