Calgary

Fall 2022

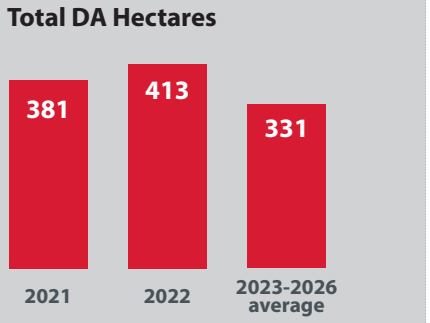
Development Agreement and Off-site Levy Forecast

Executive Summary

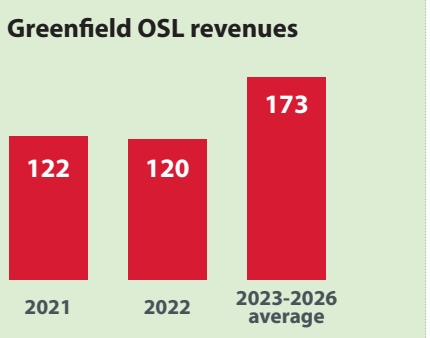
Every fall, Corporate Economics prepares a forecast of the land area of new Development Agreements (DAs) and their associated off-site levy (OSL) revenues. These forecasts of land absorption and revenues from levies assist in the financial and physical planning of the City. The fall 2022 forecasts uses a statistical model that relies on the forecast estimates contained in Corporate Economics' forthcoming Fall 2022 Calgary and Region Economic Outlook.

In 2022, Calgary's economy has moved beyond the robust recovery phase. As the significant economic challenges of COVID-19 have subsided this year, tens of thousands of jobs have emerged. The number of people migrating to Calgary internationally and from other parts of Canada has also increased. These favourable economic conditions and low interest rates at the start of the year have led to a strong real estate market in 2022.

The OSL revenues forecast uses rates and processes from the 2016 OSL bylaw. A new bylaw proposal is under development for Council approval. The current OSL forecast does not account for any changes to the OSL structure or rates resulting from the new bylaw. Corporate Economics will apply any changes resulting from the new bylaw in the Fall 2023 forecast.



Calgary experienced a mild surge in new development in 2022 due to low interest rates and post-pandemic demand. Higher interest rates and stable economic growth will cause the pace of DA's to moderate in 2022-2023.



Since OSL levies are not paid immediately following the signing of a DA, an increase in OSL revenues will not be observed in 2022. Rather, an increase in OSL revenues will be observed in 2023 and onwards.

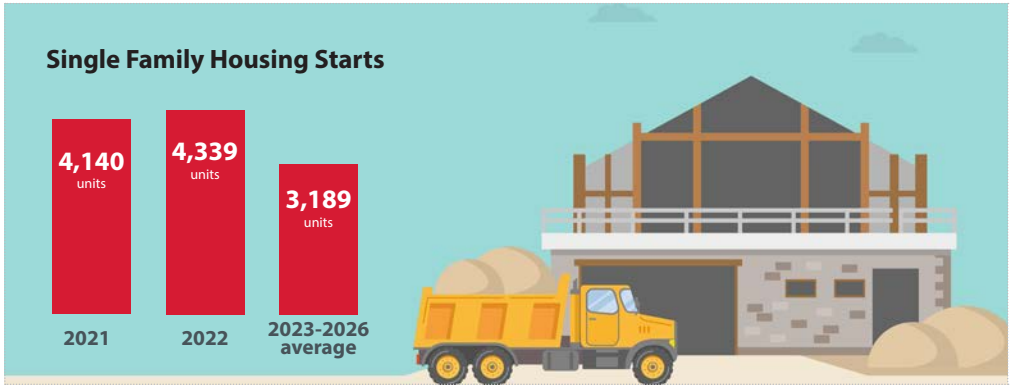
Analytical Approach

The DA land forecast relies upon a statistical forecasting model. The model uses historical data to estimate the relationships between land absorption and other economic indicators. Then, given the forecasted indicators from the Fall 2022 Calgary & Region Economic Outlook as input, the model produces a forecast for annual DA land absorption. The most recent year-to-date information and indications of developer expectations also support validating the forecast results.

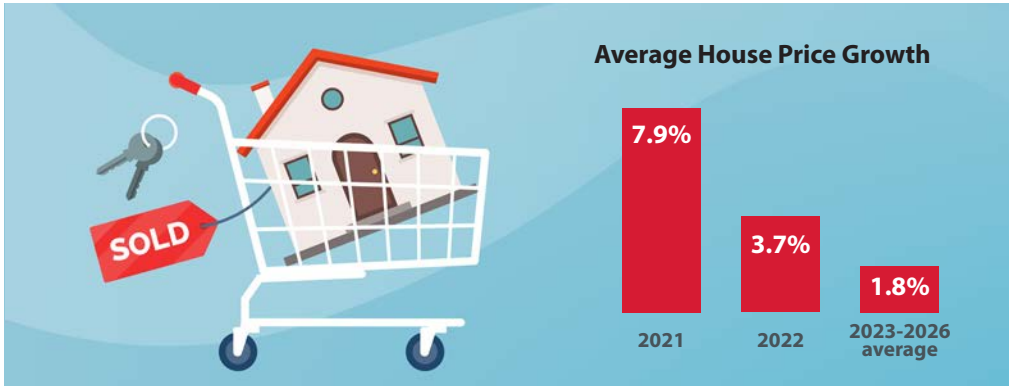
The two primary drivers of land absorption used by the model to generate the forecast are single-family housing starts and average resale house prices. Single-family housing starts reduce the available inventory of development-approved land more prominently than multi-family starts, increasing demand for new land for development. Resale house prices also affect the price of new houses. They are another important indicator of the state of the residential real estate market driving the forecast results.

Economic indicators, such as population, employment, and interest rates, play a secondary role in driving the forecast. These broader economic indicators drive Corporate Economics' main economic forecasting model. These indicators demonstrate the importance and contributions of demography and affordability in the DA forecast results.

Historical distributions are applied to estimate how many forecasted hectares are greenfield or established, residential or non-residential, or in which watershed area. The forecast of OSL revenues uses the rates and procedures from the 2016 OSL bylaw. Future levy rates are estimated based on a non-residential building construction inflation forecast. The final cash flow of OSL revenues uses the timing of payments outlined in the 2016 bylaw.



Single-family housing starts in Calgary surged in 2021 and 2022, as a desire for increased living space during the pandemic shifted demand towards single-family homes. In 2023 and onwards, demand for single-family housing is expected to partially subside and reduce demand for new land for development.



In response to increased demand for housing and low interest rates, housing prices in Calgary increased significantly in 2021 and 2022. The rate of price growth is expected to be more moderate in 2023 and beyond and dampen incentives for rapid new development.

Challenges and Risks

Challenges

Many challenges arise in the creation of the forecast. First, data for development agreements and the explanatory economic indicators are only available back to 1990, giving a relatively small window for the model to determine the relationships between the different indicators. In addition, the breakdown of DAs as greenfield or established is only available back to 2016. The limited data results in a wider confidence interval for the forecast numbers.

Some factors that determine the demand for new development are challenging to quantify. For example, despite economic conditions, developers have timelines and other constraints that affect when they enter into development agreements. There is an ongoing effort to account for as many of these factors as possible in the forecasting model.

These challenges mean the actual outcome from year to year may deviate from the forecast number. However, the total sum of land absorbed over the next five years should remain fairly accurate despite potential deviations in individual years.

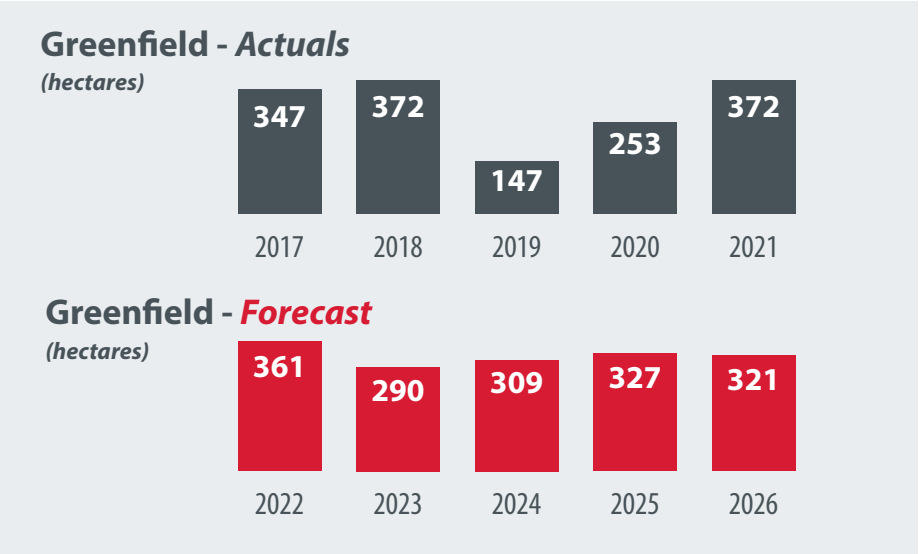
Risks

There are both upside and downside risks to the forecast. The global economy is still in a state of significant uncertainty, with ongoing disrupted supply chains, high inflation, and rising interest rates.

The OSL bylaw change expected in 2023 is another potential source of future change. An above-trend rate increase due to the bylaw change could cause developers to rush to secure DAs before the new rates take effect, creating a temporary surge. Any change in rates would also affect the OSL revenue forecast.

Results and Implications

Chart 1: Historical and Forecast Greenfield DA Hectares



After a slump in new development from 2019-2020, DA land absorption picked back up in 2021, reaching 381 hectares (ha). During the pandemic, low interest rates, consumer demand for additional living space, and a recovering economy spurred the rebound in new development. Despite the beginning of a series of interest rate increases in 2022, Calgary's real estate market has remained relatively strong. Calgary's economy has benefitted from high oil prices. Migrants continue to be attracted to the city by its strengthening economy and relatively affordable housing compared to other major cities in Canada. Total DA absorption should rise to 413 ha in 2022.

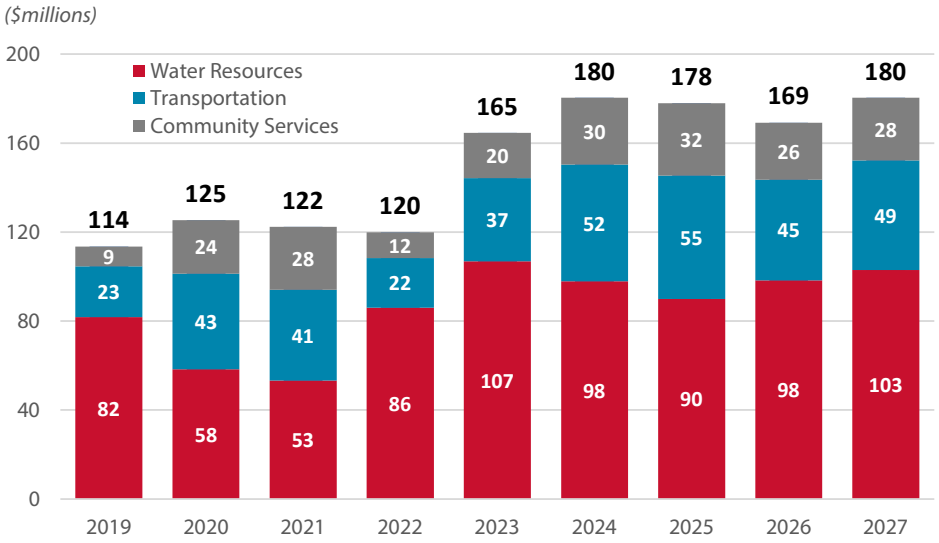
In 2023, rising interest rates would cool the market and moderately reduce DA land absorption to 313 ha. From 2024 to 2027, DA land absorption should recover slightly and average 338 hectares annually.

Results and Implications

Most DAs will be residential developments in greenfield areas throughout the forecast period, as observed in the last five years. While most DAs are classified as residential, small commercial areas are often contained within these residential developments. Developments that are primarily non-residential should appear only occasionally from 2022-2027.

Established area DAs would remain a small component of the total DA area. While established area DAs are uncommon, much of the population growth in established areas comes from smaller individual construction projects that increase density without requiring a DA. These projects may pay established area off-site levies before a development permit rather than through a DA.

Chart 2: Annual OSL Cashflow by Infrastructure Type



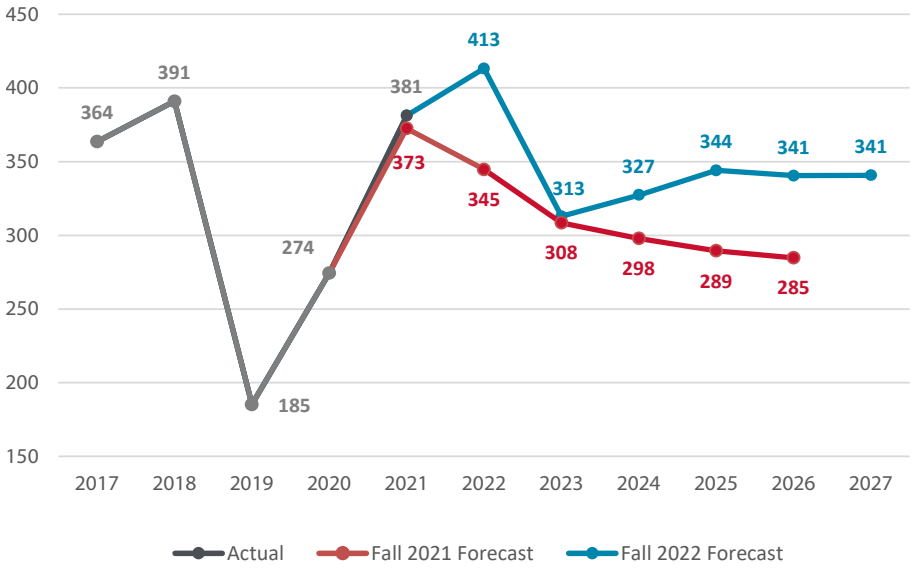
Off-site levy revenues are not received in the year that a DA is signed. Instead, payments occur during the three years after the DA is signed. Thirty per cent of the total levy falls due in the first year following the DA, 30 per cent in the second year, and 40 per cent in the third year. Because of the delay in receiving payments, total levies paid should remain relatively small at $120 million in 2022. However, by 2023, more of the rebound in development since the pandemic will be visible in levies paid, with total revenue reaching $165 million. Between 2024 and 2027, the total annual levies paid should average $177 million annually.

Levies directed to Water Infrastructure fall due in the first and second years following the signing of a DA. The significant increase in DAs signed in 2021 has led to levy revenues for Water Infrastructure increasing from $53 million in 2021 to $86 million in 2022. Levies for Water Infrastructure should increase further to $107 million in 2023.

The off-site levies for Transportation Infrastructure become due in the second and third years following a DA. Thus, levies for Transportation Infrastructure will be small in 2022, at $22 million, reflecting the slow development during 2019-2020. The revenues attributable to Transportation Infrastructure should increase in 2023 and beyond, reaching $37 million in 2023 and averaging $51 million annually from 2024 to 2027.

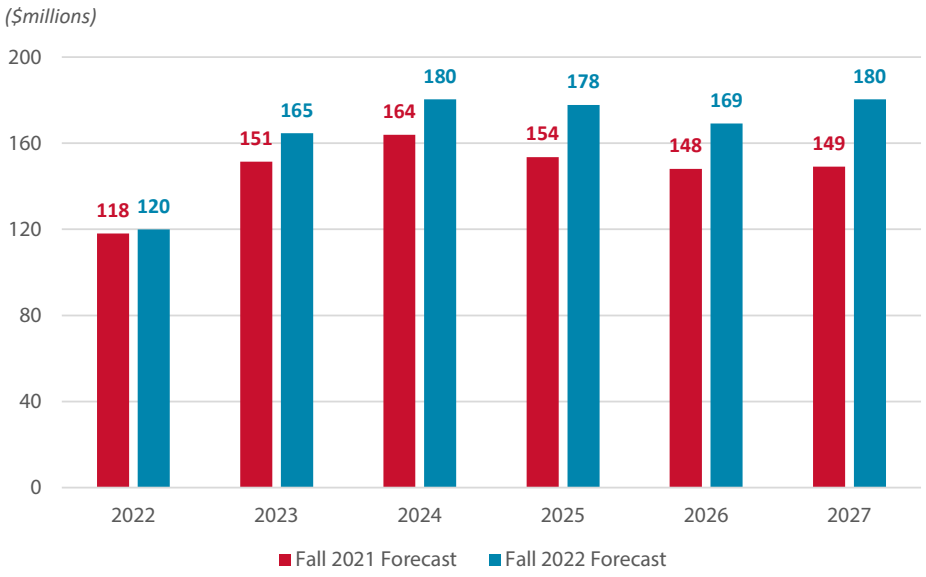
Levies for Community Services fall due in the third year after the signing of a DA. Since DA activity was slow in 2019-2020, Community Services-related Infrastructure should receive $12 million in 2022 and $20 million in 2023. From 2024 to 2027, levies should average $29 million annually.

Chart 3: Total DA Hectares Forecast Comparison



Compared to the Fall 2021 forecast, the total DA land absorption outlook has improved. Minor methodology changes to the forecasting model explain some of the improvements. In addition, the new outlook for Calgary's economic condition is more robust. Global oil prices remain high, supporting the local energy industry. Furthermore, Calgary's economic recovery from the pandemic advanced faster than expected. Higher interest rates will create headwinds in 2023, making the forecast improvement only minor in that year. However, the forecast of stable economic growth from 2024 onwards contributes to an improved long-term outlook for development.

Chart 4: Total Greenfield OSL Revenues Forecast



The improved outlook for DA land absorption also translates into higher expected OSL revenues.[1] Due to the timing of OSL payments 1-3 years following a DA, the improvement in the greenfield OSL revenue forecast is most apparent in 2023 and beyond.

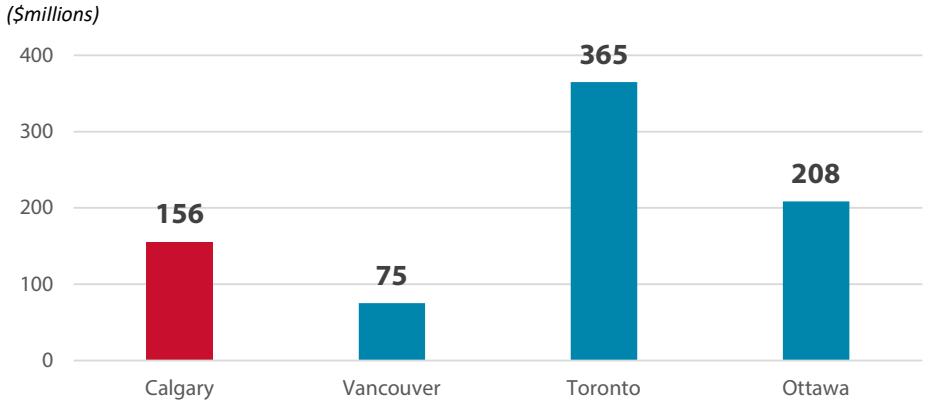
1 Due to data constraints, only levies from greenfield DA's are calculated in this report.

Comparison with Other Municipalities

Nearly all major municipalities in Canada collect some off-site levy or development charge to cover the costs of building infrastructure that serves new developments.[2] However, the design of these charges varies considerably between municipalities. The types of infrastructure costs covered by the charge may differ, as may the collection structure of the charge. In many municipalities, some infrastructure costs get collected on an agreement-by-agreement basis with developers rather than being collected according to predefined rates in a formal development charge or off-site levy. Table 1 contains a comparison of development charges in some large Canadian municipalities.

The total revenues received by municipalities from off-site levies or development charges depend on the set rates and the amount and type of growth in the municipality. Compared to other large municipalities, The City of Calgary collects neither the most nor the least in total off-site levies (both greenfield and established area levies included). Charts 5 and 6 compare The City of Calgary's total off-site levy revenues in 2021 with other major Canadian municipalities in dollar terms and as a share of total municipal revenues.[3]

Chart 5: Total (Greenfield and Established Area) Off-site Levy or Development Charge Revenue in 2021 by Municipality



2 The City of Montreal does not collect these types of development charges, though some other types of fees may be applied to new developments.

3 Edmonton is excluded because its off-site levy bylaw only came into effect in 2022.

Comparison with Other Municipalities

Chart 6: Total (Greenfield and Established Area) Off-site Levy or Development Charge Revenue in 2021 by Municipality as a Share of Total Revenue

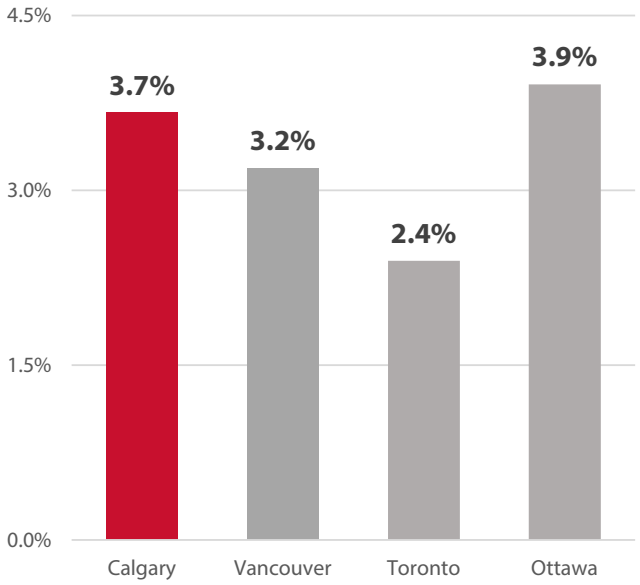


Table 1:
Comparison of development charges in major Canadian municipalities

Municipality	Services funded by the charge			Collection structure type
Calgary	■ Water ■ Storm Sewer ■ Sanitary Sewer ■ Water Treatment	■ Transportation ■ Fire ■ Library	■ Police ■ Recreation ■ Transit	■ Greenfield: per hectare ■ Established Residential: per unit ■ Established Non-residential: gross floor area
Vancouver	■ Parks ■ Childcare Facilities	■ Social and Non-profit Housing ■ Engineering infrastructure	■ Sewage ■ Water ■ Drainage	■ Gross floor area
Edmonton	■ Fire Halls			■ Per hectare
Toronto	■ Spadina Subway Extension ■ Transit ■ Roads and Related ■ Water ■ Sanitary Sewer ■ Storm Water Management	■ Parks and Recreation ■ Library ■ Affordable Housing ■ Shelter ■ Police ■ Fire	■ Ambulance Services ■ Development-Related Studies ■ Child Care ■ Waste Diversion ■ Long Term Care	■ Residential: per unit ■ Non-residential: gross floor area
Ottawa	■ Roads ■ Wastewater ■ Water ■ Stormwater Drainage ■ Protection	■ Transit ■ Parks Development ■ Recreation ■ Libraries	■ Paramedic Services ■ Affordable Housing ■ Corporate Studies	■ Residential: per unit ■ Non-residential: gross floor area

Forecast Tables

						FORECAST					
	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Development Agreement Land Absorption *(hectares)*											
Total	364	391	185	274	381	413	313	327	344	341	341
Greenfield	347	372	147	253	372	391	290	309	327	321	321
Greenfield Residential	347	338	143	253	370	375	278	297	313	308	308
Greenfield Commercial	0	0	4	0	1	11	8	8	9	9	9
Greenfield Industrial	0	34	0	0	0	5	4	4	4	4	4
Established	16	19	38	21	10	22	23	18	18	20	20
Off-site levy Revenues *(Greenfield Only, $millions)**											
Total			114	125	122	120	165	180	178	169	180
Water Resources			82	58	53	86	107	98	90	98	103
Transportation			23	43	41	22	37	52	55	45	49
Community Services			9	24	28	12	20	30	32	26	28

**Since Off-site levies may not be completely paid until three years after the signing of a DA, OSL revenues only fully reflect the 2016 bylaw beginning in 2019*

Appendices

Appendix 1: Forecasting Model Performance

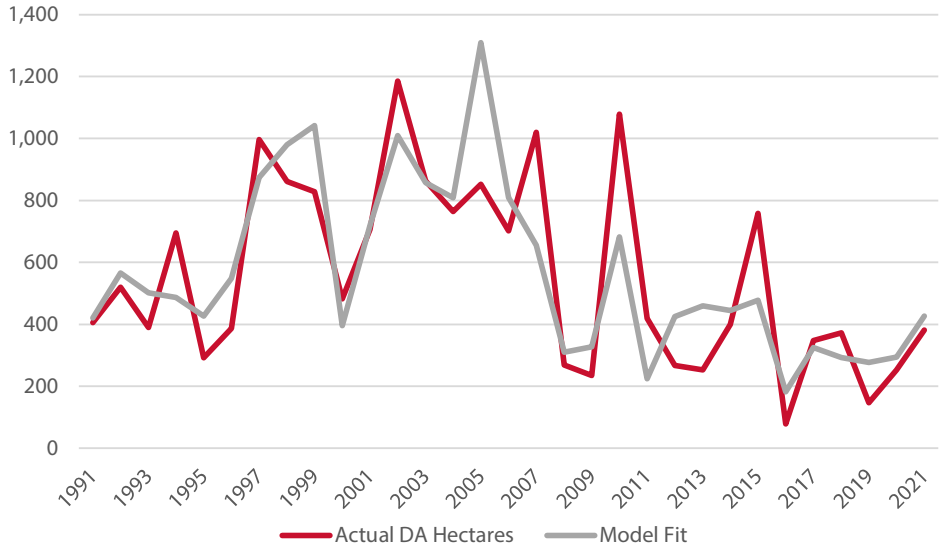
The statistical model used to generate the total DA hectares forecast uses a regression equation with the logarithm of the total assessed DA area as the dependent variable. The primary explanatory variables are:

- Single-family housing starts
- Average house price growth
- A dummy variable representing the effect of bylaw changes that cause a rush in DAs immediately before increased rates take effect and a decrease in DAs immediately after
- A dummy variable accounting for data quality differences prior to 2005

The model equation explains most of the variation in annual DA land absorption.[4] The remainder of the variation in the historical data is attributable to unquantified factors, such as developer timelines and reactions to policy.

Chart 5 shows the model equation fit compared to the actual historical values. The substantial deviation in 2005 is attributable to the model overestimating the impact of the bylaw change that took effect in 2006, as it is difficult to quantify the anticipated impact of a bylaw change on developer behaviour.

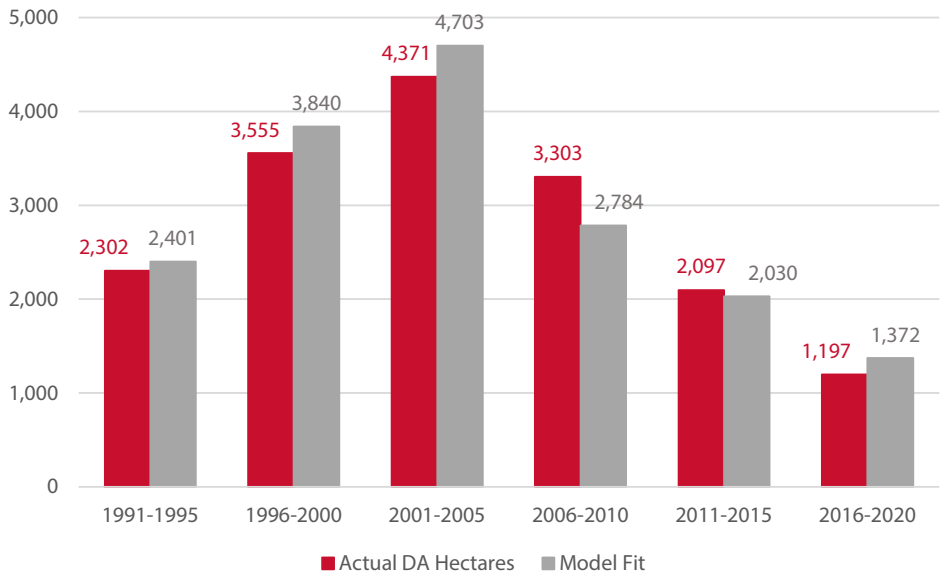
Chart 7: Total DA Land Forecast Model Historical Fit



The model equation may not capture some factors that create significant swings in DA land demand from year to year. Nevertheless, it generates accurate forecasts for 5-year periods. Chart 6 shows that when the sum of DA hectares over five years is compared to the model equation fit, the model aligns much better with the actual data. Thus, The City can use the forecast of total hectares absorbed over the next five years with greater confidence than the single-year forecasts.

4 In other words, the R2 of the regression equation is 0.71.

Chart 8: Total DA Land Forecast Model Historical Fit: 5-year Periods



Appendix 2: Glossary

Development Agreement: A development agreement is a legal contract for all residential, industrial and commercial developments. It sets out the terms and conditions under which development of the lands are to take place within the city, including the responsibility to construct public facilities and associated financial obligations. Source: Development agreements (calgary.ca).

Greenfield and Established Areas: The boundary of the greenfield and established areas of The City are defined by the map in Schedule "A" of the Calgary Off-site Levies Bylaw 2M2016. The greenfield area contains recently developed and developing communities as well as undeveloped areas on the edges of the municipal boundaries. The established area encompasses the majority of existing communities, where infrastructure buildout has already taken place.

Housing Starts: A housing start is defined as the beginning of construction work on a residential unit, usually when the concrete has been poured for the whole of the footing around the structure, or an equivalent stage where a basement will not be part of the structure.

Watershed Area: An area defined by the drainage basin into which water in the area flows. There are six watersheds in the City of Calgary: Bow River, Elbow River, Fish Creek, Nose Creek, Pine Creek, and Shephard.

Who We Are

Corporate Economics provides services in four areas: forecasting, information provision, policy analysis and consulting. We also monitor the current economic trends which allows us to develop unique insights on how external events are impacting the local economy and the Municipal government. We are experienced at researching different economic topics and have developed reliable methods of forecasting and analysis.

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