

IMPACT OF OIL AND GAS ACTIVITY ON RURAL RESIDENTIAL PROPERTY VALUES

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The conclusions, opinions and recommendations expressed in the report are those of the authors and do not necessarily reflect the views of the organizations who employ them.

EXECUTIVE SUMMARY

This study seeks to address the concern often raised by landowners that the encroachment of certain industrial facilities has a depressing effect on land values. Many of these concerns have been directed at the oil and gas sector and at sour gas activity in particular. The study objective was to determine whether such negative effects could be statistically established.

The investigation of potential impacts of the oil and gas industry on property values began with the selection of regions of the province to study. The selection criteria were simple and pragmatic; the study team looked for areas of the province where oil and gas activity principally sour gas activity - coexisted with relatively high population densities. Three municipalities from the Calgary region were selected: the Municipal District (MD) of Rocky View No. 44; the MD of the Foothills No. 31; and Mountain View County. Subregions were identified within these municipalities that featured large sales volumes of country residential properties in and around pockets of fairly intensive sour gas development. As well, subregions were identified where there were property sales in areas where there has been little to nothing in the way of oil and gas development. These two sets of data formed the basis for a comparison of property prices between properties with similar attributes other than their proximity to oil and gas activity.

The study team focused on residential properties that were larger than 1 acre but less than 40 acres. The 1-acre minimum implies rural rather than urban properties, with an improved probability that differences in property values would be more directly influenced by proximity to oil and gas activity, rather than by other urban influences. Limiting the sample size to properties less than 40 acres was intended to exclude agricultural land use, again with the intent of isolating impacts that could be more attributable to proximity to oil and gas activity rather than, for instance, to differences in the quality of agricultural land.

Property characteristics and sales were collected from real estate data for properties sold between January 1994 and March 2001. The price range was from \$150,000 to \$450,000. A property's attributes were separated into two categories: property amenities that homebuyers typically look for, and oil and gas facility attributes. The former were taken directly from the Calgary Real Estate Board data (1) and the latter from EUB data.

The aim of the analysis was to determine and assess the impact of several measurable objective variables on property prices. These variables (dubbed "facility variables") included information on a variety of different oil and gas facilities and three specific different types of impact on price:

- **intensity** impacts, generally the number of facilities near a property;

- **proximity** impacts, the distance of these facilities from the property; and
- impacts resulting from the **age** of the facilities.

The impacts of both the property and facility variables on prices were analyzed through a series of econometric models designed to maximize the chance that the statistical significance of each variable could be properly assessed. This approach allowed the property amenities to be measured in isolation from the supposed impacts of oil and gas facilities.

The modelling suggested that, generally:

- **Intensity of oil and gas activity (as measured, for example, by the number of facilities within a given area) had a clear statistically significant (2) negative influence on price.**
- Only general evidence was obtained for the influence of proximity.
- **Both old and new sour gas facilities had a negative impact on price.**

The connection between facilities and residential prices could likely be attributable to such factors as visual impacts, noise, odour, and hazard. However, the analysis ultimately was unable to isolate for these types of factors.

In terms of impacts of specific types of facilities:

- **Wells and flaring batteries were found to have a statistically measurable negative influence on property value**, but there was no discernible difference between the impacts of sweet and sour facilities.
- Despite indirect information collected on pipelines, no conclusions were reached regarding their impact.
- Sour gas plants were not found to have a statistically significant influence on prices.

The study found that a single facility, such as a well or flaring battery, in reasonably close proximity to a given residence might be expected to have an impact on the properties in the range of 0 to 5 per cent. **In instances where a number of new facilities were being proposed, such as a number of wells within 4 kilometres, the study suggests that the impacts on the property's value could be in the order of 10 per cent.** While some individuals might well attach a greater premium to avoiding such facilities, this study suggests that this would not be typical market behaviour.

This is not to say that in particular circumstances encroachment on residential property by the oil and gas industry would always be a relatively minor event. It is not difficult to imagine situations where an unusual concentration of wells, flaring batteries, and other production facilities could impose a more severe penalty on the value of nearby residential property. While the authors believe that, in general, such field equipment is not cause for a pronounced impact on property values, some consideration of site-specific conditions is likely to be warranted.

1. The Calgary Real Estate Board data were provided courtesy of Municipal Affairs.
2. Statistical significance in the context of this study merely means that we can conclude (with 95 per cent confidence) that the given variable(s) has a positive or negative impact on price. In technical terms, this is equivalent to saying that the coefficient of the given variable in the model is found to be something other than zero within a 95 per cent confidence interval.