

Public Preferences for Transfer of Development Credits in the BHI

Katherine Packman¹, Marian Weber¹, and Peter Boxall²

1 – Alberta Innovates Technology Futures, Edmonton AB;

2 – Department of Resource Economics and Environmental Sociology, University of Alberta

Purpose:

Investigate public preferences for Transfer of Development Credit Program Options in Strathcona County, Alberta

- Determine trade-offs between conservation and development land uses
- Rank alternative land use planning policies and Transfer of Development Credit options

Background:

Future growth is an important factor that must be considered in urban planning. Over the last decade Strathcona County experienced high population growth rates averaging over 2% per year which are expected to continue into the future. The Beaver Hills Initiative (BHI) area is a sensitive and unique ecosystem which is at risk from continued sub-division expansion.

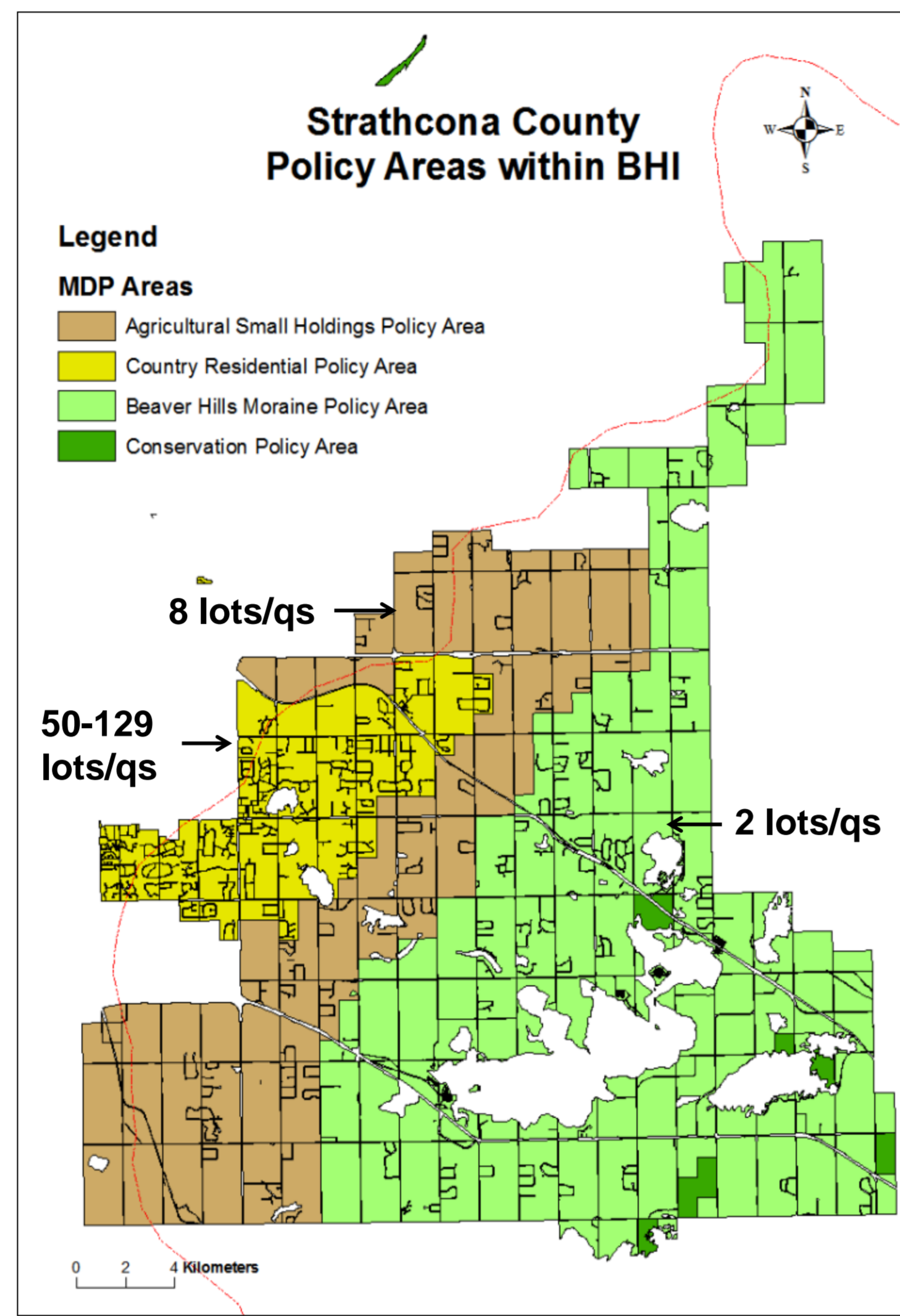


Figure 1 Map of Strathcona County showing allowable housing densities (lots per quarter section) by Land Use Bylaw Policy Areas

Strathcona County tested the feasibility of a Tradable Development Credit (TDC) to provide incentives for conservation in the sensitive BHI area while accommodating growth in areas more appropriate for intensive growth. In order to accommodate the incoming population, more houses will need to be built. Current trends favour low density housing which imposes a larger footprint on the landscape by converting more land and breaking up contiguous habitat. The alternative is to encourage higher density housing, which will lessen the urban impact on the environment but is generally less favoured by the public. TDC programs can lead to significant changes in land use patterns, leading to higher densities in development areas, and more conservation in areas zoned for conservation. The question is whether the public is willing to accept higher housing densities in rural residential areas in order to conserve land.

TDCs:

TDCs are a type of market based instrument used in land use planning to protect an area of importance by re-directing development from sensitive or vulnerable areas (i.e. the BHI) to places that are more appropriate. A TDC program requires identifying a “sending area” which is targeted for conservation, and a “receiving area” targeted for more intensive development. Landowners in the sending area receive credits for extinguishing development potential on their land, by sending it to receiving areas. Developers in the receiving area pay for development credits. In return they are allowed to develop higher densities than would otherwise be the case under existing policy. In the TDC scenarios examined, the county considered sending areas in the Beaver Hills Moraine Policy Area (TDC scenario 1), and in the Agricultural Small Holdings Policy Area (TDC Scenario 2) (see Figure 1). In the first scenario landowners would receive credits for reducing development potential from 2 lots per Quarter Section as allowed under existing land use bylaws to 1 lot per Quarter Section. In the second scenario, landowners could reduce density from 8 lots per quarter section to 1 lot per quarter section. The scenarios considered only allowed for participation by in-tact (previously un-subdivided) quarter sections. The receiving area was the Country Residential Policy Area. In that area, developers could “bonus up” densities from 50 lots per quarter section (allowed under the current land use bylaw) to 129 lots per quarter section.

Methodology:

A **Choice Experiment** was used to elicit the preferences of the public with respect to development and conservation. Choice experiments ask people to make choices between different hypothetical policy scenarios based on their different environmental and economic attributes. Choice experiments focus on the public’s willingness to make tradeoffs between policies which result in different impacts on these attributes.

The Survey

Respondents were asked to complete 6 choice tasks which involved choosing between two hypothetical policy options based on the different levels of attributes presented for each policy. Figure 2 shows an example of a choice task. The attributes were based on focus groups with developers, landowners, and Strathcona County planners.

Attributes:

They included amounts of land in **natural cover** (% land in tree stands, grasslands, or wetlands), **agriculture** (% land under agricultural practice), **residential land uses** (% land converted to residential development), **fragmentation** (degree of breaking up of habitat), **risk of future conversion** (likelihood of natural or agricultural land being developed in future), as well as impacts on **taxes** (average tax paid per household per year), **housing densities** (number of dwellings per quarter section), and area of **public green space** (% of residential area dedicated to public use).

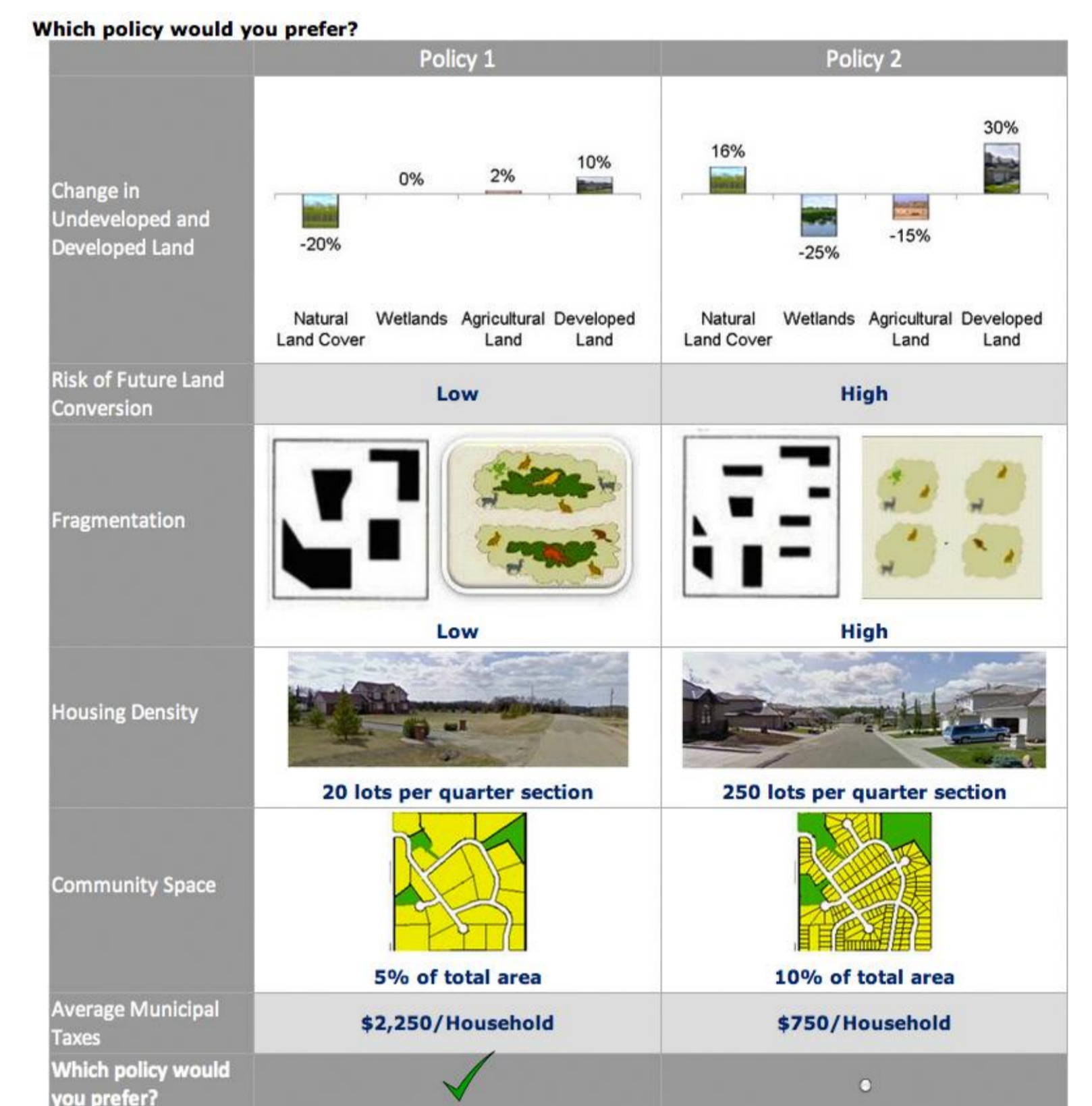


Figure 2 Example of choice card shown to survey participants

Survey respondents were recruited by telephone by Advanis, a market research company in Strathcona County. Simulation and pilot testing were used to come up with attribute levels and the final experimental design for the choice experiment. The survey used an online format that included warm-up questions, the choice task, and de-briefing questions. Information for the choice task including discussion of the context and definition of the attributes was provided in a 5 minute video which was shown prior to the task. The survey was shown to a group of experts and pre-tested with the general public, and the experimental design was updated based on initial pre-test regression results. There were 434 responses to the survey and the sample is representative of Strathcona County. On average the survey took 25 minutes to complete.

Results:

A pooled Logit regression model was run to analyse the survey results. Coefficients for each attribute are presented in Table 1. The coefficients represent the change in probability of selecting a policy option given a change in the level of the attribute.

Overall respondents:

- Value **natural** and **wetland** land cover **positively**
- **Negative** response to increasing the amount of **developed land**, to **higher density** development, and increased **taxes**.
- **Less fragmentation** and **more community space** were preferred

Table 1 Logit regression coefficients

Variable	Coefficient
Constant	-0.13
Natural Cover (% change)	0.90**
Wetland Cover (% change)	1.29**
Developed Land (%change)	-0.79**
Density (lots per quarter section)	-0.37**
Risk of Land Change (high/low)	0.12**
Fragmentation (high/low)	0.24**
Community Space (5%/10%)	0.07**
Tax Level (\$/house/year)	-0.80**

R² = .10

** significant at 1%

The regression coefficients were used to evaluate the changes in attribute levels under different land use policies. A Business As Usual (BAU) case was compared to two TDC scenarios based on simulated changes in attribute levels. **The results show that 59% of the time, the public would choose the TDC scenarios over BAU.** However there was no difference in aggregate preferences between TDC scenarios.

Conclusion:

In designing land use policy, planners make choices that involve important public tradeoffs between conservation and development in their neighbourhood. Choice experiments can help decision makers evaluate the public acceptability of different policy options. In this study we demonstrated that the public preferred transfer of development credit scenarios to development under current zoning in Strathcona County. This information can support the County in developing a TDC program to conserve significant natural features in the Beaver Hills.