Cost of Community Services study
for Red Deer County

The Fiscal Implications of Land Use:

A "Cost of Community Services" Study for Red Deer County

MAIN REPORT

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The Fiscal Implications of Land Use:
A "Cost of Community Services" Study for Red Deer County

Report 2: MAIN REPORT

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Executive Summary

Cost of Community Services (COCS) Studies

In rural municipalities, expenditure decisions are based on the provision of services to citizens, but land use planning is based on the character of the landscape. This makes it very difficult for municipalities to understand the *fiscal* implications of *land use* decisions, and leads to debates due to the absence of relevant data.

COCS studies determine a municipality's public service costs versus revenues based on current land uses. They have been conducted in over 100 American rural counties, but never yet in Canada.

COCS studies break a municipality's land base into four land uses: commercial; industrial; residential; and working landscapes (forestry, agriculture). Every dollar of revenue and every dollar of expenditure is then allocated to one of those categories. Ratios are calculated for each land use, showing how many dollars in public service costs a municipality is incurring for each dollar of revenue associated with a given land use.

Red Deer County

In terms of settlement, Red Deer County sits at Alberta's midpoint, roughly equidistant to Alberta's two major centres (Edmonton and Calgary), on the province's busiest highway. Not surprisingly, it is one of the fastest growing regions in the country. Red Deer County is 4,042 square kilometres and home to 18,639 people (though 110,000 people live within the County's geographic boundary).

Early growth in the area was based on the region's rich agricultural soils, followed by the oil and gas boom in the post-World War Two period, and now the addition of commercial and residential development. The County actively seeks to balance and promote them all.

Study Goals/Scope

The goal of this study was to provide Red Deer County a picture of their 2004 finances which related them directly to the County's current land use matrix. There was no intent to provide a subjective analysis of which land uses are "better" or "worse." Secondary goals included ensuring a rigorous methodology, one that allowed for replication of the study in Alberta.

The geographic scope of this study is Red Deer County, Alberta, and it considers all activities in which the County played a significant service provision or revenue generation role in 2004. Incorporated municipalities geographically within the boundary of Red Deer County were excluded.

As municipalities in Alberta play an indirect but significant role in the assessment and collection of school taxes, we have chosen to both include and exclude consideration of education services throughout the study by way of parallel scenarios.

Methodology

The methodology used is based on that developed by the American Farmland Trust. The simplicity of the methodology and the reliance on existing financial data allow rural municipalities with limited resources to engage in these studies. Development of the methodology included: a review of American methodologies; design of a methodology appropriate for Red Deer County; consultation with other Alberta municipalities to ensure broad applicability; and an adaptive approach.

A four-step process similar to the American Farmland Trust approach was developed: 1) develop land use category definitions; 2) collect data from the municipality; 3) allocate municipal expenditures and revenues by land use category; and 4) calculate and analyze COCS ratios

After a literature review, land use categories were created based on tax assessment codes, and vetted by County staff. The resulting categories were: Commercial, Industrial, Residential, and Working Landscapes (Agriculture).

Background information was collected to provide an understanding of County corporate structure, the decision-making process, land use divisions, zoning and assessment practices and protocols, departmental activities, special circumstances of 2004, and available Geographic Information System (GIS) support. Requisite financial data consisted primarily of the audited 2004 financial actuals and program budgets.

Allocating both expenditures and revenues is conceptually simple, but practically complex. Initial data allocation was based on discussions with department directors and program managers in group settings. Each program manager was asked to describe their program, providing context for the allocation of dollars. Rather than determining a land use split for every expenditure and revenue line item, we chose to use *staff time* as a proxy. We relied heavily on staffs' informed judgement, with each program manager making recommendations for the allocations, and rationales being recorded.

Once all data were collected and allocated, we developed a data model to allocate expenditures and revenues. Fallback percentages, derived from the averages of allocation proportions for all available data, were calculated to accommodate instances of no data, data inappropriate to allocate, and data dependent on other departments' allocations. The resulting ratios were examined for anomalies and analyzed for possible sensitivity and comparison testing options.

As road-related expenses accounted for 56% of the County's budget, their allocation was a significant issue, but a tricky one due to lack of data. We used a statistical approach drawing on

data from the US and Canada to allocate those dollars, with modifications to account for extraordinary Red Deer County circumstances (proximity to City of Red Deer and Hwy 2).

Study Findings

For the purposes of the COCS study, expenditure categories used by Red Deer County were re-organized to better reflect Red Deer County land use and facilitate comparison with other COCS studies. Expenditures were re-organized and reported by land use and expenditure classification.

Likewise, revenues were re-classified, and reported by land use and revenue classification. Additionally, property tax revenues, education tax revenues, and non-tax revenues were reported by land use.

Once expenditure and revenue data were attributed to land uses, the sums of these values were used to create a series of ratios. Mathematically, the ratio calculation is simple:

$$\text{Ratio is 1} : \frac{\text{Sum of Expenditures}}{\text{Sum of Revenues}}$$

The following baseline ratios for both *education-included* and *education-excluded* scenarios were developed:

Baseline Ratios (with Education)

	Commercial	Industrial	Residential	Working Landscapes (Agriculture)	Totals
Expenditures	$3,438,489	$1,079,792	$27,579,552	$1,740,729	$33,838,564
Revenues	$4,615,862	$11,545,653	$15,239,133	$2,487,064	$33,887,711
Ratio	1 : 0.74	1 : 0.09	1 : 1.81	1 : 0.70	

Baseline Ratios (without Education)

	Commercial	Industrial	Residential	Working Landscapes (Agriculture)	Totals
Expenditures	$3,438,489	$1,079,793	$16,531,954	$1,740,729	$22,790,965
Revenues	$3,431,567	$7,714,203	$9,966,580	$1,727,763	$22,840,112
Ratio	1 : 1.00	1 : 0.14	1 : 1.66	1 : 1.01	

Conclusions

Commercial – Like previous COCS studies, the Commercial land use 'paid for itself,' though by a lesser margin than most studies. This may be due simply to the practice elsewhere of combining Commercial with Industrial. Unsurprisingly, the commercial land use fares better in the education-included scenario.

Industrial – The Industrial land use appears to be a significant subsidizer of all other land uses. The low cost of this land use is more or less in line with other COCS studies. A sensitivity test of the "Power and Pipe" taxes, a significant source of the Industrial land use's revenues, indicated that even without these revenues, the Industrial land use would still pay for itself in dramatic fashion.

Residential - Residential land use ratios were within the range of previous studies, but on the high end. It is significant to note that the Residential land use did not pay for itself in any scenario in this study – this effectively means that other land uses are subsidizing the level of service provided to the Residential land use. Drivers of these high costs include the significant costs of road development/servicing, and the heavy focus of staff time on planning for and servicing the Residential land use. In contrast to the other land uses, the Residential land use fares better in all education-excluded scenarios.

Working Landscapes (Agriculture) – While it essentially paid for itself, the cost of servicing the Working Landscapes land use was surprisingly high, though the per acre cost of servicing is very low. Drivers included the sensitivity of these ratios due to the low expenditure/revenue values, a non-typical fire year, and the differential between agricultural services' revenues and expenditures.

Recommendations

The intent of this COCS study is to provide data to inform the discussions that are already taking place regarding what land use planning approaches are in the best interest of the community – it is not to make recommendations regarding land use planning actions to be taken. Rather, recommendations relate to how this study could be used, and the process improved.

Potential uses include support for community visioning, regional planning, policy review, assessment of non-revenue programs, departmental program and finance assessments, catalyst for discussions, and identification of data gaps.

Future improvements could include better aligning to standardized program summaries, use-specific roads data, and protective services data collection in a manner that relates the service to land uses.

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Introduction

The Role of a Cost of Community Services study

In rural municipalities, expenditure decisions are based primarily on the need for, and ability to provide, services for citizens (waste management, utilities, community services, policing, fire, etc.). Land use planning, however, is based more on the spatial character and abilities of the landscape (agriculture, country residential, light industrial, highway commercial, etc.). Some, but very few, municipal revenue/expenditure categories relate specifically to land uses.

This makes it very difficult for municipal councils and staff to fully understand the <u>fiscal</u> implications of decisions regarding their current <u>land use</u> matrix.

This "disconnect" has led to the continent-wide debates currently taking place on whether rural municipal planning which encourages residential development is cost effective, whether agriculture pays its way, whether commercial services receive undue attention, etc. Unfortunately, because revenues and expenditures are not tracked based on land use, these debates generally take place in the absence of actual data.

Cost of Community Services Studies

A *Cost of Community Services* (COCS) study is designed to help connect those fiscal and land use components of municipal decision-making in a straightforward and cost-effective way. COCS studies determine a municipality's public service costs versus revenues based on current land uses. These studies have been conducted in over 100 rural counties throughout the United States over the past 20 years. They have been referenced repeatedly in Canada, but never conducted here.

COCS studies generally break down a municipality's land base into four land uses:
- commercial;
- industrial;
- residential; and
- working landscapes (forestry, agriculture).

Every dollar of revenue and every dollar of expenditure is then allocated to one of those categories. The study requires analyzing a municipality's budgets, department financials, tax assessments, service agreements, incident reports, and other relevant documents and databases to tease out all revenues and expenditures. Working closely with staff, costs and revenues are then divided into the four land use categories.

After the numbers are collected and categorized, ratios are calculated for each land use, comparing their public service costs with their associated revenues. Those ratios will show how many dollars in public service costs a municipality is incurring for each dollar of revenue associated with a given land use.

Demand for Services vs. Benefit to Society

It is important to note that in a Cost of Community Services study fiscal data are allocated based on a given land use category's *demand for services*, not its *benefit to society*. In other words, a community may derive broad benefits – whether direct or indirect – from various services provided by the local government. However, Cost of Community Services studies seek out where the demand has originated, attaching service costs to the land use generating the demand.

For example, there is no question that education is a benefit to an entire community. However, only residents (rather than oil wells, cows or new cars) demand that service, so costs related to schools are attached to the 'Residential' land use category. Likewise, residents of rural communities may derive cultural, financial and environmental benefit from open agricultural spaces, but the costs of agricultural services provided by the municipality are attached to the 'Working Landscapes' land use.

"Cost of Community Services Studies" vs. "Fiscal Impact Analyses"

COCS studies are a sub-set of the broader field of fiscal impact analysis. In this field, more far-reaching, complex, expensive and detailed analyses are available, which examine past trends and interlinked benefits, and can therefore make comprehensive forecasts.

COCS studies do not inherently provide a basis for predicting what would or should happen in the future. Rather, they are designed to be financially accessible tools that show a snapshot in time (one fiscal year), and illustrate the connection between municipal finances and land use for that period.

Red Deer County
(drawn from County of Red Deer Municipal Development Plan, Red Deer County: Profile at a Glance, Alberta Municipal Affairs' Municipal Profiles, and Reeve's Task Force on Land Use Planning and Sustainable Agriculture)

Location and Demographics

In terms of the settlement pattern of the province of Alberta, Red Deer County sits at the province's centre. It is roughly equidistant to Alberta's two major population and economic centres, Edmonton and Calgary, at the midway point of the province's busiest highway, the Queen Elizabeth II Highway (formerly, Highway 2). The highway, combined with the railways passing through, the east-west Highway 11, and the Red Deer Regional Airport, make the County remarkably accessible to the rest of the province. Not surprisingly, it is one of the fastest growing regions in the country, with population growing 8.9% between the 1996 and 2001 censuses.

Red Deer County encompasses an area of 4,042 square kilometres (1,575 square miles). In 2004, the County itself contained 60 residential subdivisions and 8 commercial/industrial

subdivisions, and was home to 18,639 people. However, within the County's geographic boundary, there are a city, four towns, two villages, two summer villages and seven hamlets, meaning upwards of 110,000 people living within that region.

In 2004, the corporation of Red Deer County had 43 full time, 11 permanent part time, and 8 seasonal employees. The County had an operating budget of approximately $14,300,000 and a capital budget of $6,300,000 for a total of $20,600,000.

Historical land use

Early growth in the area was based on the region's rich soils, with the first agricultural settlements appearing in 1882. Local government appeared shortly after, evolving into a council-based local improvement district by 1904. Agriculture remained the premier land use through several booms and busts, including the Great Depression of the 1930s.

The economic boom of the post-World War Two period coincided with the discovery of large oil and gas deposits in the region in the late 1940s, forever transforming the area. New industrial activity, urban expansion, substantial increases in acreages and rural subdivisions characterized that period.

In 1963 the Municipal District of Red Deer amalgamated with the Red Deer School Division, creating the County of Red Deer. The oil and gas related boom continued through this period, seeing the establishment of the world class Joffre and Prentiss petrochemical plants in adjacent Lacombe County in the mid-1970s. The deflation of the oil boom in the 1980s did little to slow development and growth in Red Deer County, and urban expansion, industrial development, new retail sites and the proliferation of acreages and new rural subdivision continues.

Current land use

Red Deer County's land use reflects its economy, which is still based largely on agriculture and oil and gas. Although agriculture occupies about 90% of the County's land base, with current world markets, oil and gas carries greater economic clout. Strong oil and petrochemical industries, as well as a value-added agricultural sector drive both economy and land use demand.

Commercial and residential development factor prominently as well. Currently, approximately 825 businesses are based in the County, and the County imposes no business tax. In 2003, Red Deer County issued 371 development permits and approved in excess of $39 million in development permits (more than a 10% increase in five years). Housing starts in 2003 exceeded 90 units.

Balancing the Land Use Matrix

As the above indicates, Red Deer County has a diverse matrix of land uses, and it strives to maintain and promote all of these. Excerpts from the Municipal Development Plan illustrate this (see sidebar).

Red Deer County also has a history of trying to understand and proactively address land use conflicts, through initiatives such as the *Reeve's Task Force on Land Use Planning and Sustainable Agriculture*, the *Code of the West*, and this study.

Study Goals

As described above, the overarching goal of this study was to provide Red Deer County a picture of their 2004 finances[1] which related them directly to the County's current land use matrix.

Although we have provided some sensitivity analysis to help determine what are the drivers of the results we found, there was no intent to provide a subjective analysis of which land uses are "better" or which land use activities should be promoted or scaled back. The study is intended to provide a data point for Council, staff and community discussion.

Secondary goals included:

- conducting the study to be comprehensive and fully inclusive of all RDC activities, and well understood and supported by RDC Council and staff;
- ensuring a methodology and implementation that were rigorous and defensible while still being pragmatic;
- developing a methodology that was specific to Red Deer County, but also replicable in other Alberta municipalities;

Agricultural Policy

Goal: To ensure agriculture remains a sustainable and diversified economic activity and lifestyle in the County

- preserve agricultural land for agricultural use wherever possible
- limit the fragmentation of productive agricultural land
- direct, where possible, non-agricultural development to areas where such development will not constrain agricultural activities

Residential Policy

Goal: To allow for opportunities for people to live in a rural setting and enjoy a rural lifestyle while ensuring rural residential development occurs in an orderly and environmentally safe manner in suitable locations.

- ensure that new residential developments are attractive, conveniently located, and safe physical environments
- provide for orderly multi-lot country residential development
- direct country residential development to lands that have marginal agricultural value

Industrial / Commercial Policy

Goal: Ensure there is a good supply of properly located industrial and commercial land within the County to meet the needs of the marketplace.

- provide for a range of industrial activities to create local employment including value-added processing related to the agricultural and petrochemical sectors
- maintain an adequate inventory of industrial and commercial sites of varying lot sizes to meet the needs of business and industry
- cooperate with neighbouring urban municipalities in providing sewer and water services to new and existing industrial and commercial areas

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[1] The most recent year with complete financials at the time of the study's initiation.

- conceiving a study design that would keep costs within the reach of the average Alberta rural municipality; and
- conducting a study that would contribute to the collective body of Cost of Community Services study knowledge on the continent.

Scope

Geographically, the scope of this study is Red Deer County, Alberta. The study considers all activities in which the County plays a significant service provision or revenue generation role. There are some exceptions to and limitations on that broad scope.

The incorporated municipalities geographically within the boundary of Red Deer County are excluded (City of Red Deer, Town of Bowden, Town of Innisfail, Town of Penhold, Town of Sylvan Lake, Village of Delburne, and Village of Elnora). Hamlets which are financially integrated with Red Deer County were included.

For the most part, health care services in Alberta are the sole responsibility of the province. Although land use planning decisions, such as increasing residential development, have an impact on the cost to the community of providing those services, we have chosen to exclude health care (outside of Ambulance service) as Red Deer County has essentially no role here.

Although municipalities in Alberta have not been directly involved in the provision of education services since 1995, they do still play a significant role in the assessment and collection of school taxes. For that reason, we have chosen to include consideration of education services in the study. Because there is a valid argument for excluding education services (similar to that used above for health services), we have presented ratios both including and excluding education service costs/revenues to facilitate that differentiation.

Municipalities in Alberta are not responsible for primary and secondary highways (one- and two-digit numbered highways). This study has considered only the roads for which the municipality has responsibility.

This study considers revenues and expenditures incurred in the 2004 fiscal year. It is important to note that this study provides a 'snap-shot' in time for that period, and accepts that extraordinary events may occur in a given year. Where those events have occurred, they have been noted, and the implications discussed.

Unlike more in-depth fiscal impact analyses, there is no intent in this type of study to provide predictive capability as to what types of land use patterns are likely to occur.

A Cost of Community Services study categorizes into broad land use categories, but does not seek to separate into the different sub-types of those categories (e.g., dispersed residential vs.

clustered residential; intensive vs. extensive agriculture; high-density industrial vs. lower-density industrial).

Finally, this study was developed to serve Red Deer County's needs specifically, but through a broad literature review and multi-municipality consultation we have striven to ensure the methods are applicable to any Alberta municipality.

Methodology

Introduction

The methodology used for the Cost of Community Services (COCS) study for Red Deer County is based on that developed by the American Farmland Trust in the early 1980's, one which has been replicated in one form or another at least 103 times since then across the United States.

The simplicity of the methodology allows rural municipalities to engage in these studies despite potentially lacking resources or sophisticated data management structures. The methodology relies on existing financial data, which is re-sorted by researchers to allocate financial information by land use categories.

All COCS studies use a somewhat varied methodology to account for situational differences, resulting in an inability to directly compare one study to another. However, there are enough similarities that they can be considered a cohesive body of knowledge, and for that reason this methodology strives to use terminology and practices common to other COCS studies.

The methods for this study were also intentionally developed to be easily replicable across the province of Alberta.

Communication

Generating buy-in, and therefore establishing effective communications, at both the political and operational levels is critical.

Initial conversations took place between the Miistakis Institute and Red Deer County's Community and Planning Services Director to discuss the feasibility of the study. After receiving approval from Council, the Community and Planning Services Director met with researchers to establish the project and organize initial logistics. Miistakis Institute researchers then formally briefed Council regarding the goals and activities of the study. Department managers were likewise formally briefed to explain the study, and to inform them as to what requests they could expect from the researchers. We also sought their input regarding land use category definitions and potential issues.

Informal discussions took place with both the Community and Planning Services Director and the Assistant County Manager (responsible for the finances of the County) throughout the project, which provided valuable information and insight. The open communication style encouraged by both the County and the researchers enabled a dialogue of ideas and options throughout the study.

Methodology development

Development of a methodology this COCS study had four components:
- review American methodologies and contextual differences;
- design a methodology appropriate for Red Deer County;
- consult several Alberta municipalities to ensure broad applicability; and
- adapt the methods to new information as the study proceeded.

In order to understand the potential differences between the American studies and this Canadian one, research was conducted to review differences in governance structure; in particular, municipal taxation powers.

A brief review of fiscal impact analyses in general was completed to provide the necessary understanding of fiscal analysis within the municipality context. This information provided insight into the benefits of the COCS methodology for a rural community. The review of historical fiscal impact analysis and American COCS studies suggested corresponding results.

The American COCS studies and their methodologies were surveyed to: review variations in methods; identify strengths and weaknesses; gauge the most appropriate circumstances in which to conduct a COCS study; assess the potential for relative consistency between studies; and seek direction in designing an appropriately neutral fiscal analysis tool.

Based on a review of specific Albertan legislation (such as the *Municipal Government Act* and Alberta's *Regulation Matters Relating to Assessment and Taxation Regulation*), areas of concern were identified and addressed within the Canadian methodology.

Following development of all methodologies and proxies, we received external feedback from a variety of experts on the methods. Generally, the responses supported the methodological decisions and some made minor suggestions which were incorporated into the study methods where appropriate.

Based on the aggregate information collected, a conceptual Canadian methodology was created and implemented as described below.

In order to test the applicability of the methodology to other rural Alberta municipalities, a multi-municipality workshop was convened. The goals of the workshop were: 1) to introduce the Red Deer County COCS study; 2) to understand the challenges of applying the current methodology to other rural Alberta municipalities; and 3) to solicit feedback from participants on

addressing a suite of significant issues faced so far in conducting the study. Ten Alberta municipalities were represented and took part in plenary and break-out group discussions. The results of the workshop were reported back to the participants in a written report, and incorporated into the study methodology.

Once the conceptual methodology was developed, the Red Deer County COCS study began in earnest. Understanding that specific data provided by Red Deer County would alter the specific procedures within the methodology, we engaged in a fluid methodology testing and development process that responded to unknown data formats and municipal organization.

Steps

As mentioned above, the investigation of the American COCS methodology, adapting as necessary to the Alberta and Red Deer County context, resulted in a four-step process very similar to the basic American Farmland Trust approach:
- develop land use category definitions
- collect data from the municipality
- allocate municipal expenditures and revenues by land use category
- calculate and analyze COCS ratios

Develop land use category definitions

Similarly to other COCS studies, this study sought to divide all land use within the County into a small number of broad categories. The land use categories were created through a review of literature at three scales: international (US); provincial; and local. This multi-step research process was used to ensure the land use categories were compatible with previous studies, but context-appropriate for Red Deer County.

Following a review of American COCS studies' land use definitions, a review of Alberta's *Municipal Government Act* and Alberta's *Matters Relating to Assessment and Taxation Regulation* was conducted to provide further background knowledge to distinguish between land use categories. Initially, there was some suggestion that zoning could provide the necessary land use definitions, but tax assessment codes specifically distinguish between various uses, identifies mixed uses, and are in common use across Alberta. Subsequently, an evaluation of the taxation assessment codes used in Red Deer County was conducted. Taxation assessment codes resulted in the most accurate method of identifying land use categories because this system identifies property and improvements separately, and thus accurately separates farm residences from the agricultural parcel of land.

In addition to referring to taxation assessment codes, land use definitions were discussed with Council, the County Manager and Assistant County Manager, Departmental Directors and program managers to ensure they were accurate reflections of Red Deer County's land uses. Most importantly, the Tax Assessor was consulted in depth regarding the land use definitions.

The resulting four broad land use categories are:

- Commercial;
- Industrial;
- Residential; and
- Working Landscapes (Agriculture)[2].

(see sidebar for details)

Of particular note is the treatment of vacant land, which differs here from other COCS studies. The *vacant land* classification for Commercial, Industrial and Residential is included within these categories because these parcels are already serviced when their assessment classification is changed to *vacant*.

Collect data from the municipality

The process of collecting the required data from the County was lengthy and necessarily adaptive. Data collection proceeded virtually until the end of the project, and required repeated refinements in practice based on information gathered.

The data collection process can be divided into two types: background information on the County, and financial data.

Background information was collected to provide an understanding of the corporate structure of the County, the decision-making process, land use divisions, zoning and assessment practices and protocols, departmental activities, special circumstances of 2004, and available Geographic Information System (GIS) support. To this end, we consulted the council orientation manual, task force reports, the Municipal Development Plan, the Land Use Bylaw, various area structure plans, old budgets and financial reports, the County web site, transportation reports, public safety incident logs, tax rolls, assessment documents, council minutes, GIS data sets, and County newsletters.

The requisite financial data consisted primarily of the audited 2004 financial actuals. The most recent data available is, of course, the most useful, which is why when the study was initiated in early 2005, we chose to use the 2004 actuals (Red Deer County's fiscal year follows the calendar year). This meant the actuals were not available until well along in the study. Although

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[2] To facilitate comparison with other studies, the term "working landscapes" is used in this study; however, in the case of Red Deer County, this refers exclusively to agriculture as there is no other significant working landscape use (such as forestry, for example).

this required using old financials and 2004 budgets as an initial basis this was not deemed to be a significant concern, as the audited actuals were structured in the same way, allowing them to be inserted when they came available.

For 2005, Red Deer County moved to a new system for budgeting, based on "Programs." Each manager was required to re-organize the line items associated with their department's expenditures into function-defined programs, giving a picture of the cost of each program. As the approach to the COCS involved having managers divide staff time or department effort between the four land use categories (with researchers then applying those proportions to line items such as salaries, travel, office supplies, etc.), using Program Summaries initially seemed an efficient way to 'short-cut' the expenditure allocation process. It unfortunately proved problematic, as the system was not fully in place for 2004, and managers used various methods for creating Program Summaries, with few documenting their process. This made it difficult to establish a basis for dividing the 2004 *actuals* into programs. In future years, once the Program Summary system is fully in place and standardized, this will make an excellent basis for allocating department expenditures into the land use categories.

<u>Allocate municipal expenditures and revenues by land use category</u>

Conceptually, allocating both expenditures and revenues is simple. However, the procedures involved in determining the breakdown of these accounting line items are complex. The practical objective of a COCS study is to get from a list of the financial actuals organized by accounting line item (salaries, travel, printing, etc.) to a list of the actuals organized by broad land use category (Commercial, Industrial, Residential, Working Landscapes). Not surprisingly, determining and allocating expenditures and revenues make up the largest task in the study.

We chose to use a semi-structured interview process. Directors and program managers were interviewed with the objective of understanding how each department's expenditures and revenues would divide between the four land use categories.

Departmental Meetings

Initial data allocation was based on discussions with the department directors and program managers from each department in a group setting. A total of six meetings were held, one with each of Community and Planning Services, Protective Services, Operations, County Managers Office, Corporate Services, and County Council (considered a *department* for this component of the study). The group setting of these discussions enabled open discourse, learning from one another, and testing of the responses. Facilitation of these meetings was loose, tending to follow the energy of the group and the discussions, while ensuring all components of the programs were discussed.

Each program manager was asked to describe their program and its staffing structure so as to provide necessary context for the allocation of dollars. We encouraged cross-department

integration, noting where one department's responses were contingent on another's, and incorporating that into the final ratio calculations.

During each of the departmental meetings, we recorded the information and created summary meeting notes. These notes provided documentation of the decisions made in determining the expenditure/revenue allocations for each program. Each program manager was requested to review the meeting notes, providing clarification or corrections where necessary. This information was integrated into a final document for each department, and each program manager, Director and Councilor was asked to verify, through a signature, that the percentages were a fair and accurate representation of their program.

Allocating expenditures

Rather than investigate every expenditure and line item within a given department and then determine a land use split for each, we chose to use *staff time* as a proxy. For each program, the proportion of staff time devoted to the four land uses was determined. Those same proportions were then applied to the majority of expenditures incurred by that department. These percentages were later converted to dollar values based on the financial actuals.

To ensure that significant extraordinary expenditures (those that should be allocated to the land uses in different proportions than routine department expenses) were not missed, staff were questioned to determine if there were exceptions. Examples might include legal costs, travel budgets, contracted services, etc. devoted primarily to servicing one land use.

As expected, documentation did not exist that would allow staff readily to allocate their time between the land use categories. We therefore relied heavily on staff's informed judgement, then questioned them regarding the bases on which they made the divisions. This allowed for testing of their process and assumptions to make sure they were both valid and consistent with those of other study participants.

To assist in this often difficult task, we first had managers break down the totality of their department's work into subdivisions that they might more easily separate according to land use category. In the case of Red Deer County, managers had already done a significant amount of this work, as their 2005 budgeting process required them to divide their budgets into 'Programs.' Although this provided a logical basis to approach this task, it was not without difficulties; actuals were not divided in this manner in the study's focal year, 2004. This required translating the proportions based on the 2005 budget to the dollar figures from the 2004 actuals.

Finally, each program manager made recommendations for the allocation of expenditures and revenues. Rationales included allocating resources using the program manager's judgement, staff time allocated to the issue, and using records of activities or logs.

The program managers were also asked to support these allocations with examples and justification for two reasons: first, to clarify the activity and rationale for the researchers so we could probe the issue further if necessary; and second, to provide support for the final numbers. These discussions involved not only the program manager responsible for the program, but also relied upon discussion between program managers and peer verification when necessary.

Other proxies for allocating between land uses were occasionally used, including: the number of utility payees (based on land use); the number of employees within a department; or for 'support' departments using the allocations from the 'supported' departments. Miscellaneous expenditures were allocated based on staff time unless there was a superior means of breaking these items into land use categories.

Allocating revenues

The same process as described above was used for allocating revenues. Generally, Directors were consulted regarding revenues because they had the most informed perspective on this issue. The Directors were able to provide allocation ratios based on discussions in the departmental meetings. In some cases, further discussions outside of these meetings were required to allocate all revenues, but the same process was followed including providing examples and justification. Proxies (e.g., road methodology) and analysis of records (e.g. subdivision off-site levies) were used to provide specific percentages.

Using the allocation of expenditures as a guide is a particularly important part of this stage. Decisions that were made on the expenditure side of the analysis needed to have a corresponding decision on the revenue side. Therefore, allocation of revenues, in many instances, was quite easy. The revenue provided for a specific activity was assigned the same percentages as the expenditures for that activity. For example, the grant received by Red Deer County for the development of their Geographic Information System (GIS) directly supported the services provided by GIS. In this case, land use percentages for both GIS expenditures and GIS revenues were the same.

Calculate and analyze COCS ratios

Data Model

Once all the data were collected and allocated, we developed a data model. This data model reflected Red Deer County's municipal structure and the process used to allocate expenditures and revenues. Each program activity's allocated percentages were applied to the 2004 financials.

The interactions between departments were complex and resulted in a three stage calculation. The first stage involved calculating *all data available* to create the fallback percentages (see *Special Considerations; Fallback Percentages*, below). The second stage involved applying the

fallback percentages to program activities that either had *no data* or were deemed *inappropriate* to allocate directly to land uses.

Program activities that were considered *supportive* of other departments simply adopted those departments' land use percentages. Therefore, once the data input described above was complete, a summary value for each program was created.

The final stage was the amalgamation of all data, and the calculation of total expenditures and revenues (and ultimately, ratios) for each land use. This calculation was conducted for both baseline scenarios – with education revenues and expenditures included, and without.

Sensitivity / Comparative Analyses

Analysis of the ratios began with examining all values looking for anomalies. Any anomalies found were discussed with the appropriate Director and either adjustments made or rationale recorded.

The final ratios were also analyzed for possible sensitivity and comparison testing options. Based on the observations of the data, sensitivity analyses were developed to determine driving factors. In the case of this study, we examined the contribution of "power and pipe" revenues to the Industrial land use's ratios, and the driving factors behind the Working Landscapes' (Agriculture) unexpectedly inefficient ratios (see *Conclusions; Observations*).

As we chose to use a number of methodological approaches that were a departure from previous Cost of Community Services studies, we re-ran the data model to identify the differences that may have appeared had we used the methodological assumptions common in previous Cost of Community Services studies[3].

Special Considerations

Fallback Percentages

Occasionally, there were instances where activities could not be allocated between the four land use categories because of a lack of records or information (e.g., ambulance). In other situations, there is no appropriate basis for allocating an activity between land uses (e.g., general administration, facilities, investment, etc). To address these situations, "fallback percentages" were developed.

Fallback percentages are designed such that their use does not influence the outcome of the study results. Instead it enables all financials to be included in the analysis, but essentially allows these few pieces of data to enter and exit the analysis with the same ratios and thus

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[3] The results of those comparative analyses, and the discussion, are under different cover in Report 4: *A Comparative Analysis of the Red Deer County COCS Study and Previous COCS Studies*

does not have an impact. It is important for these pieces of data to be included to represent the entire budget. If incomplete values are used on one side of the calculation (e.g., expenditures) but not on the other (e.g., revenues), this will result in a distortion of the ratio. Therefore all values are included.

In the COCS for Red Deer County, fallback percentages were calculated by averaging the land use allocation proportions for all *available* data. Despite being a deviation from the American Farmland Trust's general methodology, we felt it provided a more accurate basis for allocating these expenditures and revenues (see *Report 3: Methodology; Fallback Percentages* for further discussion).

In the case of Red Deer County's COCS study, the percentage of the overall budget requiring a fallback percentage was between 4% and 6% (depending on the scenario assumptions chosen), which we considered to be an acceptable amount.

Education

Revenues and expenditures related to education pose a dilemma in terms of whether to include them in the analysis. Previous (i.e., American) COCS studies have included education largely because it is a local service, administered by a local taxation authority, and is financed based on property tax revenues. Since 1995, the Province of Alberta has had responsibility for education property taxes, but relies on municipalities to do the assessment and collect the taxes. After receiving the total assessment for property in the province, the provincial government determines a set of mill rates to be applied uniformly across the province, based on their projection of revenues needed from property taxes. In Alberta, education property taxes account for approximately one third of the K-12 education expenditures.

Our rationale for potentially including education was based on the following factors:
- demand for the service varies directly with changes in land use (the more Residential land use, generally the greater the demand for schools);
- revenues are based on property taxes, with different rates for different land uses; and
- there is still a municipal responsibility in that expenditures related to assessment and tax collection are borne by the local government.

Still, it could be argued that this crosses a methodological line, and opens the door for inclusion of every service provided by any level of government (health, employment training, etc.). Each of these would represent a legitimate avenue of investigation, but dilutes the purpose of the study, and the utility of the results to the local government.

Education revenues and expenditures sit on or near that line. For that reason, we chose to develop two sets of baseline ratios: one which includes education, and one which does not.

Because in Alberta more dollars come back to fund the community schools than are sent out in property taxes, we simply added the education property tax revenues to the appropriate land

use, then assigned the amount being transferred to the Province to the Residential land use category (as these services are demanded by people in their capacity as residents) as an expenditure. This allowed us to limit our analysis to those revenues and expenditures related to property taxation, without having to look at actual expenditures on schools servicing Red Deer County residents.

Road-related Expenditures and Revenues

Another significant issue for the Red Deer County COCS study was the allocation of road-related expenditures and revenues. Road-related expenses account for 56% of the County's budget. In previous COCS studies in the United States, there are many instances where roads were removed from the study because of the difficulty allocating them, or fallback percentages were used for these values.

We felt, and Red Deer County concurred, that it was critical roads be included, and that the most appropriate methods possible be used for this component. Adding to the difficulty is the fact that neither Red Deer County nor the Province of Alberta have adequate data on road usage related to land uses.

The key issue in designing a method for allocating road-related expenses and revenues was ensuring the values represented *road usage* demanded by each of the different land uses. Immediately, methods allocating road activities based on road length adjacent to land uses were discarded. Several different options were tested, but eventually a statistical approach was devised relying on the most comprehensive rural road usage data in North America, supplemented by census and additional road use data specific to Red Deer County.

This statistical approach to allocating roads activities uses four sets of data:
1. Alberta Highways 1 to 986 Traffic Volume, Vehicle Classification, Travel And ESAL Statistics Report 2004, updated March 2005 (Alberta Infrastructure and Transportation)
2. 2001 National Household Transportation Study (U.S. Department of Transportation),
3. 2002 Vehicle Inventory and Use Survey (U.S. Census Bureau),
4. *2001 Canada Census* (Statistics Canada), and

The American national transportation studies were used to develop a representative picture of the proportion of road use attributable to various activities (trips to work, trips to the store, etc.), with those activities then being categorized by land use. The personal-road-use data in the Alberta Infrastructure and Transportation study, and the industry/commercial profile from the Canada Census allowed us to refine those data further and add a Red Deer County-specific dimension to that picture. The resulting proportions were applied to any road-related expenditure or revenue to allocate those dollars amongst the land use categories (see *Report 3: Methodology* for complete discussion of the road methodology).

During the departmental meeting, the Director of Operations identified specific program activities where the basic road methodology would be most appropriate. In other cases, his

informed judgment led to using a "rural road methodology" in areas where there is little to no use of roads for commercial or industrial transportation. The rural road methodology is therefore a subset of the overall road methodology that considers only personal use, and was used to allocate program activities for these areas.

Study Findings

Using the methodology described above, the findings of this COCS study comprise a *series* of results. To begin with, the results include the total amount of revenues and expenditures by standardized classification systems and according to land use categories. From this information, a set of baseline ratios (including and excluding education) were developed.

As mentioned earlier, (see *Methodology; Special Considerations; Education*) we have chosen to present each set of results both with and without consideration of education property tax revenues. Although the titles are fully descriptive, tables with a dark green bar at the top include education, and tables with a light green bar do not.

Additionally, a series of sensitivity and comparison testing results were calculated to test some assumptions and driving factors involved in the baseline ratios.

Expenditures

Expenditure classifications
For the purposes of the COCS study, the expenditure categories used by Red Deer County have been re-organized for two reasons. First, the focus of a COCS study in considering financial information is on land use, and thus operational and organizational expenditure categories may not lend themselves to classification by land use. Second, although the case study format of COCS studies does not lend itself to detailed comparison with other studies, they do follow a similar methodology. Efforts to standardize the categories within this methodology better facilitates consideration of COCS studies as a cohesive body of knowledge.

To that purpose, we reorganized the departments and programs into six categories (Table 1). A brief description of each category is included in the table to provide an understanding of these categories. Generally, Red Deer County's departments follow this organizational structure, but there were some areas where reorganization was necessary. For example, we divided activities from the Operations department into ones based on providing services (Community Services) and ones focused on infrastructure needs (Public Works).

Table 1: Expenditure Classifications

Classification	Detailed Sources
Council	All programs and activities undertaken directly by County Council members, as well as the programs and activities undertaken by the County Managers Office which directly support Council.
Corporate Administration	All programs and activities undertaken to support the operation of the corporate entity known as Red Deer County including communications, financial services, human resources, records management, IT support, assessment, and county land management.
Community Services	All programs and activities undertaken to provide services directly to the community of Red Deer County including recreation, culture, beautification, pest control, hydro-seeding, weed and brush control, business retention and attraction, beaver control, and parks and campgrounds.
Planning	All land use planning services including current, long-range and intermunicipal planning.
Public Safety	All programs and activities undertaken to provide safety services directly to County residents including fire, patrol, ambulance and disaster services
Public Works	All programs and activities related to the construction and maintenance of the County infrastructure including roads, sewers, and bridges.

Total Expenditures by Land Use

Total expenditures in all six categories were allocated to the four land use categories. The resulting values and percentages for the education-included baseline are shown in Table 2 and Figure 1. The corresponding results for the education-excluded baseline are shown in Table 3 and Figure 2.

Table 2: Total Expenditures by Land Use (with Education)

	Dollars	Percent
Commercial	$3,438,489	10.2%
Industrial	$1,079,793	3.2%
Residential	$27,579,552	81.5%
Working Landscapes (Agriculture)	$1,740,730	5.1%
Total	$33,838,564	100.0%

Figure 1: Total Expenditures by Land Use (with Education)
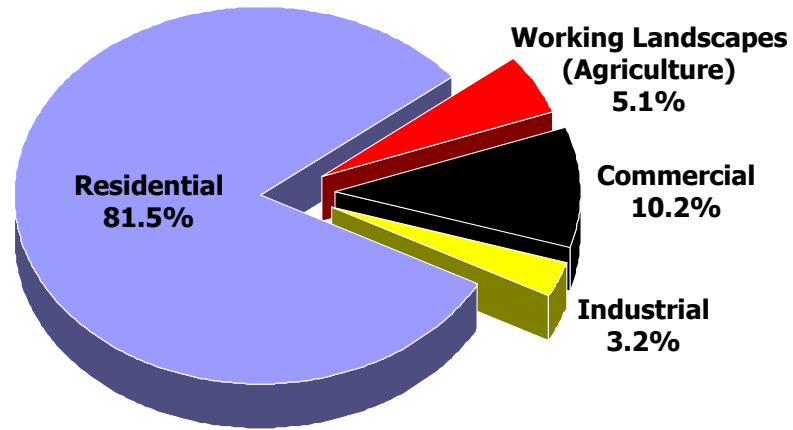
Table 3: Total Expenditures by Land Use (without Education)

	Dollars	Percent
Commercial	$3,438,489	15.1%
Industrial	$1,079,793	4.7%
Residential	$16,531,954	72.5%
Working Landscapes (Agriculture)	$1,740,729	7.6%
Total	$22,790,965	100.0%

Figure 2: Total Expenditures by Land Use (without Education)
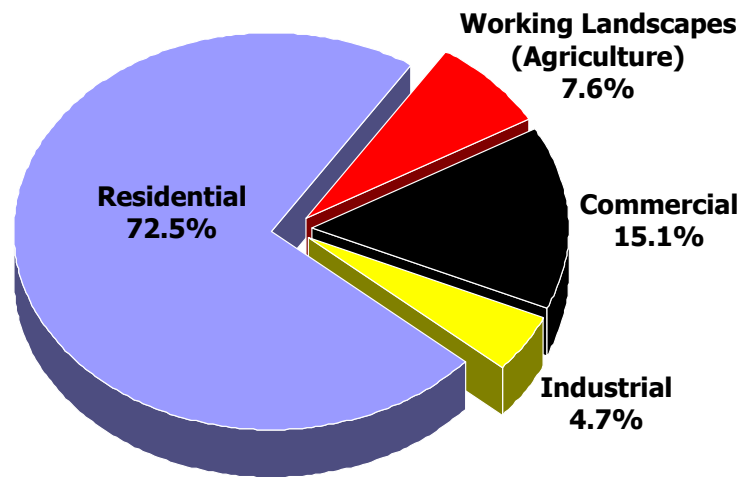
Total Expenditures by Expenditure Classification

To calculate the demand of each land use by specific expenditure category, the data were re-stated by expenditure category for both baseline scenarios (Tables 4 and 5). Analysis of each expenditure category's impact on the total expenditures and the different land use allocations between categories adds insight into the complexities of the financial and land use relationships involved.

Table 4: Expenditures by Classification by Land Use (with Education)

	Commercial	Industrial	Residential	Working Landscapes (Agriculture)	Total
Council	$50,616	$94,949	$357,296	$84,386	$587,247
	8.6%	16.2%	60.8%	14.4%	
Corporate Administration	$453,166	$249,846	$1,692,944	$249,045	$2,645,001
	17.1%	9.4%	64.0%	9.4%	
Community Services	$89,497	$56,206	$1,369,677	$485,023	$2,000,403
	4.5%	2.8%	68.5%	24.2%	
Planning	$146,710	$227,864	$632,478	$43,646	$1,050,698
	14.0%	21.7%	60.2%	4.2%	
Public Safety	$382,780	$206,850	$950,962	$564,764	$2,105,356
	18.2%	9.8%	45.2%	26.8%	
Public Works	$2,315,721	$244,078	$11,528,596	$313,866	$14,402,261
	16.1%	1.7%	80.0%	2.2%	
Education	$0	$0	$11,047,599	$0	$11,047,599
	0.0%	0.0%	100.0%	0.0%	
Totals	$3,438,489	$1,079,793	$27,579,552	$1,740,730	$33,838,564

Table 5: Expenditures by Classification by Land Use (without Education)

	Commercial	Industrial	Residential	Working Landscapes (Agriculture)	Total
Council	$50,616	$94,949	$357,296	$84,386	$587,247
	8.6%	16.2%	60.8%	14.4%	
Corporate Administration	$453,166	$249,846	$1,692,945	$249,044	$2,645,001
	17.1%	9.4%	64.0%	9.4%	
Community Services	$89,497	$56,206	$1,369,677	$485,023	$2,000,403
	4.5%	2.8%	68.5%	24.2%	
Planning	$146,710	$227,864	$632,478	$43,646	$1,050,698
	14.0%	21.7%	60.2%	4.2%	

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Public Safety	$382,780	$206,850	$950,962	$564,763	$2,105,356
	18.2%	9.8%	45.2%	26.8%	
Public Works	$2,315,721	$244,078	$11,528,596	$313,866	$14,402,261
	16.1%	1.7%	80.0%	2.2%	
Totals	$3,438,489	$1,079,793	$16,531,954	$1,740,729	$22,790,965

Revenues

All municipalities organize their fiscal information in a way that best suits their circumstances and operating methods. Although there are some basic similarities owing to common accounting principles, all are different for this reason. To simplify Red Deer County's data, we compiled all revenues into a standardized list of revenue sources that could be compared to other communities and is consistent with the American COCS revenue categories.

Revenue classifications

Red Deer County's 2004 revenue sources have been divided into nine standard categories based on available data. The sources of revenue were generally quite distinct making classification logical. It is important to consider the different categories relative to the land use categories, as different land uses provide more or less revenue based on revenue type. However, it is also critical to note the percentage of total revenue each of these categories is providing to the municipal budget.

Table 6 outlines the nine revenue classifications and provides an explanation and/or examples of each.

Table 6: Revenue Classifications

Classification	Detailed Sources
Property taxes	Taxes in lieu, water and sewer frontage, costs on taxes, drilling taxes, pipeline taxes, power line levies, pipeline levies
Grants and rebates	Municipal assistance grant, GST rebate, Agricultural Service Board, Alberta Environmentally Sustainable Agriculture, Summer Temporary Employment Program, West Nile, Ambulance and Disaster Services
Interest and investment income	Interest, investment, dividend
Oil and gas royalties	Oil and gas royalties
Permits and fees	Development, bylaw amendment, appeals, land use bylaw, Area Structure Plans, subdivision, development advertising fees, patrol access approval applications, subdivision offsite levies
Sales of goods and materials	Material and salvage

Service charges and recoveries	FOIP requests, assessment revenues, road closure revenues, land management revenues, inspections, dust control program, engineering services, campgrounds and parks, landfill, garbage pickup, tree planting, Agricultural Service Board education and awareness, development service charges, development planning project, Ambulance/Disaster Services recoveries, house and municipal land rental, roadway leases, sprayer rental, water and sewer utility contracts (Benalto, Springbrook, Spruceview, Southhills, Lousana), water meters, water line connection fees, Innisfail airport, patrol contracts (Norglenwold, Jarvis Bay, Delburne), Red Deer County fire operations contract
Fines and penalties	Patrol fines, municipal bylaw fines
Unknown	Municipal election revenue, Beautification

Total Revenue by Land Use

Allocation of revenues for each land use is provided in actual dollars and a percentage of the total revenue for comparison purposes (Tables 7 and 8). The corresponding figures (Figures 3 and 4) illustrate the comparison within each scenario based on percentages.

Table 7: Total Revenue by Land Use (with Education)

	Dollars	Percent
Commercial	$4,615,862	13.6%
Industrial	$11,545,653	34.1%
Residential	$15,239,133	45.0%
Working Landscapes (Agriculture)	$2,487,064	7.3%
Total	$33,887,711	100.0%

Figure 3: Total Revenue by Land Use (with Education)
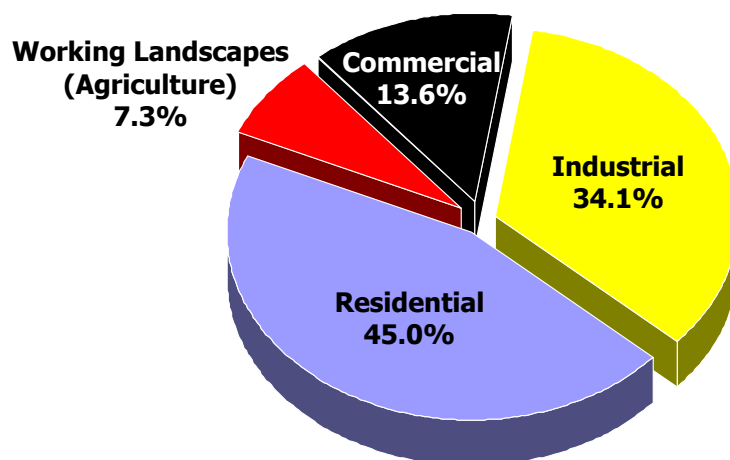
Table 8: Total Revenue by Land Use (without Education)

	Dollars	Percent
Commercial	$3,431,567	15.0%
Industrial	$7,714,203	33.8%
Residential	$9,966,580	43.6%
Working Landscapes (Agriculture)	$1,727,763	7.6%
Total	$22,840,112	100.0%

Figure 4: Total Revenue by Land Use (without Education)
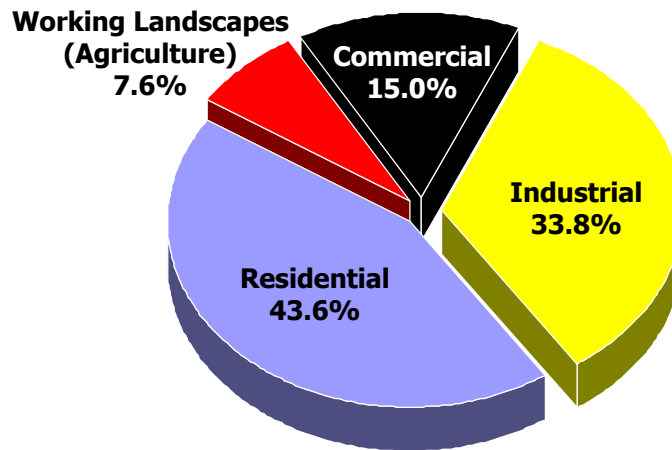
Total Revenues by Revenue Classification

Dividing the total revenues by land use category into the nine revenue classifications illustrates which land uses are contributing revenues through the various sources (Tables 9 and 10).

Table 9: Revenues by Classification by Land Use (with Education)

	Commercial	Industrial	Residential	Working Landscapes (Agriculture)	Total
Fines and Penalties	$39,638	$15,097	$139,664	$20,186	$214,585
	18.5%	7.0%	65.1%	9.4%	
Grants and Rebates	$601,928	$271,832	$2,729,324	$325,095	$3,928,179
	15.3%	6.9%	69.5%	8.3%	
Interest and Investment Income	$87,410	$220,561	$287,768	$47,314	$643,053
	13.6%	34.3%	44.8%	7.4%	
Oil and Gas Royalties	$0	$25,944	$0	$0	$25,944

	Commercial	Industrial	Residential	Working Landscapes (Agriculture)	Total
	0.0%	100.0%	0.0%	0.0%	
Permits and Fees	$652,452	$47,212	$95,205	$16,466	$811,335
	80.4%	5.8%	11.7%	2.0%	
Property Taxes	$3,094,295	$10,833,768	$10,624,072	$2,006,249	$26,558,384
	11.7%	40.8%	40.0%	7.6%	
Sales of Goods and Materials	$3,586	$351	$16,749	$519	$21,205
	16.9%	1.7%	79.0%	2.4%	
Service Charges and Recoveries	$136,387	$130,888	$1,344,252	$71,234	$1,682,761
	8.1%	7.8%	79.9%	4.2%	
Unknown	$167	$0	$2,099	$0	$2,265
	7.4%	0.0%	92.6%	0.0%	
Totals	$4,615,862	$11,545,653	$15,239,133	$2,487,064	$33,887,711

Table 10: Revenues by Classification by Land Use (without Education)

	Commercial	Industrial	Residential	Working Landscapes (Agriculture)	Total
Fines and Penalties	$39,638	$15,097	$139,664	$20,186	$214,585
	18.5%	7.0%	65.1%	9.4%	
Grants and Rebates	$610,069	$270,749	$2,720,893	$326,469	$3,928,179
	15.5%	6.9%	69.3%	8.3%	
Interest and Investment Income	$96,453	$219,358	$278,402	$48,840	$643,053
	15.0%	34.1%	43.3%	7.6%	
Oil and Gas Royalties	$0	$25,944	$0	$0	$25,944
	0.0%	100.0%	0.0%	0.0%	
Permits and Fees	$652,452	$47,212	$95,205	$16,466	$811,335
	80.4%	5.8%	11.7%	2.0%	
Property Taxes	$1,892,316	$7,004,671	$5,369,834	$1,243,965	$15,510,785
	12.2%	45.2%	34.6%	8.0%	
Sales of Goods and Materials	$3,586	$351	$16,749	$519	$21,205
	16.9%	1.7%	79.0%	2.4%	
Service Charges and Recoveries	$136,887	$130,821	$1,343,734	$71,319	$1,682,761
	8.1%	7.8%	79.9%	4.2%	
Unknown	$167	$0	$2,099	$0	$2,265
	7.4%	0.0%	92.6%	0.0%	
Totals	$3,431,567	$7,714,203	$9,966,580	$1,727,763	$22,840,112

Municipal Property Tax Revenues

The major source of revenue for the county is from property taxes: 78% - including education and 68% - excluding education. Municipal property taxes account for between more half of that in the education-included scenario (58%), and the entire amount in the education-excluded scenario. The significance of this revenue source warrants further exploration.

All parcels in the county are assessed by Red Deer County. Each year Council applies a mill rate for residential and non-residential properties for all municipal taxes, with the exception of exempt properties. However, Council does not determine the mill rate for education taxes.

The nature of property taxes is such that there is a lag time between the assessment and the taxation of the property. The assessment of parcels is based on the previous year and this can mean that property assessments do not reflect the market value in regions experiencing dramatic change. Regardless, the property tax provided by each land use is the actual value of revenues used to support the county's activities for the year.

Another important point for property taxes is that it includes taxation on parcels, improvements, and machinery and equipment. The machinery and equipment classification is not personal property, but rather machinery and equipment used as an essential component of industrial activities.

Table 11 and Figure 5 below, highlight each land use's contribution to municipal property taxes.

Table 11: Property Taxes by Land Use (without Education)

	Dollars	Percent
Commercial	$1,892,316	12.2%
Industrial	$7,004,671	45.2%
Residential	$5,369,834	34.6%
Working Landscapes (Agriculture)	$1,243,965	8.0%
Total	$15,510,785	100.0%

Figure 5: Property Taxes by Land Use (without Education)
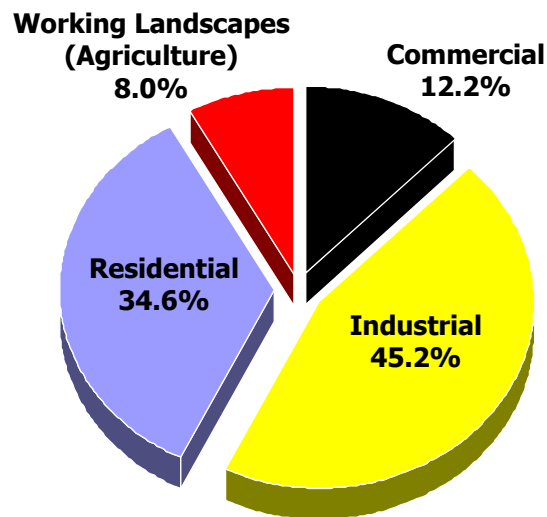
Education Taxes

Red Deer County also assesses properties for education taxes, but the Province of Alberta defines the tax rate. This revenue source is only accounted for in the baseline scenario that includes education. In this scenario, education taxes account for 33% of the entire county revenues. Table 12 and Figure 6 provide the details.

Table 12: Education Taxes by Land Use

	Dollars	Percent
Commercial	$1,201,979	10.9%
Industrial	$3,829,098	34.7%
Residential	$5,254,238	47.6%
Working Landscapes (Agriculture)	$762,284	6.9%
Total	$11,047,599	100.0%

Figure 6: Education Taxes by Land Use
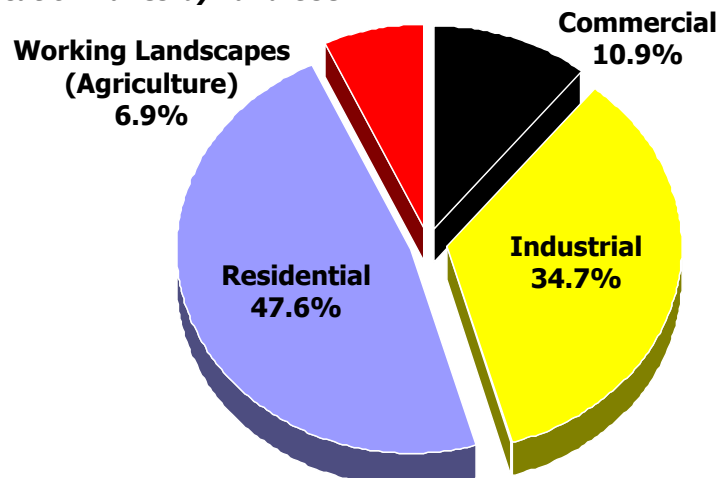
Non-Tax Revenues

The non-tax revenues come from a variety of sources and account for a relatively small proportion of the total revenues relative to property tax revenues (21.6% - including education and 32.1% excluding education). Tables 13 and 14 and Figures 7 and 8 represent the non-tax revenues by land use for both baseline scenarios.

Table 13: Non-Tax Revenues by Land Use (with Education)

	Dollars	Percent
Commercial	$1,521,567	20.8%
Industrial	$711,885	9.7%
Residential	$4,615,061	63.0%
Working Landscapes (Agriculture)	$480,814	6.6%
Total	$7,329,327	100.0%

Figure 7: Non-Tax Revenues by Land Use (with Education)
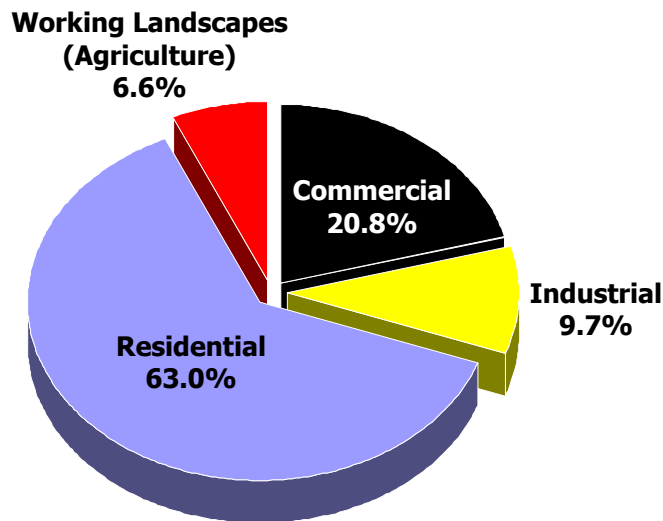
Table 14: Non-Tax Revenues by Land Use (without Education)

	Dollars	Percent
Commercial	$1,539,251	21.0%
Industrial	$709,532	9.7%
Residential	$4,596,746	62.7%
Working Landscapes (Agriculture)	$483,798	6.6%
Total	$7,329,327	100.0%

Figure 8: Non-Tax Revenues by Land Use (without Education)
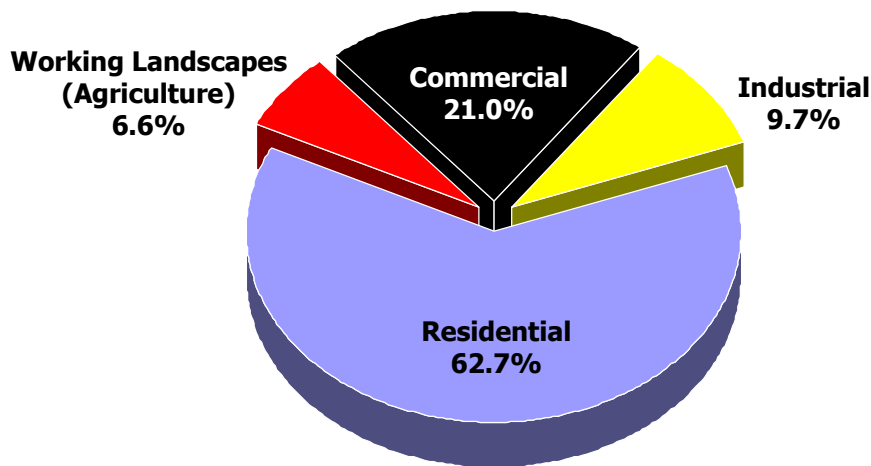
Ratios

Once all the expenditure and revenue data were collected and attributed to land uses, the sums of these values were used to create a series of ratios, comparing revenues to expenditures for each land use. The first set of ratios (including and excluding education) were calculated as the "baseline ratios," and were so named to differentiate from any subsequent sensitivity analysis or comparison testing.

Mathematically, the ratio calculation is simple: Ratio is 1 : $\dfrac{\text{Sum of Expenditures}}{\text{Sum of Revenues}}$

For example, a ratio of 1 : 1.50 means a land use is incurring $1.50 in expenditures for each $1.00 in revenues it generates. Conversely, a ratio of 1 : 0.50 means a land use is incurring only $0.50 in expenditures for each $1.00 it generates in revenues.

Baseline Ratios

Baseline ratios for both the education-included and education-excluded scenarios are provided in this section as well as their total expenditures and revenues. Table 15 shows the education-included scenario and Table 16 shows the education-excluded scenario. A comparison graph follows the table (Figure 9).

Table 15: Baseline Ratios (with Education)

	Commercial	Industrial	Residential	Working Landscapes (Agriculture)	Totals
Expenditures	$3,438,489	$1,079,792	$27,579,552	$1,740,729	$33,838,564
Revenues	$4,615,862	$11,545,653	$15,239,133	$2,487,064	$33,887,711
Ratio	1 : 0.74	1 : 0.09	1 : 1.81	1 : 0.70	

Table 16: Baseline Ratios (without Education)

	Commercial	Industrial	Residential	Working Landscapes (Agriculture)	Totals
Expenditures	$3,438,489	$1,079,793	$16,531,954	$1,740,729	$22,790,965
Revenues	$3,431,567	$7,714,203	$9,966,580	$1,727,763	$22,840,112
Ratio	1 : 1.00	1 : 0.14	1 : 1.66	1 : 1.01	

Figure 9: Comparison of the Baseline Ratios
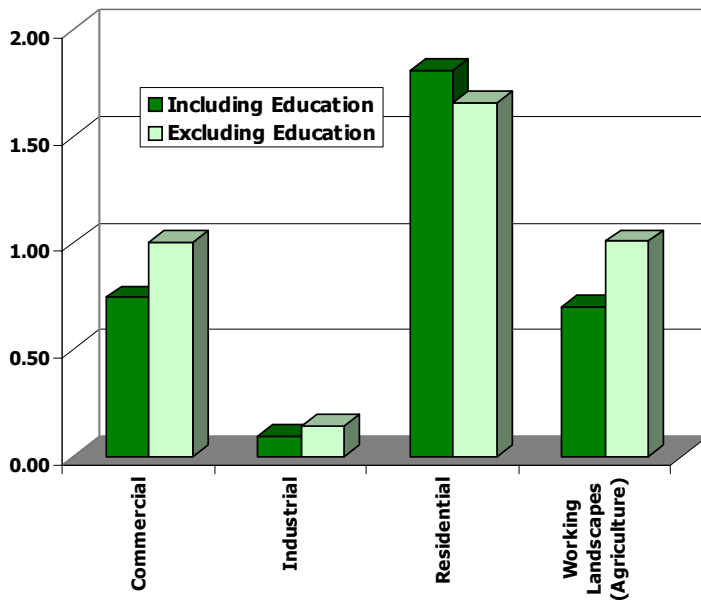
Conclusions

Observations

Commercial

In previous Cost of Community Services (COCS) studies, the Commercial land use has virtually always generated more revenue than it incurred in service costs (i.e., 'paid for itself'), usually by a significant margin[4]. At first glance, it appears that the Commercial land use in this study, though paying for itself, does so to a significantly lesser degree (with a cost of $0.74 and $1.00 for each dollar of revenue respectively in the education-included and education-excluded scenarios).

However, most American studies have considered Commercial and Industrial land uses as one combined land use. Combining those in this study results in costs of $0.28 and $0.41 (education-included and education-excluded, respectively), numbers comparable to the median ratio calculated in the American Farmland Trust's review of COCS studies (1:0.28). This suggests that previous studies combining Commercial and Industrial may actually be showing a result similar to this study's.

Previous studies may also be inappropriately characterizing both Commercial (over-favourably) and Industrial (under-favourably). The greater costs associated with the Commercial land uses are largely due to the greater level of road use, as there is generally a greater amount of public access to commercial businesses. This study's ratios would be even less favourable to the Commercial land use without the modifications made to the methods for allocating road-related expenditures (see *Report 3: Methodology; Allocating Road-related Expenditures and Revenues; Red Deer County Adaptation*).

Not surprisingly, the Commercial land use fares better in the education-included scenario, where additional revenues (education taxes) are included, but the additional expenditures are attributed exclusively to the Residential land use.

Industrial

The Industrial land use appears to be a significant subsidizer of all other land uses. That is, it consistently provides substantially more in revenues than it requires in service costs (34% of revenues, and 3-5% of expenditures). In the case of the education-excluded baseline scenario, the Industrial land use requires only $0.14 in servicing for each dollar of revenue, where Commercial and Working Landscapes are at the break-even point. This effectively means the

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[4] In a review of 103 COCS studies, the American Farmland Trust found a median value of 1:0.28 for the combined Commercial/Industrial land uses.

Industrial land use is directly subsidizing the Residential land use's requirement for $1.66 per dollar of revenue.

The low cost of this land use is more or less in line with other COCS studies, in fact sitting well below the median. However, as noted above, most studies combine Commercial and Industrial, likely diminishing the fiscal contribution of the Industrial land use in those studies.

A significant source of the Industrial land use's revenues is the "Power and Pipe[5]" taxes, largely the result of the booming oil and gas industry in the area. Because these represent a large revenue source, with minimal servicing requirements, we conducted a sensitivity test to identify how much of a factor this revenue source is in defining the ratios.

This test showed that even without the 'power and pipe' revenues, the Industrial land use would still pay for itself in dramatic fashion ($0.15 and $0.33 per dollar respectively in the education-included and education-excluded scenarios). This indicates that these revenues go directly to subsidizing non-Industrial land uses, and a downturn in this industry sector will have significant implications for Red Deer County's ability to service other land uses at 2004 levels.

Residential

The Residential land use ratios were within the range of previous studies, but definitely on the high side. The American Farmland Trust's review of 103 studies found a median cost of $1.15 for every dollar of revenue in the Residential land use, with a range of $1.01 to $2.11. This study found a cost of $1.81 in the education-included baseline scenario, and $1.66 in the education-excluded baseline scenario.

It is significant to note that the Residential land use did not pay for itself in any scenario in this study, not even in the re-calculations done to make this study more comparable to previous studies (see *Report 4: A Comparative Analysis of the Red Deer County COCS Study and Previous COCS Studies*). This effectively means that other land uses are subsidizing the level of service provided to the Residential land use.

Drivers of these high costs relative to other land uses include the significant costs of road development/servicing, and (based on interviews and time allocation data) the heavy focus of staff time on planning for and servicing the Residential land use.

The costs in Red Deer County may be higher due to the regional land use matrix. In this region, Red Deer County residents access commercial services in the City of Red Deer, resulting in a greater than usual amount of lower-cost Commercial land use existing outside of the County's jurisdiction, and thus a greater than usual proportion of higher-cost Residential land use existing within the County.

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[5] "Power and Pipe" refers to the revenues derived from linear industrial features, including power lines, pipelines, and cable lines.

In contrast to the other land uses, the Residential land use fares better in all education-excluded scenarios. Although the revenues for all land uses increase in the education-included scenarios, the additional expenditures are attributed exclusively to the Residential land use.

<u>Working Landscapes (Agriculture)</u>

Although it essentially still paid for itself, the cost of servicing the Working Landscapes (Agriculture) land use was surprisingly high. Despite the increased costs associated with servicing a disperse land use, the per acre costs of servicing this land use are very low. The American Farmland Trust's review of 103 studies found the median cost for Working Landscapes was $0.36 per dollar of revenues, with a range from $0.02 to $0.99. This study, however, found costs of $0.70 and $1.01 respectively for the education-included and education-excluded baseline scenarios.

A number of factors were identified which appear to have driven these results. An overarching consideration is that the dollar values of expenditures and revenues were generally much lower than those figures for the other land uses. This means a small change in dollar values on either side of the Working Landscapes (Agriculture) ledger can result in a measurable change in the ratios. With this in mind, two factors had a particular effect on the Working Landscapes (Agriculture) ratios: fire expenditures and the agricultural services program.

In 2004, the Fire Service program provided $500,556 in services to the Working Landscapes land use (accounting for approximately 30% of Working Landscapes expenditures). Protective Services staff indicated there was an unusually high proportion of calls originating from the Working Landscapes land use this year, largely due to a roughly 20% increase in grass fires over a normal year. More detailed fire records would allow us to determine what proportion of these fires were actually generated by other land uses (e.g., farm residences and passing train – factors identified as noteworthy by staff).

The Agricultural Services program provides $464,413 in services to the Working Landscapes (Agriculture) land use (about 27% of its expenditures), but generates only $212,135 in revenues attributable to that same land use. As noted above, this sort of discrepancy would likely make little difference in the other, higher revenue/cost land uses, but does make a difference in Working Landscapes.

As a measure of the influence of these two factors, if the Fire Service expenditures and revenues were removed, the baseline ratios would change from $0.70 to $0.50, and from $1.01 to $0.72 (education-*included* and education-*excluded*, respectively). Removing the Agricultural Services expenditures and revenues would change the ratios from $0.70 to $0.56, and from $1.01 to $0.84. If both Fire Service and Agricultural Services are removed, the ratios would change from $0.70 to $0.34 and from $1.01 to $0.51, putting them well within the median range of previous studies.

Unique Contributors to Red Deer County's COCS Study Results

The methods we designed for this Cost of Community Services (COCS) study are intended to be transportable and ultimately to facilitate comparison between Alberta municipalities. In the same spirit, we have attempted to identify some characteristics of Red Deer County that would produce ratios noticeably different from other Alberta municipalities.

Power and pipe revenues. As we noted earlier, significant revenues from tax levies on linear features (most notably power lines and pipelines) have had an impact on the Industrial land use ratios, and arguably on all ratios. This would not be the case for a rural municipality that did not have these features in equally significant supply.

Development growth. Red Deer County is experiencing significant development growth in the Residential, Commercial and Industrial land uses. This may make a target year less representative than it would be in a community facing less growth. Infrastructure for development in future years may have been created in 2004, and conversely, an "infrastructure deficit" may have been incurred where development in 2004 outstripped the capacity of municipal infrastructure.

Proximity to the City of Red Deer. At the time of this study, the City of Red Deer was the third largest city in Alberta by population (79,082 in 2005). Having a city of this size entirely within the boundaries of Red Deer County presents unique opportunities and challenges related to fiscal / land use issues which municipalities not adjacent to major cities would not face. For example, services in the City are used by County residents; services provided by the County are used by City residents; large population centres attract different types of businesses; the airport serving the city exists within Red Deer County; etc. This effect has been reflected in a significant way in how road-related expenditures and revenues are allocated (see *Report 3: Methodology; Allocating Road-related Expenditures and Revenues; Red Deer County Adaptation*).

Proximity to Queen Elizabeth II Highway (Highway 2). Red Deer County straddles Queen Elizabeth II Highway (formerly Highway 2), the province's major 4-6 lane highway, as well as a number of secondary highways branching off from it. These highways are owned and managed by the Province of Alberta, and for that reason were not included in this study. However, a significant amount of traffic originating in the County uses these roadways; and likewise, a significant amount of County traffic emanates from these roadways. Municipalities whose traffic patterns do not include such significant Provincial road networks will likely see those differences manifested in the assessment of their road-related costs.

Commercial and industrial land base. Red Deer County's proximity to both the province's major highway and its third-largest city makes it an ideal place to locate industrial and commercial enterprises which require larger populations and robust transportation

options. This has led to a more significant commercial and industrial land base than might occur in rural municipalities elsewhere in Alberta.

Limitations of this Study

Although this study has tremendous value in illustrating the connections between a municipality's fiscal and land use planning considerations over a given time period, it is important to keep it in context, and understand the functions this study does <u>not</u> satisfy.

Lack of predictive capability. The originators of the COCS methodology describe these studies as "snapshots" showing a set of relationships for a one-year time frame. Unique circumstances may arise in any given year which, while noted, are not excluded from the analysis. Likewise, circumstances may change in future years. Although broad generalizations can be made, it is inappropriate to suggest that the results from this study make a sound basis for detailed predictions of what will happen in future years.

Relation to other municipalities. At a conceptual level, the approach to the COCS in Red Deer County is the same as that used in over 100 other such studies. However, a key feature of that approach is to design the methods with respect to the unique circumstances of the subject municipality. Within Alberta, each rural municipality has slightly different revenue sources, spending priorities, demands for services, etc. Although this study gives an indication of what might be the case in analogous municipalities, it would be inappropriate to suggest the resulting ratios of this study, unreplicated, would be equivalent to those in other municipalities.

Relation to other studies. COCS studies all follow the same fundamental approach, which is dividing the revenues and expenditures of a municipality in one fiscal year into broad land use categories, and developing ratios based thereon. The details of how that is done are specific to the character of the municipality, the available data, and the underlying assumptions agreed to by the participants. For this reason, COCS studies can be viewed as a cohesive body of knowledge, emanating from the same starting point, and with the same basic framework. At a high level, they can be compared and contrasted. However, because the details of each study are tailored to fit the circumstances, it would be inappropriate to directly compare studies that have been conducted in different places and with different base assumptions.

Target vs. Average Year. COCS studies use a case study approach, generally choosing the most recent single year for which there is available data. Anomalies are likely to appear in any single year (major capital initiatives, disasters, economic booms, etc.). Using the case study approach means these abnormalities are not removed nor discounted, though, generally, they are noted in the discussion of the study, accompanied by comments related to what impact they might have on the ratios. For this reason, it is inappropriate to think of the study's "target" year as an "average" year, or one that

necessarily provides a fully representative picture. To get a sense of how representative the study results are requires viewing ratios in concert with discussions of the anomalies.

Available data. One of the hallmarks of a COCS is that it is designed to fit the capabilities of the subject community. This includes working with the data which the municipality has available. Although there are places where researchers might ideally call a halt, and commission an expensive study to plug data gaps, the nature of a Cost of Community Services study is to get past those gaps using proxies and surrogate measures. In these cases, we note where superior data would have been preferable, and clearly lay out the assumptions and methods used. In some cases, we provide multiple methods of circumventing data limitation issues. Depending on the intended use of the study results, users of this report must judge for themselves the impact of specific instances of incomplete data.

Costs and revenues vs. benefits. It bears repeating that this COCS study is designed to provide an analysis of the *fiscal* costs and revenues associated with four broad land uses. Each land use brings benefits to the community outside of the revenues generated, and takes a toll from the community outside of the expenditures incurred by the local government, which are <u>not</u> accounted for in this sort of study.

Recommendations

The intention of a Cost of Community Services (COCS) study, and this accompanying report, are to provide data to inform the discussions that are already taking place regarding what land use planning approaches are in the best interest of the community. In making these decisions, Councillors and staff in local governments must consider several types of information: input from constituents, outside studies, desired community character, legal guidelines, etc.

Although fiscal information is a very important type of information, it is only one type. For this reason, it is <u>not</u> our intention in this section to make sweeping recommendations to the County regarding what land use planning actions should be taken in the future. Rather, these recommendations relate to how this study could be used, and how the process could be improved to make this information an even more solid decision-making support tool.

<u>Potential Uses for this Study</u>

It is not the intent of this project, nor of this report, to provide prescriptive directions on how to incorporate the information into the decision-making process. However, in the interest of seeding the County's discussions on how to use this study, we can suggest ways and areas in which this study may contribute.

Community visioning

Planning exercises aimed at engaging the community in developing a vision for Red Deer County (e.g., Municipal Development Plan reviews, Land Use Bylaw reviews, Area Structure Plans) could benefit from the strategic context this study can provide. The data and findings could help inform or reconcile the sometimes inconsistent desires of the community in determining the type and level of services requested.

Regional planning

Generating a discussion amongst adjacent municipalities, or within regional bodies such as the Alberta Association of Municipal Districts and Counties or the regional Chamber of Commerce, could increase understanding of the interrelationships between regional municipalities.

Policy review

It is often difficult to measure if the policy being developed is being matched in weight by the operational activities. As many of the policies are made relative to land uses, this study can assist with the discussions around whether expenditures are matching policy priorities. This study can also inform discussions around the setting of mil rates.

Comparison of non-revenue and revenue-generating programs

Program areas and land uses that generate revenues are often given greater fiscal priority over those which do not generate revenues. This study provides a more level approach for comparing the true fiscal costs of these apples and oranges. For example, environmental protection activities are often given a lesser profile in fiscal discussions as they do not inherently generate revenues, and land uses such as Residential, a higher profile, but residential development may be a greater net drain on municipal finances.

Understanding the 'client'

Each municipal department is tasked with providing services to one or more of the land uses within the County. Using department specific data, managers can assess whether their expenditure level or human resource effort is aligned with the department's stated priorities.

Program Income / Revenue Assessment

An understanding of the true cost to a municipal department or program of providing services to different land uses, can better inform whether revenues are capably equated to expenditures. For example, a study of the data may indicate that a given program, identified as a priority, is under-resourced and the need for a renewed effort to secure grant monies is indicated.

Dissemination of Results

It will be important for the public, especially rate-payers, to have access to this study so this piece of information can be incorporated into the public dialogue. We recommend disseminating the results through a variety of options such as:
- a newsletter to rate-payers,
- inclusion of the report on the Red Deer County website,
- provision of the report upon request to rate-payers and other interested parties, and
- generation of discussion within the community regarding the implications of the results.

Inventory of Data Deficiencies

The undertaking of a study such as this automatically identifies data deficiencies which not only affect the study, but also the capable delivery of services. For example, many municipal services are provided on a region-wide basis, yet are funded primarily by a land-use-based apportionment. In some instances, there was insufficient data to determined how ambulance and fire services were used differentially across the landscape, yet contracts and plans are based on a geographic or land use basis. This information would help future COCS studies, but would also be valuable to regional contract negotiations and to service planning managers.

Study Replication

COCS results have limited predictive capability because they are a snapshot view of a municipality at a point in time, in this case Red Deer County in 2004. However, if Red Deer County replicated this study periodically, (e.g., every three years) while tracking changes in fiscal and land use policies, trends could be identified. This would give the county an understanding of how fiscal and land use policy decisions are being reflected in the actual fiscal and land use matrix, and would provide some basic trend information.

Further Research into Different Servicing Demands

To gain further insight into the COCS study results, Red Deer County could investigate the servicing costs of various land use sub-categories. The COCS study specifically groups all land uses into one of four categories, but within these categories different developments will generate more or less servicing requirements than the average. Exploring the servicing differences between sub-categories within Red Deer County would complement the COCS study (but would not change nor inform the COCS study). Examples include:
- extensive versus intensive agriculture;
- clustered country residential versus large lot acreage residential; and
- highway commercial versus local commercial.

Future COCS Research Improvements

Administration of the COCS Project

During the COCS study, Red Deer County adopted a new system of budgeting based on "Programs". This new system of budgeting is consistent with the COCS study process. However, because Red Deer County had not used this format in 2004, the financial actuals were not itemized in this manner. Having access to information in this format is beneficial to a COCS study, but difficulties were encountered because this was a transition year.

In the future, Red Deer County staff members should document the process used for dividing their line items into Program Summaries. It would be most beneficial if Red Deer County developed a standardized process for consistency.

As well, if a COCS study is conducted again during a transition such as this, and no documentation is available, it would be advisable to use the system that was in place during the target year.

Roads Data

Roads-related expenditures account for a considerable portion of Red Deer County's budget (56%) and having more accurate local data would be beneficial to both a COCS study and the municipality in general.

Ultimately, the challenge is in attributing road usage to specific land uses. Trip purpose research provides the most solid empirical method for making that connection, and we recommend exploring the possibility of using an Alberta version of a Trip Generation report. Currently, there is a Trip Generation Report being produced for Alberta Infrastructure and Transportation; however, it does not address Working Landscapes as one of the land uses generating trips, and could therefore not be utilized for this type of study. In the future, a Trip Generation report that includes all the major land uses could prove to be an invaluable complement to the COCS methodology.

As well, Trip Generation information needs to be paired with geographically-based data related to actual road usage (e.g., traffic volumes, and where snow plough activity, graveling, brushing, bridge development, etc. are occurring). We recommend more geographically-referenced data on road maintenance be developed as well.

In essence, if roads can be characterized in this fashion (how much and what kind of use, and who is using it) there will be a basis on which to assign costs to land uses. If that characterization can be represented spatially, it will show what proportion of road-related costs are incurred by the four land uses in the County, in a zone or on a particular stretch of road.

Protective Services Data

A significant amount of data is collected regarding protective services (patrol, fire and ambulance), but very little of it was related clearly to land use. This created obvious difficulties for the COCS study. To avoid these difficulties in the future, we recommend that Red Deer County collect data for these activities in a manner that relates the service to land uses.

In the case of fire, all that is required is a more explicit address and perhaps more detailed classification of fire calls. For patrol and ambulance, there is currently no data related to land use and this is a considerable concern. If this information was available even for a representative period (e.g., one month out of every quarter), this would provide more information than currently exists and would improve this component of the COCS study.

We feel that this data also would be useful outside of a COCS study, and provide an improved basis for designing service contracts, deploying resources and fleets, and planning for future service provision.