

## **CITY OF VAUGHAN**

### **EXTRACT FROM COUNCIL MEETING MINUTES OF APRIL 11, 2018**

Item 2, Report No.16, of the Committee of the Whole (Working Session), which was adopted without amendment by the Council of the City of Vaughan on April 11, 2018.

## **2 GREEN DIRECTIONS VAUGHAN ANNUAL UPDATE – REPORT ON QUANTITATIVE INDICATORS FILE 22.31.1**

**The Committee of the Whole (Working Session) recommends:**

- 1) That the recommendation contained in the following report of the Deputy City Manager, Planning and Growth Management, dated April 9, 2018, be approved; and**
- 2) That the presentation and Communication C2, presentation material entitled, “*Green Directions Vaughan Annual Update Report – Indicator Trends 2011 to 2016*”, be received.**

### **Purpose**

To provide Council with an annual update on Green Directions Vaughan, the City’s Community Sustainability and Environmental Master Plan. Objective 6.1 of Green Directions Vaughan outlines the City’s commitment “to fully support the implementation of Green Directions at all levels of City operations”, and under Action 6.1.6 provides that an annual report to Council be prepared on the status of existing programs and accomplishments “for the purpose of monitoring the implementation of the Community Sustainability and Environmental Master plan.”

### **Report Highlights**

- Thirteen of the 24 quantitative indicators that are used to measure progress on Green Directions Vaughan demonstrate modest improving trends.
- One indicator (per capita residential electricity consumption) shows an upward trend despite energy conservation programs and points to the need for action under the City’s Municipal Energy Plan.
- The proposed revision to the current Green Directions Vaughan sustainability plan provides an opportunity to replace or augment several indicators with a more meaningful measure of sustainability progress.

### **Recommendations**

- 1. THAT the Green Directions Vaughan Annual Update – Report on Quantitative Indicators BE RECEIVED.**

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#### **Background**

In April 2009, Council approved Green Directions Vaughan, the City's Community Sustainability and Environmental Master Plan. As the City's sustainability plan, Green Directions Vaughan contains a set of recommended actions that address the range of municipal responsibilities including both operational and regulatory functions. It also serves as the City's Integrated Community Sustainability Plan (ICSP) and allows the City to be eligible for funding from the Federation of Canadian Municipalities.

Green Directions Vaughan (GDV) establishes a definition of "sustainability", an "environmental ethic" and a set of "principles" to guide the implementation of the plan. The definition of sustainability reflects the breadth of municipal responsibilities, where, "Sustainability means we make decisions and take actions that ensure a healthy environment, vibrant communities and economic vitality for current and future generations."

The plan identifies six categories that classify Vaughan's functions. These are further broken down into goals, objectives and a series of actions, which describe how each of the goals can be achieved. The categories and goals include:

What We Use. Goal 1: To significantly reduce our use of natural resources and the amount of waste we generate.

How and Where we Grow. Goal 2: To ensure sustainable development and redevelopment.

How We Get Around. Goal 3: To ensure that Vaughan is a City that is easy to get around with low environmental impact.

How We Live. Goal 4: To create a vibrant community where citizens, businesses and visitors thrive.

How we Lead. Goal 5: To be leaders in advocacy and education on sustainability issues.

How we Operate. Goal 6: To ensure a supportive system for the implementation of Green Directions Vaughan.

The over 80 sustainability actions in GDV are under review to fulfill a Service Excellence Strategy initiative to revise GDV and, hence, are not reported on in this annual update. In this transition, the annual GDV implementation update to Council is scoped to the 24 quantitative indicators approved by Council in 2012. City staff continue to work to integrate the findings of the departmental consultations and community engagement effort into the revision of GDV objectives and actions.

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#### **GDV indicators are aligned with global and regional efforts to measure progress on sustainability.**

The ability to measure progress on key indicators is critical to improving environmental outcomes and quality of life. High quality data informs effective decision-making in cities. Making such information available to the public in a meaningful way and using the findings to modify City programs in an adaptive management approach also supports participatory democracy. GDV indicators are aligned with global and regional efforts to measure progress on sustainability.

#### World Council on City Data

The World Council on City Data (WCCD), of which the City of Vaughan is a member, is leading the implementation of ISO 37120: Sustainable Development of Communities – Indicators for City Services and Quality of Life. The standard is a set of 100 globally comparative indicators designed to aid City officials and City managers in tracking performance and benchmarking data across 17 quality of life themes. ISO 37120 is expanding to measure elements of resilience and “smart” Cities.

#### The Living City Report Card

The Toronto and Region Conservation Authority recently published an update of the Living City Report Card for 2016 to track progress of the following goals: reduced carbon; clean air; clean water; reduction of waste; sustainable land use and expanded greenspace; and healthy biodiversity. The Living City Report Card provides an opportunity to join a regional alliance for collective action. Aligning the GDV indicators to the Living City Report Card and World Council on City Data provides for benchmarking with other municipalities, understanding where the City of Vaughan can inform other municipalities, and recognizing areas of improvement for the City to contribute to regional sustainability performance.

#### Indicator Update

In November 2012, Council adopted 24 quantitative indicators to measure the progress and impact of the outcomes of GDV. Tracking core environmental indicators helps the City to measure our progress towards achieving a sustainable environment, vibrant communities and a strong economy, thereby meeting the reporting commitments outlined in Section 4.2 and Appendix C of GDV. The 24 indicators are grouped into 14 categories shown below (Figure 1) in relation to the Goals in Green Directions Vaughan.

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<b>GOAL 1: WHAT WE USE</b>  <i><u>INDICATORS:</u></i> Energy Climate Change Stormwater & Water Solid Waste	<b>GOAL 2: HOW WE GROW</b>  <i><u>INDICATORS:</u></i> Greenspace Urban Tree Canopy Sustainable Built Form	<b>GOAL 3: HOW WE GET AROUND</b>  <i><u>INDICATORS:</u></i> Walking/Cycling Paths Transit Trips	<b>GOAL 4: HOW WE LIVE</b>  <i><u>INDICATORS:</u></i> Active Community Creative Community Economic Activity
<b>GOAL 5: HOW WE LEAD</b>  <i><u>INDICATOR:</u></i> Engagement			
<b>GOAL 6: HOW WE OPERATE</b>			

Figure 1 Categories of quantitative indicators in relation to the six Goal areas of Green Directions Vaughan. Goals #5 and #6 include actions that are more supportive of community and corporate outcomes.

Attachment 1 outlines the 24 indicators in tabular format and displays the progress over the past 5 years of reporting. Attachment 2 of this report illustrate trends for the 24 indicators where reliable data was available to identify trends.

#### **Of the 24 indicators used to measure progress, 19 indicators demonstrate improving or stable trends**

Based on current data, 19 indicators are generally trending in the right direction. Indicator tracking identifies reduced corporate energy use and greenhouse gas (GHG) emissions, modest reductions in residential potable water consumption, improved waste diversion from landfill, and growing resident participation in community activities. A high level assessment of the progress reveals the following status of the 24 indicators:

- 13 indicators demonstrate improving trends;
- 6 indicators are stable;
- 1 indicator shows a concerning trend (residential electricity use per capita is increasing);
- 2 indicators require evaluation to identify a more suitable measure of progress (corporate fleet emissions and stormwater management); and
- 2 indicators require data assessment (data was received late for the analysis in this report or data compilation is underway).

The following notable trends from 2011 and the year-over-year change between 2015 to 2016 are provided in more detail, as follows:

- City facility electricity consumption decreased (improved) by 4.7% from 2011 to 2016 and decreased (improved) 1.4% from 2015 to 2016.

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- Corporate GHG emissions per resident served decreased 27% from 2012 to 2016, with a 9% reduction from 2015 to 2016 (23% and 7% reductions in absolute GHG emissions measured in tonnes eCO<sub>2</sub>).
- Residential waste diversion improved 11% from 2011 to 2016. Residential waste diversion improved 3% from 2015 to 2016 to 66%, meaning that only 34% of residential waste went to landfill.
- The number of total square feet certified “green” (BOMA ‘BEST’ or LEED certified) in Vaughan increased 192% from 2011 to 2016, and 20% from 2015 to 2016, with over 6 million square feet of Vaughan buildings certified.
- Number of jobs provided by Vaughan businesses increased by 23% from 2011 to 2016, with a 4% increase from 2015 to 2016. In 2016, over 200,000 jobs were provided by Vaughan businesses.
- From 2011 to 2016, the number of attendees at environmental events increased 45%. In 2016, over 19,000 residents participated in events like Earth Hour Vaughan, 20-Minute Makeover and Environmental Days and marked a 1% improvement from 2015.

#### **Service Excellence - Improving indicator tracking improves decision-making and is a platform for communicating results about Vaughan’s sustainability journey**

Staff have addressed issues such as consistent methodology and data availability to assess trends. With the development of the second iteration of Green Directions Vaughan underway, City Staff have identified some indicators that will require minor revision. These revisions will provide more accurate data tracking, consistent methodologies, and provide better context for shaping Vaughan’s sustainability and environmental journey. Proposed changes being considered include:

- Residential Electricity Consumption: Electricity use by residents is growing on a per capita basis, not simply as population increases, such that conservation efforts are not yet resulting in a de-coupling of electricity consumption from growth. However, direction in the Province’s Climate Change Action Plan places more emphasis on the relatively low-carbon electricity grid such that electricity consumption may continue to increase even with aggressive conservation efforts. In addition to electricity consumption, companion indicators include tracking total energy use (including natural gas and transportation fuels) and ensure decreased community GHG emissions and increased renewable energy generation in the community. The trend also points to the need for action under the City’s Municipal Energy Plan to enable further electricity conservation in the private sector.

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- **Corporate Energy Use:** The City continually seeks to expand corporate energy conservation measures beyond a focus on electricity use for the mandatory update of the Energy Conservation Demand Management Plan in 2019. A future focus will include natural gas reductions in City facilities. “Green fleet” strategies could include right-sizing the fleet, integration of zero emission and/or low emission vehicles, alternative mobility options such as car-sharing and shuttle services, and improved efforts to reduce vehicle idling. Natural gas consumption in City facilities and fuel use by City vehicles are already tracked and reported annually as part of the City’s membership in Partners for Climate Protection. As such, fossil fuel consumption is an appropriate indicator to determine if City conservation efforts are effective in reducing fuel consumption.
- **Water Consumption:** If the City implements the Advanced Metering Infrastructure (i.e. smart water meter program), more detailed data for residential and business water consumption will be available for Vaughan that will complement the Region-wide data currently used.
- **Corporate Waste Diversion:** City Staff have identified waste diversion in corporate facilities as a “leading by example” initiative. A corporate waste diversion strategy is required to better facilitate “reduce, reuse, recycle” habits in facilities to decrease waste to landfill. This effort should foster cross-collaboration amongst City departments such as Facility Maintenance Services, Environmental Services, and Vaughan Public Libraries to ensure positive uptake of a comprehensive waste reduction program. The recent renewal of the corporate waste contract ensured that weights and waste diversion are tracked and can continue to be used as the main indicator. Any contract renewal with waste haulers should maintain or improve the data collection regarding waste streams.
- **Stormwater Controls:** Vaughan is a newer urban community and most of Vaughan has stormwater controls unlike parts of Toronto and older communities that have combined sewer systems. Installation of treatment train measures to manage stormwater, such as low impact development techniques, can be used as an indicator for stormwater management. This can also be tracked as a component of green infrastructure asset management.

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- **Urban Canopy:** Urban forest measurements are generally only undertaken every 5 years as this measure does not change dramatically unless there are severe disturbances such as extreme weather events or damage from invasive species. A related indicator is the annual number of trees that are planted as part of the City's urban forestry program. Street trees and other treed areas can be tracked as part of an integrated green infrastructure asset management inventory.
- **Recreation Hours:** Staff in the Policy Planning and Environmental Sustainability department will work with Recreation Services on appropriate indicators that may be recommended through the revision of the Active Together Master Plan.
- **Stakeholders Involved in Community Mechanisms:** Social media information is currently used to generate values for this indicator. This approach requires an improved assessment of meaningful stakeholder involvement so that these values can be used by staff in the Policy Planning and Environmental Sustainability department, who will work with the office of Strategic Planning to ensure consistent methodology is applied.

#### **The City is revising Green Directions Vaughan and staff will provide a report to Council in 2019**

Staff initiated the renewal of Green Directions Vaughan in late 2016. Revised sustainability actions are the result of departmental consultation, a policy review and municipal benchmarking. A consulting contract provided assistance to structure the City's community engagement effort in support of the revision of GDV. The digital content created for this effort will be used to improve ongoing communications of GDV. Internal departmental consultation and public feedback will continue through 2018 to finalize the sustainability actions for Council approval in 2019.

Staff provided a GDV update in September 2016 to Committee of the Whole. As identified at the time, a critical component of the revision of GDV will be the alignment of its actions with the changing policy landscape at the Provincial and Federal levels. Several key themes have been identified and need to be explored as part of the GDV revision and include the following: better alignment with the objectives of health agencies; more attention to climate change mitigation efforts; a new focus on climate change adaptation and resilient communities; and ensuring the ability to measure progress on GDV actions.

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Approval of the Growth Plan 2017 and changes to the *Municipal Act* continue to demonstrate Provincial policy alignment for integrated environmental sustainability, economic viability and vibrant communities. Additional themes have emerged requiring further exploration as part of the revision to GDV to reflect the Provincial policy direction and include the following:

- climate change as a matter of provincial interest;
- asset management and resilient infrastructure aligned with climate change adaptation;
- transit hierarchy to promote transit supportive developments;
- further emphasis on compact urban form and mixed use;
- complete communities including attention to housing diversity, housing affordability and community hubs;
- complete streets and active transportation;
- better integration of energy planning into land use planning;
- strengthening the role of watershed planning in land use planning, including through green infrastructure and low impact development techniques; and
- supporting the Agricultural System and Agri-Food Network.

#### **Demonstrating progress on shared goals and actions in the community can help to create a culture of conservation**

In general, GDV, which was approved in 2009, is more of a corporate implementation plan. A focus on shared goals and actions in the community is an important lens for interpreting proposed new actions in the revision of GDV. Attachment 3 provides a high level summary of the progress and a near-term outlook with reference to the six goal areas and 18 objectives of GDV.

#### **Previous Reports/Authority**

[Green Directions Vaughan Community Sustainability and Environmental Master Plan Implementation – Annual Update File #22.31](#) (September 7, 2016)

[Green Directions Vaughan Community Sustainability and Environmental Master Plan Implementation – Annual Update](#) (June 1, 2015)

[Green Directions Vaughan Implementation Update](#) (June 18, 2014)

[Green Directions Vaughan Implementation Update](#) (May 27, 2013)



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#### **Analysis and Options.**

The current indicators generally remain relevant to assist in measuring the progress of GDV, but several indicators require replacement or ongoing improvement in their respective assessment methodology. Measures of corporate fleet emissions and stormwater management require new indicators to represent meaningful outcomes. Accounting for social media interaction complicates the indicator for stakeholder involvement in community mechanisms and requires further effort to develop a consistent tracking methodology. The urban tree canopy is measured infrequently (e.g. about every 5 years), such that an indicator that can be reported annually (e.g. number of trees planted) will complement the broader metric.

Federal, Provincial and York Region targets that relate to these indicators will be examined as part of the revision to Green Directions Vaughan. Where appropriate, such targets can be interpreted at the local municipal scale.

#### **Financial Impact**

There are no economic impacts resulting from the adoption of this report. All activities related to the establishment, tracking and communication of the Green Directions Vaughan indicators are supported through existing budget allocations.

#### **Broader Regional Impacts/Considerations**

In 2007, York Region released its Sustainability Strategy, which outlined its commitment to creating a sustainable future for current and future residents of York Region. With the goal to balance a sustainable natural environment and a healthy community with economic vitality, the Regional plan aims to inform decision-making processes within the region. Of the nine municipalities in York Region, seven have drafted integrated community sustainability plans and/or sustainability development guidelines. The City of Vaughan was one of the first municipalities to draft and release an established plan with Green Directions Vaughan. The proposed revision to Green Directions Vaughan will incorporate other relevant Regional requirements and guidance through the Region's Official Plan, York Region Vision 2051, the Greening Strategy, and other operational and infrastructure master plans (e.g. Economic Development Action Plan, Integrated Waste Management Master Plan, Transportation Master Plan, Pedestrian and Cycling Master Plan, Water and Wastewater Master Plan, Long Term Water Conservation Strategy).

The continued progress and communication of the achievements and successes of this plan will work to establish the City of Vaughan as an environmental leader within the

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region. In addition, under the guidance of Green Directions Vaughan and its program progress, the City continues to contribute positively as a member of the Greater Toronto and Hamilton Area Clean Air Council.

#### **Conclusion**

The 24 quantitative indicators, approved by Council in November 2012, are working to measure the impact and outcomes of Green Directions Vaughan and to highlight successes and identify areas in need of continued focus and improvement. Modest changes in the tracked indicators are noted this reporting year, signifying the ongoing progress of Green Directions Vaughan actions and programs. The trend analysis can be used as input to the proposed revision to Green Directions Vaughan to seek community feedback, such as areas of interest for greater improvement or communication strategies.

The following indicators show an overall modest improving trend and positive change in the last year of data analysis:

- corporate facility electricity use;
- corporate GHG emissions;
- residential water consumption;
- residential waste diverted from landfill;
- waste diverted from City facilities;
- greenspace (publicly owned and publicly available open space);
- building floor space certified to a green standard;
- length of walkways and cycling paths;
- number of jobs provided by Vaughan businesses;
- participation hours for recreation programs;
- stakeholder involved in community mechanisms;
- cultural initiatives supported by the City; and
- attendees at environmental events.

Indicators requiring improved methodology or replacement with more pertinent measures of progress have been identified, namely, corporate fleet emissions, stormwater management, urban tree canopy, and stakeholder involvement.

An effort has been made to display the indicators in a “dashboard” style for ease of interpretation. Through the communication and engagement campaign, in support of the revision of Green Directions Vaughan, staff will seek feedback on a “sustainability dashboard” platform that has a public focus for ongoing community engagement.

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#### **Attachments**

1. Green Directions Vaughan Indicator Summary Table
2. Green Directions Vaughan Indicator Trends
3. Green Directions Vaughan Objectives - High Level Summary and Outlook

#### **Prepared by**

Tony Iacobelli, Manager of Environmental Sustainability, ext. 8630

Bill Kiru, Interim Director of Policy Planning and Environmental Sustainability, ext. 8633

(A copy of the attachments referred to in the foregoing have been forwarded to each Member of Council and a copy thereof is also on file in the office of the City Clerk.)

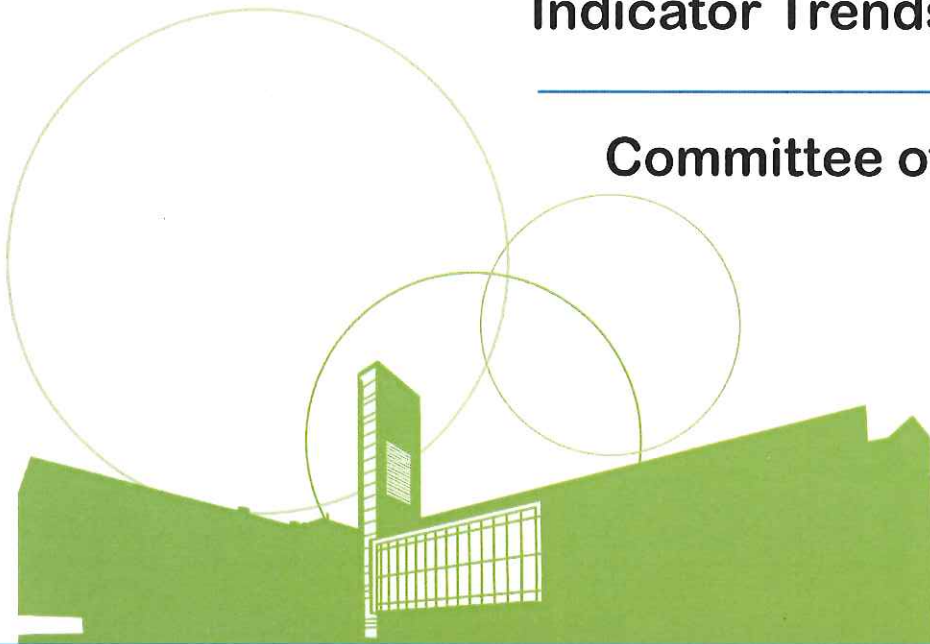
# Green Directions Vaughan

## Annual Update Report

### Indicator Trends 2011 to 2016

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Committee of the Whole (Working Session)  
April 9, 2018



# Green Directions Vaughan (GDV)

- GDV provides core principles of sustainability for operational and regulatory functions
- GDV sets a corporate and community ethic that engages:
  - All City Portfolios
  - Regional and Provincial government, utilities and other agencies
  - Community stakeholders (residents, business, schools, not-for-profits)
- Action 6.1.6 states that an annual update report be prepared on the status and accomplishments for the purpose of monitoring the implementation of the plan.



# GDV Renewal – Progress Update

Phase 1 – Revised Sustainability Actions (complete)

Phase 2 – Community Engagement (complete)

- Main community workshop held on Nov. 29, 2017 with about 80 ideas contributed
- 28 stakeholder meetings to date, attended by almost 70 people
- Over 100 sessions and over 3,600 votes on “All Our Ideas”

Finalization of Actions and Report to Council in Q2 2019



## GDV Indicators

First report presenting multi-year trends for most of the 24 quantitative indicators

GDV Renewal project allows for review of the 24 quantitative indicators to align with the City's participation in the World Council on City Data and the recent Sustainable Development Goals



**WCCD**  
ISO 37120



*"... creating smart, sustainable, resilient, and prosperous cities."*



# Green Directions Vaughan Indicator Framework

## Goal 1

### "What We Use"

Energy  
Climate Change & Air Quality  
Stormwater & Water  
Solid Waste

## Goal 2

### "How We Grow"

Greenspace  
Urban Tree Canopy  
Sustainable Built Form

## Goal 3

### "How We Get Around"

Walking & Cycling Paths  
Transit Trips

## Goal 4

### "How We Live"

Active Community  
Creative Community  
Economic Activity

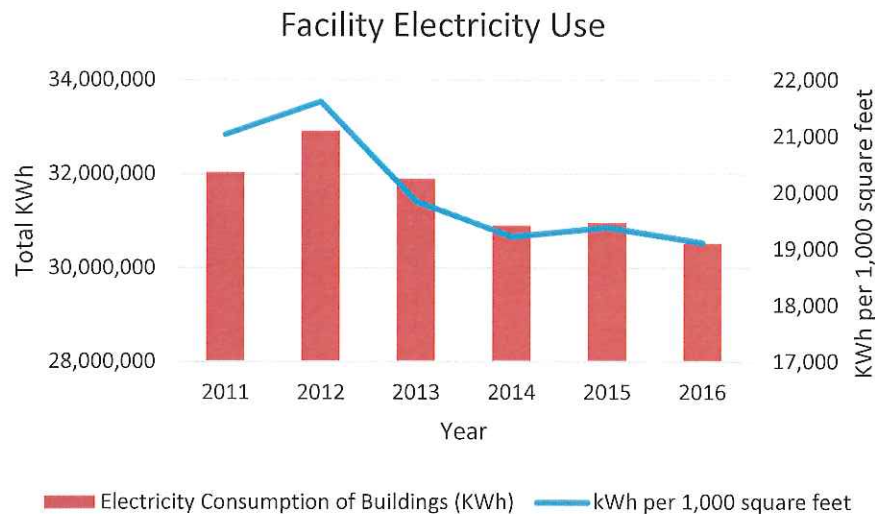
## Goal 5

### "How We Lead"

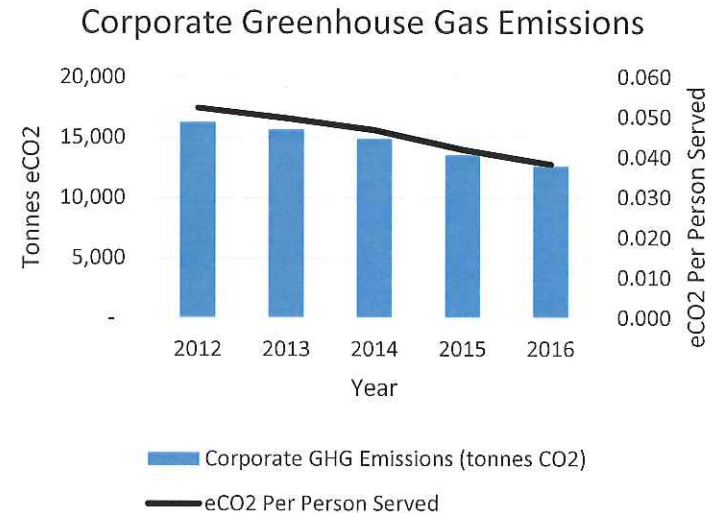
Engagement



## Goal 1: What We Use – Corporate Energy

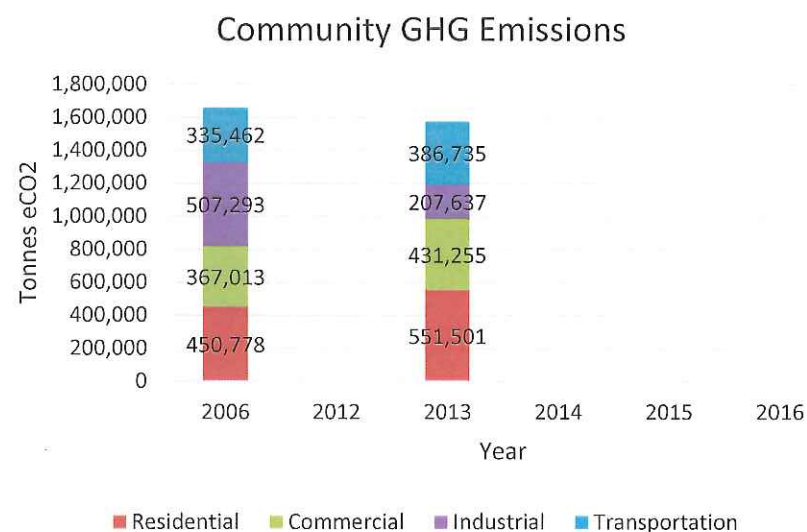
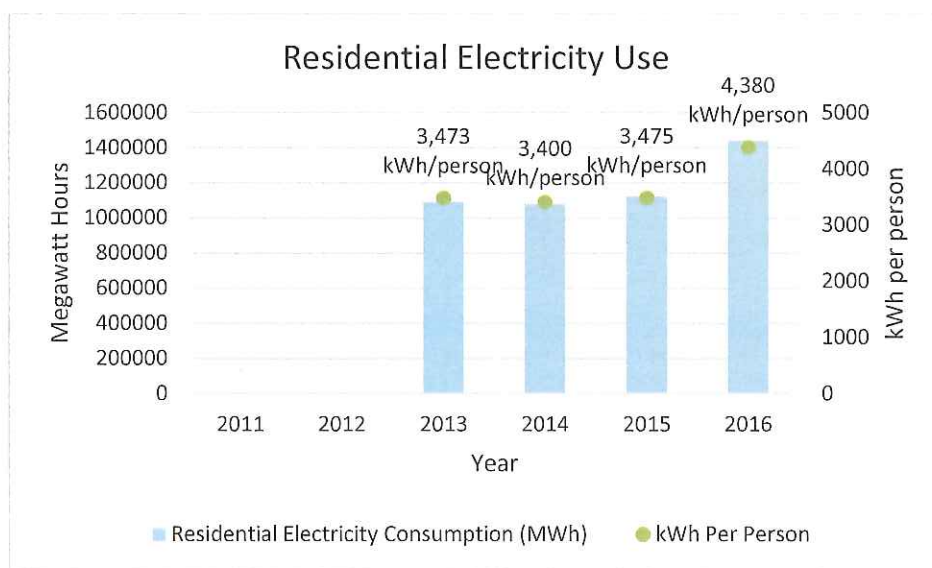


Facility electricity use decreased almost 5% between 2011 to 2016.



Corporate GHG emissions per resident served decreased 27% from 2012 to 2016.

## Goal 1: What We Use – Community Energy

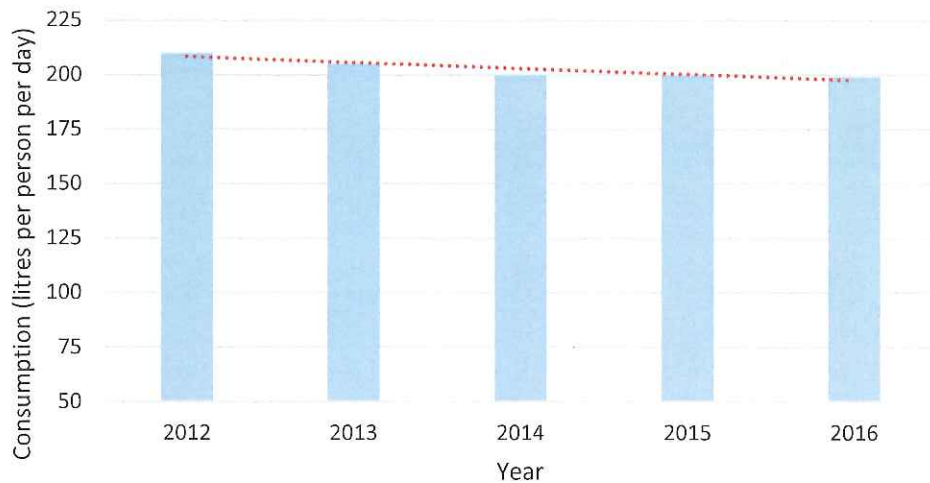


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While there is considerable policy direction to act on climate change, community energy data remains difficult to obtain.

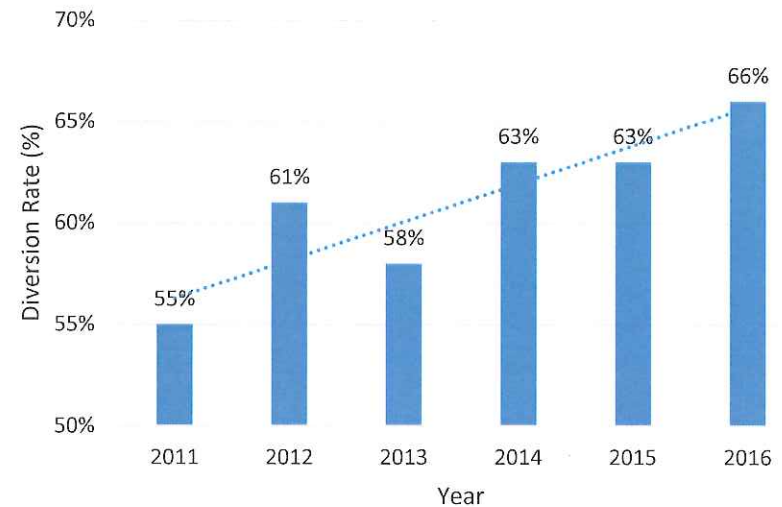
## Goal 1: What We Use – Water and Waste

Water Consumption (litres per person per day)



Residential water consumption decreased 5% from 2012 to 2016.

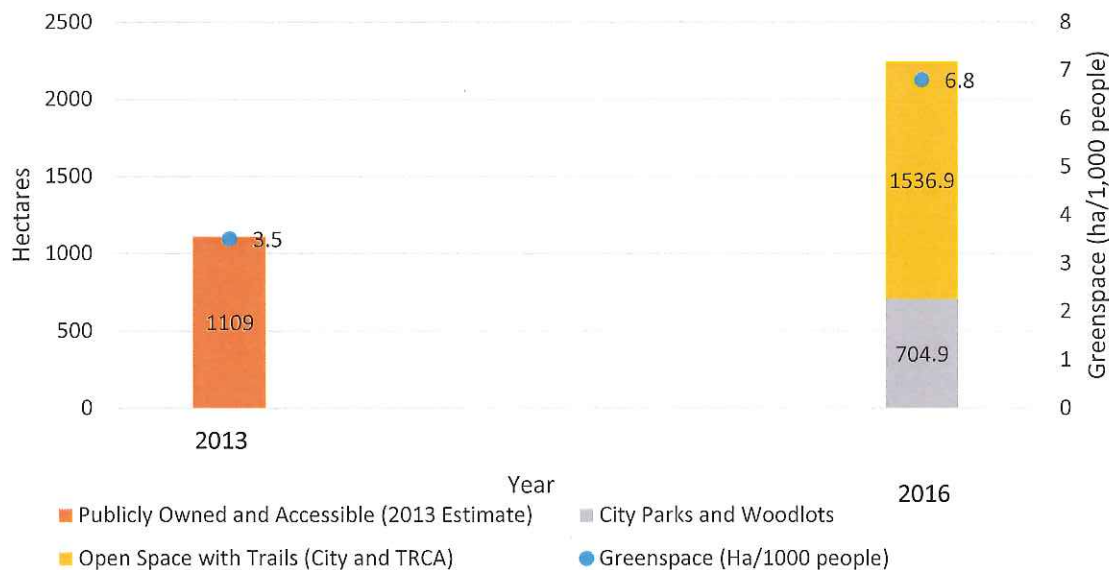
Residential Waste Diverted from Landfill



Residential waste diversion improved 11% from 2011 to 2016.

## Goal 2: How We Grow

Greenspace Indicator



Greenspace increase reflects publicly owned lands becoming publicly accessible through trail construction and improved data tracking.

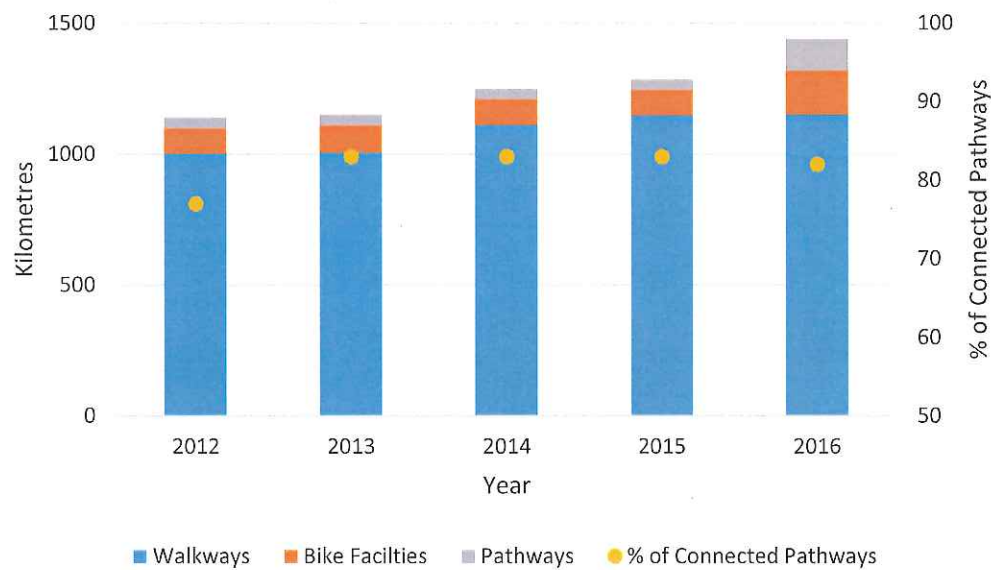
Green Certified Floor Area in Vaughan Buildings



192% increase from 2011 to 2016 in floor space certified to a green building standard.

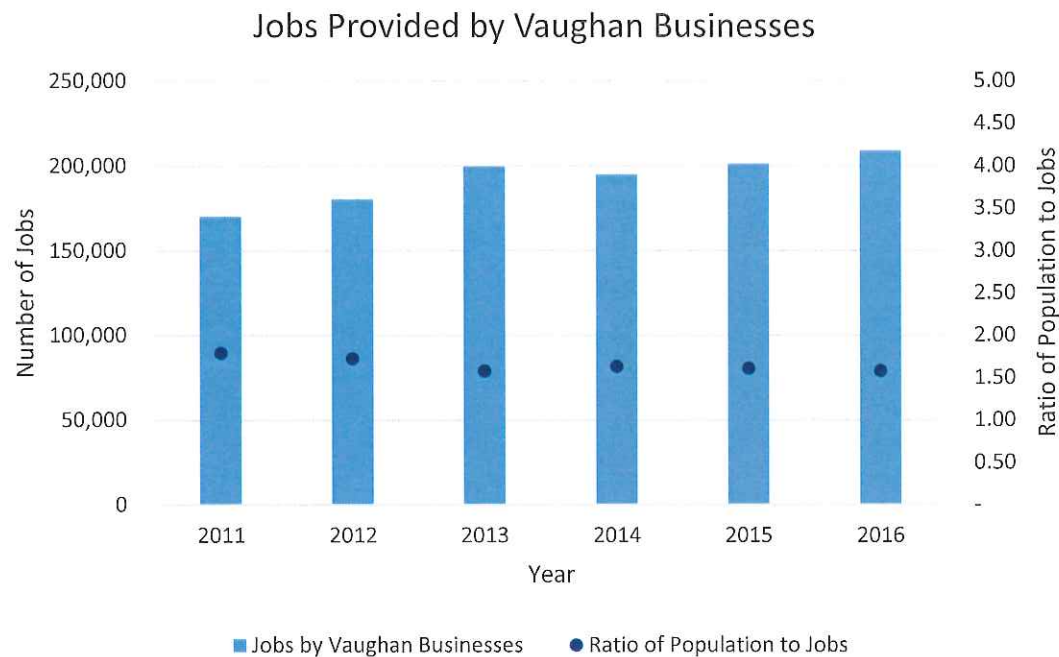
## Goal 3: How We Get Around

Walking and Cycling Paths



The length of walking and cycling paths increased by 26% from 2011 to 2016 with over 1,400 total kilometres of active routes across the city.

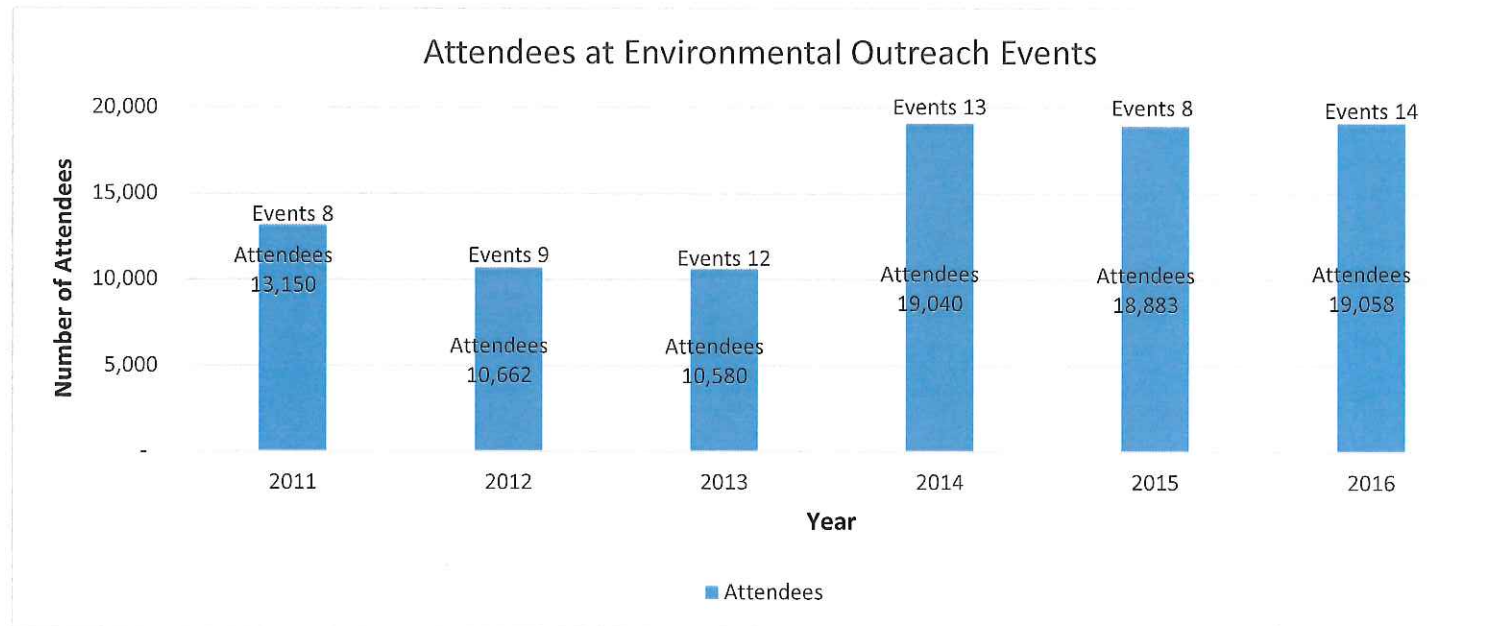
## Goal 4: How We Live



The number of jobs provided by Vaughan businesses increased by 23% from 2011 to 2016. In 2016, over 200,000 jobs were provided by Vaughan businesses.



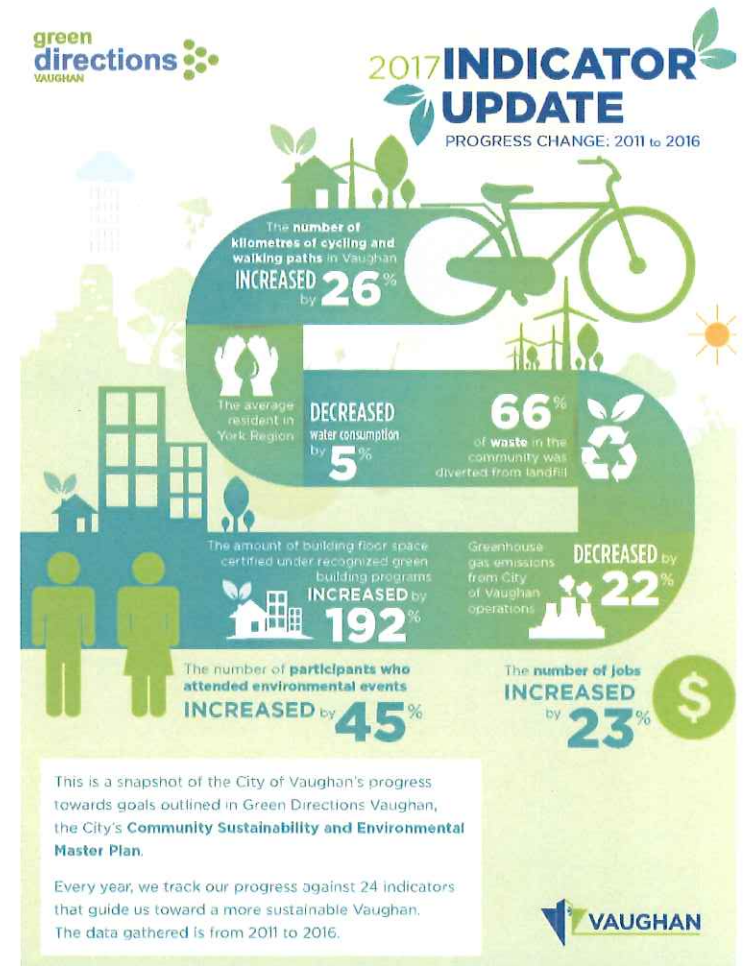
## Goal 5: How We Lead



From 2011 to 2016, the number of attendees at environmental events increased 45%. In 2016, over 19,000 residents participated in events like Earth Hour Vaughan and 20-Minute Makeover.

## Communicating Success

- Indicators are generally trending in the right direction (2011 – 2016)
- GDV provides a platform to share positive environmental, social, and economic stories
- In the revision of Green Directions Vaughan, staff will explore how communicating results can also assist in encouraging **collective impact**.
- Several indicators need to be replaced or to represent Vaughan-specific progress and can be aligned with City efforts regarding Results Based Accountability.





Item:



## **Committee of the Whole (Working Session) Report**

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**DATE:** Monday, April 09, 2018

**WARDS:** ALL

**TITLE: GREEN DIRECTIONS VAUGHAN ANNUAL UPDATE – REPORT  
ON QUANTITATIVE INDICATORS  
FILE 22.31.1**

**FROM:**

Jason Schmidt-Shoukri, Deputy City Manager, Planning and Growth Management

**ACTION:** FOR INFORMATION

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**Purpose**

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**Recommendations**

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## **Report Highlights**

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The ability to measure progress on key indicators is critical to improving environmental outcomes and quality of life. High quality data informs effective decision-making in cities. Making such information available to the public in a meaningful way and using the findings to modify City programs in an adaptive management approach also supports participatory democracy. GDV indicators are aligned with global and regional efforts to measure progress on sustainability.

#### World Council on City Data

The World Council on City Data (WCCD), of which the City of Vaughan is a member, is leading the implementation of ISO 37120: Sustainable Development of Communities – Indicators for City Services and Quality of Life. The standard is a set of 100 globally comparative indicators designed to aid City officials and City managers in tracking performance and benchmarking data across 17 quality of life themes. ISO 37120 is expanding to measure elements of resilience and “smart” Cities.

#### The Living City Report Card

The Toronto and Region Conservation Authority recently published an update of the Living City Report Card for 2016 to track progress of the following goals: reduced carbon; clean air; clean water; reduction of waste; sustainable land use and expanded greenspace; and healthy biodiversity. The Living City Report Card provides an opportunity to join a regional alliance for collective action. Aligning the GDV indicators to the Living City Report Card and World Council on City Data provides for benchmarking with other municipalities, understanding where the City of Vaughan can inform other municipalities, and recognizing areas of improvement for the City to contribute to regional sustainability performance.

#### Indicator Update

In November 2012, Council adopted 24 quantitative indicators to measure the progress and impact of the outcomes of GDV. Tracking core environmental indicators helps the City to measure our progress towards achieving a sustainable environment, vibrant communities and a strong economy, thereby meeting the reporting commitments

outlined in Section 4.2 and Appendix C of GDV. The 24 indicators are grouped into 14 categories shown below (Figure 1) in relation to the Goals in Green Directions Vaughan.

<b>GOAL 1: WHAT WE USE</b>  <u>INDICATORS:</u> Energy Climate Change Stormwater & Water Solid Waste	<b>GOAL 2: HOW WE GROW</b>  <u>INDICATORS:</u> Greenspace Urban Tree Canopy Sustainable Built Form	<b>GOAL 3: HOW WE GET AROUND</b>  <u>INDICATORS:</u> Walking/Cycling Paths Transit Trips	<b>GOAL 4: HOW WE LIVE</b>  <u>INDICATORS:</u> Active Community Creative Community Economic Activity
<b>GOAL 5: HOW WE LEAD</b>  <u>INDICATOR:</u> Engagement			
<b>GOAL 6: HOW WE OPERATE</b>			

Figure 1 Categories of quantitative indicators in relation to the six Goal areas of Green Directions Vaughan. Goals #5 and #6 include actions that are more supportive of community and corporate outcomes.

Attachment 1 outlines the 24 indicators in tabular format and displays the progress over the past 5 years of reporting. Attachment 2 of this report illustrate trends for the 24 indicators where reliable data was available to identify trends.

### **Of the 24 indicators used to measure progress, 19 indicators demonstrate improving or stable trends**

Based on current data, 19 indicators are generally trending in the right direction. Indicator tracking identifies reduced corporate energy use and greenhouse gas (GHG) emissions, modest reductions in residential potable water consumption, improved waste diversion from landfill, and growing resident participation in community activities. A high level assessment of the progress reveals the following status of the 24 indicators:

- 13 indicators demonstrate improving trends;
- 6 indicators are stable;
- 1 indicator shows a concerning trend (residential electricity use per capita is increasing);
- 2 indicators require evaluation to identify a more suitable measure of progress (corporate fleet emissions and stormwater management); and
- 2 indicators require data assessment (data was received late for the analysis in this report or data compilation is underway).

The following notable trends from 2011 and the year-over-year change between 2015 to 2016 are provided in more detail, as follows:

- City facility electricity consumption decreased (improved) by 4.7% from 2011 to 2016 and decreased (improved) 1.4% from 2015 to 2016.

- Corporate GHG emissions per resident served decreased 27% from 2012 to 2016, with a 9% reduction from 2015 to 2016 (23% and 7% reductions in absolute GHG emissions measured in tonnes eCO<sub>2</sub>).
- Residential waste diversion improved 11% from 2011 to 2016. Residential waste diversion improved 3% from 2015 to 2016 to 66%, meaning that only 34% of residential waste went to landfill.
- The number of total square feet certified “green” (BOMA ‘BEST’ or LEED certified) in Vaughan increased 192% from 2011 to 2016, and 20% from 2015 to 2016, with over 6 million square feet of Vaughan buildings certified.
- Number of jobs provided by Vaughan businesses increased by 23% from 2011 to 2016, with a 4% increase from 2015 to 2016. In 2016, over 200,000 jobs were provided by Vaughan businesses.
- From 2011 to 2016, the number of attendees at environmental events increased 45%. In 2016, over 19,000 residents participated in events like Earth Hour Vaughan, 20-Minute Makeover and Environmental Days and marked a 1% improvement from 2015.

### **Service Excellence - Improving indicator tracking improves decision-making and is a platform for communicating results about Vaughan’s sustainability journey**

Staff have addressed issues such as consistent methodology and data availability to assess trends. With the development of the second iteration of Green Directions Vaughan underway, City Staff have identified some indicators that will require minor revision. These revisions will provide more accurate data tracking, consistent methodologies, and provide better context for shaping Vaughan’s sustainability and environmental journey. Proposed changes being considered include:

- **Residential Electricity Consumption:** Electricity use by residents is growing on a per capita basis, not simply as population increases, such that conservation efforts are not yet resulting in a de-coupling of electricity consumption from growth. However, direction in the Province’s Climate Change Action Plan places more emphasis on the relatively low-carbon electricity grid such that electricity consumption may continue to increase even with aggressive conservation efforts. In addition to electricity consumption, companion indicators include tracking total energy use (including natural gas and transportation fuels) and ensure decreased community GHG emissions and increased renewable energy generation in the community. The trend also points to the need for action under the City’s Municipal Energy Plan to enable further electricity conservation in the private sector.
- **Corporate Energy Use:** The City continually seeks to expand corporate energy conservation measures beyond a focus on electricity use for the

mandatory update of the Energy Conservation Demand Management Plan in 2019. A future focus will include natural gas reductions in City facilities.

“Green fleet” strategies could include right-sizing the fleet, integration of zero emission and/or low emission vehicles, alternative mobility options such as car-sharing and shuttle services, and improved efforts to reduce vehicle idling. Natural gas consumption in City facilities and fuel use by City vehicles are already tracked and reported annually as part of the City’s membership in Partners for Climate Protection. As such, fossil fuel consumption is an appropriate indicator to determine if City conservation efforts are effective in reducing fuel consumption.

- **Water Consumption:** If the City implements the Advanced Metering Infrastructure (i.e. smart water meter program), more detailed data for residential and business water consumption will be available for Vaughan that will complement the Region-wide data currently used.
- **Corporate Waste Diversion:** City Staff have identified waste diversion in corporate facilities as a “leading by example” initiative. A corporate waste diversion strategy is required to better facilitate “reduce, reuse, recycle” habits in facilities to decrease waste to landfill. This effort should foster cross-collaboration amongst City departments such as Facility Maintenance Services, Environmental Services, and Vaughan Public Libraries to ensure positive uptake of a comprehensive waste reduction program. The recent renewal of the corporate waste contract ensured that weights and waste diversion are tracked and can continue to be used as the main indicator. Any contract renewal with waste haulers should maintain or improve the data collection regarding waste streams.
- **Stormwater Controls:** Vaughan is a newer urban community and most of Vaughan has stormwater controls unlike parts of Toronto and older communities that have combined sewer systems. Installation of treatment train measures to manage stormwater, such as low impact development techniques, can be used as an indicator for stormwater management. This can also be tracked as a component of green infrastructure asset management.
- **Urban Canopy:** Urban forest measurements are generally only undertaken every 5 years as this measure does not change dramatically unless there are severe disturbances such as extreme weather events or damage from invasive species. A related indicator is the annual number of trees that are planted as part of the City’s urban forestry program. Street trees and other

treed areas can be tracked as part of an integrated green infrastructure asset management inventory.

- **Recreation Hours:** Staff in the Policy Planning and Environmental Sustainability department will work with Recreation Services on appropriate indicators that may be recommended through the revision of the Active Together Master Plan.
- **Stakeholders Involved in Community Mechanisms:** Social media information is currently used to generate values for this indicator. This approach requires an improved assessment of meaningful stakeholder involvement so that these values can be used by staff in the Policy Planning and Environmental Sustainability department, who will work with the office of Strategic Planning to ensure consistent methodology is applied.

### **The City is revising Green Directions Vaughan and staff will provide a report to Council in 2019**

Staff initiated the renewal of Green Directions Vaughan in late 2016. Revised sustainability actions are the result of departmental consultation, a policy review and municipal benchmarking. A consulting contract provided assistance to structure the City's community engagement effort in support of the revision of GDV. The digital content created for this effort will be used to improve ongoing communications of GDV. Internal departmental consultation and public feedback will continue through 2018 to finalize the sustainability actions for Council approval in 2019.

Staff provided a GDV update in September 2016 to Committee of the Whole. As identified at the time, a critical component of the revision of GDV will be the alignment of its actions with the changing policy landscape at the Provincial and Federal levels. Several key themes have been identified and need to be explored as part of the GDV revision and include the following: better alignment with the objectives of health agencies; more attention to climate change mitigation efforts; a new focus on climate change adaptation and resilient communities; and ensuring the ability to measure progress on GDV actions.

Approval of the Growth Plan 2017 and changes to the *Municipal Act* continue to demonstrate Provincial policy alignment for integrated environmental sustainability, economic viability and vibrant communities. Additional themes have emerged requiring further exploration as part of the revision to GDV to reflect the Provincial policy direction and include the following:

- climate change as a matter of provincial interest;

- asset management and resilient infrastructure aligned with climate change adaptation;
- transit hierarchy to promote transit supportive developments;
- further emphasis on compact urban form and mixed use;
- complete communities including attention to housing diversity, housing affordability and community hubs;
- complete streets and active transportation;
- better integration of energy planning into land use planning;
- strengthening the role of watershed planning in land use planning, including through green infrastructure and low impact development techniques; and
- supporting the Agricultural System and Agri-Food Network.

### **Demonstrating progress on shared goals and actions in the community can help to create a culture of conservation**

In general, GDV, which was approved in 2009, is more of a corporate implementation plan. A focus on shared goals and actions in the community is an important lens for interpreting proposed new actions in the revision of GDV. Attachment 3 provides a high level summary of the progress and a near-term outlook with reference to the six goal areas and 18 objectives of GDV.

### **Previous Reports/Authority**

[Green Directions Vaughan Community Sustainability and Environmental Master Plan Implementation – Annual Update File #22.31](#) (September 7, 2016)

[Green Directions Vaughan Community Sustainability and Environmental Master Plan Implementation – Annual Update](#) (June 1, 2015)

[Green Directions Vaughan Implementation Update](#) (June 18, 2014)

[Green Directions Vaughan Implementation Update](#) (May 27, 2013)

### **Analysis and Options.**

The current indicators generally remain relevant to assist in measuring the progress of GDV, but several indicators require replacement or ongoing improvement in their respective assessment methodology. Measures of corporate fleet emissions and stormwater management require new indicators to represent meaningful outcomes. Accounting for social media interaction complicates the indicator for stakeholder involvement in community mechanisms and requires further effort to develop a consistent tracking methodology. The urban tree canopy is measured infrequently (e.g.



about every 5 years), such that an indicator that can be reported annually (e.g. number of trees planted) will complement the broader metric.

Federal, Provincial and York Region targets that relate to these indicators will be examined as part of the revision to Green Directions Vaughan. Where appropriate, such targets can be interpreted at the local municipal scale.

### **Financial Impact**

There are no economic impacts resulting from the adoption of this report. All activities related to the establishment, tracking and communication of the Green Directions Vaughan indicators are supported through existing budget allocations.

### **Broader Regional Impacts/Considerations**

In 2007, York Region released its Sustainability Strategy, which outlined its commitment to creating a sustainable future for current and future residents of York Region. With the goal to balance a sustainable natural environment and a healthy community with economic vitality, the Regional plan aims to inform decision-making processes within the region. Of the nine municipalities in York Region, seven have drafted integrated community sustainability plans and/or sustainability development guidelines. The City of Vaughan was one of the first municipalities to draft and release an established plan with Green Directions Vaughan. The proposed revision to Green Directions Vaughan will incorporate other relevant Regional requirements and guidance through the Region's Official Plan, York Region Vision 2051, the Greening Strategy, and other operational and infrastructure master plans (e.g. Economic Development Action Plan, Integrated Waste Management Master Plan, Transportation Master Plan, Pedestrian and Cycling Master Plan, Water and Wastewater Master Plan, Long Term Water Conservation Strategy).

The continued progress and communication of the achievements and successes of this plan will work to establish the City of Vaughan as an environmental leader within the region. In addition, under the guidance of Green Directions Vaughan and its program progress, the City continues to contribute positively as a member of the Greater Toronto and Hamilton Area Clean Air Council.

### **Conclusion**

The 24 quantitative indicators, approved by Council in November 2012, are working to measure the impact and outcomes of Green Directions Vaughan and to highlight successes and identify areas in need of continued focus and improvement. Modest changes in the tracked indicators are noted this reporting year, signifying the ongoing progress of Green Directions Vaughan actions and programs. The trend analysis can be

used as input to the proposed revision to Green Directions Vaughan to seek community feedback, such as areas of interest for greater improvement or communication strategies.

The following indicators show an overall modest improving trend and positive change in the last year of data analysis:

- corporate facility electricity use;
- corporate GHG emissions;
- residential water consumption;
- residential waste diverted from landfill;
- waste diverted from City facilities;
- greenspace (publicly owned and publicly available open space);
- building floor space certified to a green standard;
- length of walkways and cycling paths;
- number of jobs provided by Vaughan businesses;
- participation hours for recreation programs;
- stakeholder involved in community mechanisms;
- cultural initiatives supported by the City; and
- attendees at environmental events.

Indicators requiring improved methodology or replacement with more pertinent measures of progress have been identified, namely, corporate fleet emissions, stormwater management, urban tree canopy, and stakeholder involvement.

An effort has been made to display the indicators in a “dashboard” style for ease of interpretation. Through the communication and engagement campaign, in support of the revision of Green Directions Vaughan, staff will seek feedback on a “sustainability dashboard” platform that has a public focus for ongoing community engagement.

## **Attachments**

1. Green Directions Vaughan Indicator Summary Table
2. Green Directions Vaughan Indicator Trends
3. Green Directions Vaughan Objectives - High Level Summary and Outlook

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## ATTACHMENT 1

### Green Directions Vaughan Indicator Summary Table

Asterisk (\*) indicates that data is not available. Explanations are provided in Attachment 1.

	2011	2012	2013	2014	2015	2016	Status
<b>Vaughan Population Estimates</b> <i>(Source: York Region, Corporate Services, Long Range Planning Division, based on Statistics Canada and CMHC data)</i>	304,639	311,218	315,006	317,889	323,506	329,517	
<b>ENERGY</b>							
1. Total residential electricity use per capita (kWh/pp)	*	*	3,473	3,400	3,475	4,380	Needs Improvement
2. City of Vaughan buildings energy use (kWh per 1000 square feet)	21,032	21,612	19,842	19,221	19,387	19,113	Improved
<b>CLIMATE CHANGE</b>							
3. Total community greenhouse gas emissions (tonnes of eCO <sub>2</sub> -equivalent carbon dioxide)	1,660,546 (2006)	*	1,577,128	*	*	*	Data Assessment Underway
4. Corporate Greenhouse gas emissions per resident served (eCO <sub>2</sub> -equivalent carbon dioxide/pp)	0.0559 (2008)	0.0522	0.0497	0.0468	0.0419	0.0382	Improved
<b>AIR QUALITY</b>							
5. Particulate matter (PM2.5) (annual average in micrograms per m <sup>3</sup> )	6.8	6.8	8.4	9.0	8.7	*	Stable
6. Percentage of low emission vehicles within City Fleet (%)	2%	2%	2%	2%	2%	8.5%	Indicator Requires Evaluation
7. Number of days when the Air Quality Index (AQI) is poor (AQI > 49 or AQHI > 6)	1	5	4	6	4	*	Stable
<b>WATER USE</b>							
8. Daily volume of water used per person in York Region (litres per person)	*	210	205	200	200	199	Improved

	2011	2012	2013	2014	2015	2016	Status
<b>STORMWATER MANAGEMENT</b>							
9. Percentage of area with stormwater controls (%)	92 % (2009)	*	92%	92%	*	*	Indicator Requires Evaluation
<b>SOLID WASTE</b>							
10. Residential waste diverted from landfill (%)	55%	61%	58%	63%	63%	66%	Improved
11. Waste diverted from landfill in City facilities (%)	12%	6%	5%	*	*	21%	Improved
<b>LAND USE</b>							
12. Greenspace (hectares per 1000 people)	*	*	3.5			6.8	Improved
<b>URBAN FOREST</b>							
13. Tree canopy cover as a percentage of urban area (%)	19.5%	19.5%	19.5%	*	*	*	Data Assessment Underway
<b>SUSTAINABLE BUILT FORM</b>							
14. Building floor area certified under recognized green building programs (ft²) (LEED and BOMA BEST)	2,107,696	2,446,787	2,356,954	3,118,683	5,128,023	6,163,233	Improved
<b>WALKING AND CYCLING PATHS</b>							
15. Length of walkways and cycling paths (km)	*	1,138	1,149	1,247	1,282	1,438	Improved
16. Percentage of walkways and paths which are linked (%)	*	77%	83%	83%	83%	82%	Stable
<b>TRANSIT</b>							
17. Passenger trips per person (#/pp) in York Region	18.2	*	20.09	19.61	21.35	20.69	Stable
<b>ECONOMIC ACTIVITY</b>							
18. Level of construction activity (value of building permits in millions of dollars)	1038.9	778.8	1102.4	886.9	1405.1	1131.7	Stable
19. Ratio of population to jobs	1.79	1.73	1.58	1.63	1.61	1.58	Stable

	2011	2012	2013	2014	2015	2016	Status
20. Number of jobs provided by Vaughan businesses	170,140	180,200	199,470	194,900	201,008	208,827	Improved
<b>ACTIVE COMMUNITY</b>							
21. Total participant hours for recreation programs	11,717,422	13,414,830	14,354,123	14,059,714	14,226,267	14,394,793	Improved
22. Number of stakeholders involved in different community mechanisms (community meetings, social media, on-line newsletter)	746,955	820,347	177,266	810,423	888,200	2,928,277	Improved
<b>CREATIVE COMMUNITY</b>							
23. Number of cultural initiatives supported, endorsed by the City	40	40	50	52	55	57	Improved
<b>ENGAGEMENT</b>							
24a. Number of environmentally related public outreach events held by the City of Vaughan	8	9	12	13	8	14	Stable to Improved
24b. Number of attendees at environmental events	13,150	10,662	10,580	19,040	18,883	19,058	Improved

## ATTACHMENT 2

### Green Directions Vaughan Indicator Trends

#### INTRODUCTION

Attachment 2 examines the data trends for the 24 indicators over the last 6 years of implementation (2011-2016) where data is available. For some indicators, data may not be available in a given reporting year due to incomplete data sets or differing methodologies for data collection (e.g. some external agencies have 24-month reporting schedules). Indicators for which data is not available are explained or marked with an asterisk (\*) in the following charts and graphs.

#### GOAL 1: WHAT WE USE

Goal 1 aims to significantly reduce our use of natural resources and the amount of waste generated.

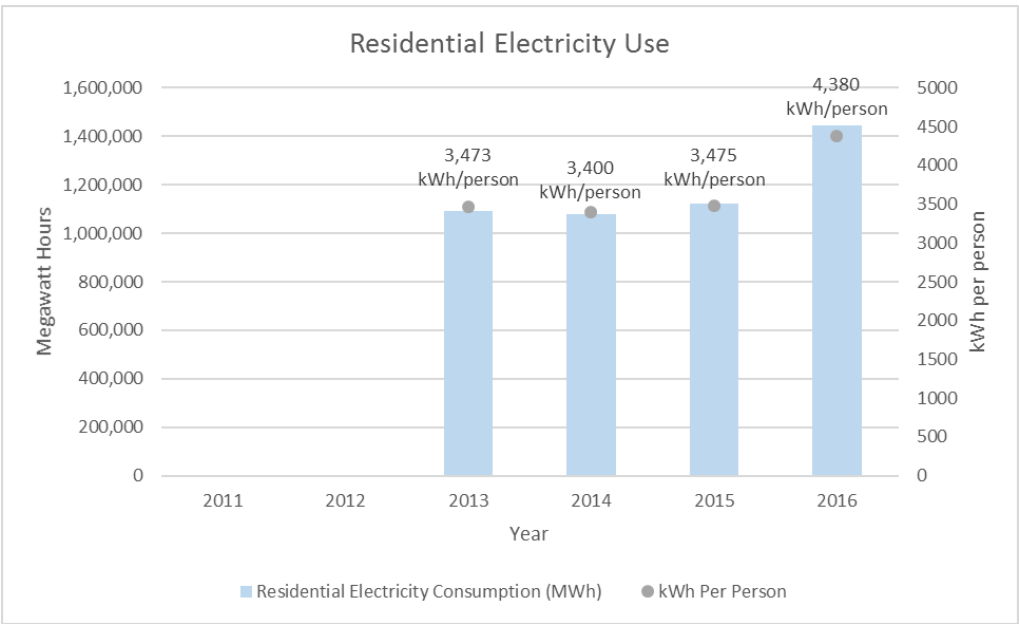
**Table 1.1: Indicator Trends for Energy and Climate Change**

Goal 1	INDICATOR	2011	2012	2013	2014	2015	2016
ENERGY	Total residential electricity use per capita (kWh/pp)	a	a	3,473	3,400	3,475	4,380
	Electricity use (kWh per 1000 square feet) in City of Vaughan buildings	21,032	21,612	19,842	19,221	19,387	19,113
CLIMATE CHANGE	Total community greenhouse gas emissions (eCO <sub>2</sub> ) (Not including GHG emissions from waste)	1,660,546 (2006)	a	1,577,128	b	b	b
	Corporate greenhouse gas emissions per resident served (eCO <sub>2</sub> in tonnes/pp)	0.0559 (2008)	0.0522	0.0497	0.0468	0.0419	0.0382

<sup>a</sup> Estimates of residential electricity consumption are available for 2011 and 2012. Only verified data from Alectra Utilities is used for the analysis of residential electricity consumption and is available from 2013 to 2016.

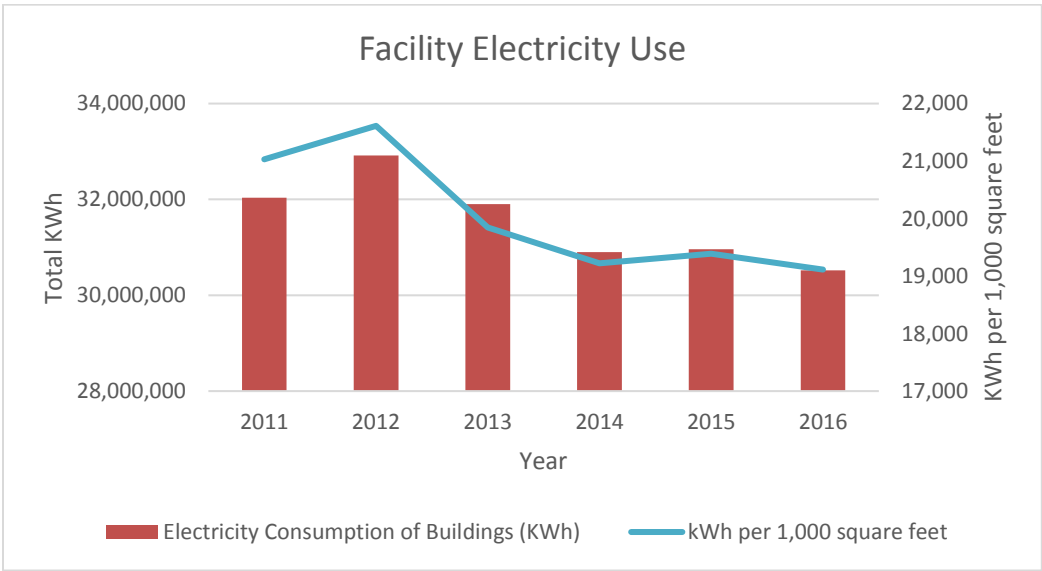
<sup>b</sup> Electricity data for the industrial, commercial and institutional sector was not available in time to undertake a full analysis of GHG emissions. The 2013 calculation of GHG emissions was undertaken for the Vaughan Municipal Energy Plan.

**Figure 1.1: Total Residential Electricity Use and Electricity Use Per Capita**



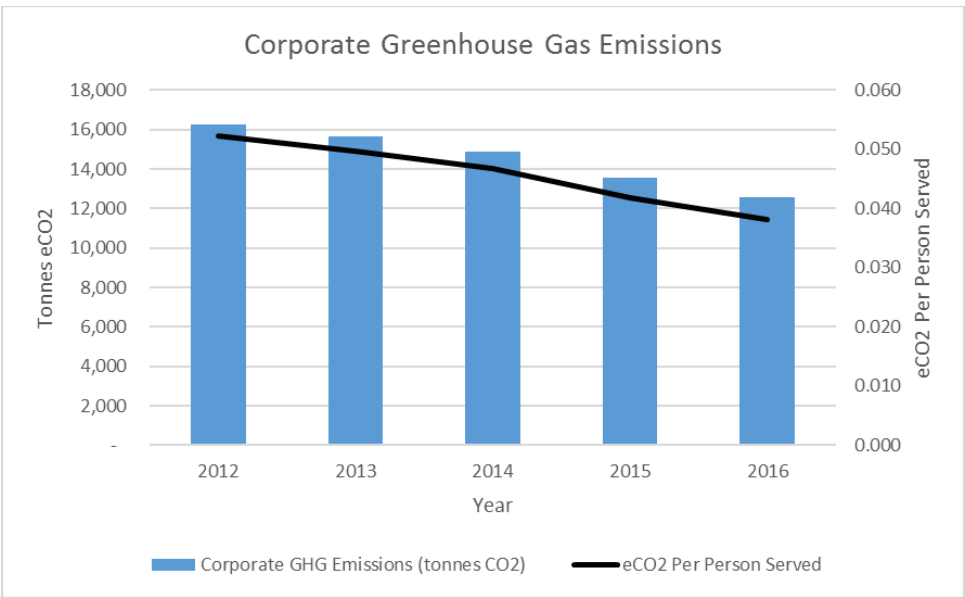
Electricity consumption data is provided by Alectra Utilities and generally shows an increasing trend with population growth. Electricity data for 2011 and 2012 are estimates rather than verified from Alectra and are not utilized in the assessment. The City’s Municipal Energy Plan identifies the need to investigate programs to promote residential retrofits to reduce overall community energy use.

**Figure 1.2: Corporate Electricity Consumption in City Facilities**



Electricity consumption in City buildings is declining as building retrofits are completed. Replacing light fixtures with LEDs, undergoing arena retrofits, and upgrades to HVAC systems have been the primary focus of retrofits to date. Future retrofits will further drive electricity reduction under the Energy Manager Agreement signed with Alectra Utilities, as well as identify opportunities to reduce natural gas consumption.

**Figure 1.3: Corporate Greenhouse Gas Emissions**



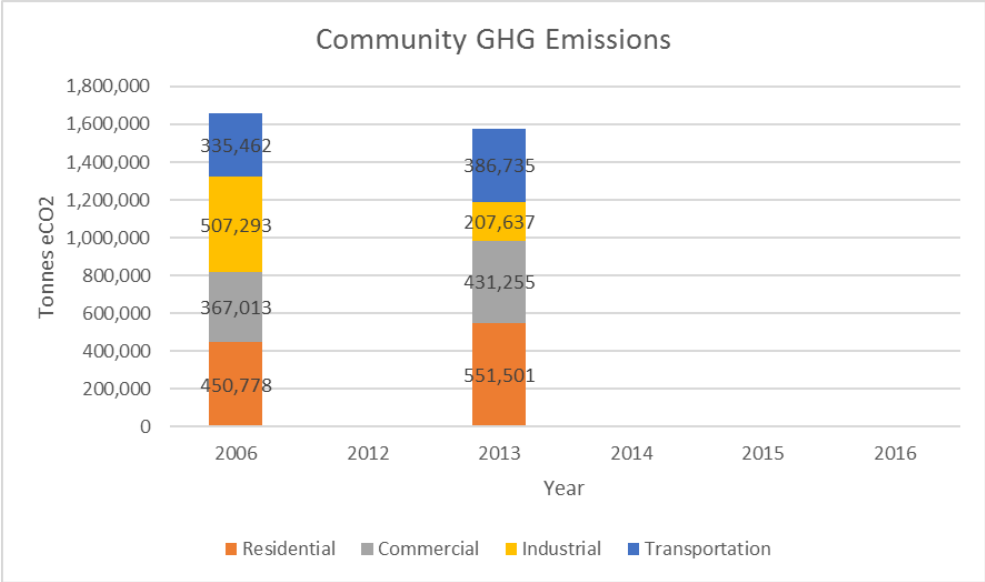
The City of Vaughan’s corporate greenhouse gas (GHG) profile incorporates greenhouse gas emissions (CO<sub>2</sub> equivalents) from the following sources:

- Electricity consumption
- Natural gas consumption
- Vehicle fuel
- Streetlights
- Solid waste
- Water and sewage pumping

The decline in corporate GHG emissions can be attributed to recent facility energy retrofits in addition to a cleaner electricity grid in Ontario as a result of the closure of coal generating stations. Further GHG emissions reductions will be realized with a focus on items such as decreasing natural gas consumption, a “green fleet” strategy, and increased corporate waste diversion.



**Figure 1.4: Community Greenhouse Gas Emissions**



Community GHG emissions cannot be calculated at the time of this report as electricity data for the commercial and industrial sectors was not received in time to undertake the analysis. The GHG estimates provided in the table above and in Figure 1.4 are taken from the Community Climate Action Plan approved in 2014 providing a GHG estimate for 2006 (1,660,546 tonnes eCO<sub>2</sub>) and the Vaughan Municipal Energy Plan (MEP) approved in 2016 providing a 2013 GHG estimate of 1,577,128 tonnes eCO<sub>2</sub>. The GHG emissions estimates for 2006 and 2013 do not include emissions from waste. GHG emissions from waste in 2006 were estimated to be 35,066 tonnes eCO<sub>2</sub> and were not calculated for the MEP. As noted in the MEP, the decrease in GHG emissions can be attributed primarily to three key factors that have changed in Vaughan and in Ontario between 2006 and 2013: (1) the province’s successful phase-out of coal; (2) the significantly increased conservation efforts and conservation targets of local utilities; and (3) changes in the Vaughan economy that have shifted away from carbon intensive industries.

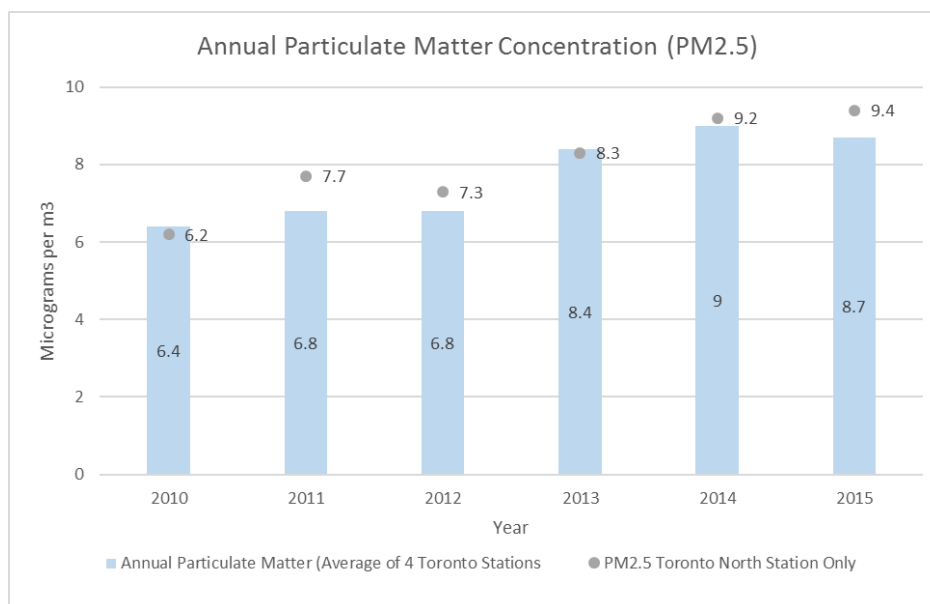
**Table 1.2: Indicator Trends for Air Quality**

GOAL 1	INDICATOR	2010	2011	2012	2013	2014	2015	2016
AIR QUALITY	Particulate matter (PM2.5) (micrograms per m <sup>3</sup> )	6.4 µg / m <sup>3</sup>	6.8 µg / m <sup>3</sup>	6.8 µg / m <sup>3</sup>	8.4 µg / m <sup>3</sup>	9.0 µg / m <sup>3</sup>	8.7 µg / m <sup>3</sup>	c
	Percentage of low emission vehicles within City fleet (%)		2%	2%	2%	2%	2%	8.5%
	Number of days when the Air Quality Index (AQI) is poor	2	1	5	4	6	4	c

\* Data unavailable for reporting year.

c The Ministry of Environment and Climate Change air quality reports are issued 2 years after the measurements are recorded (<http://www.airqualityontario.com/press/publications.php>). Therefore, the latest measurements are for 2015 observations.

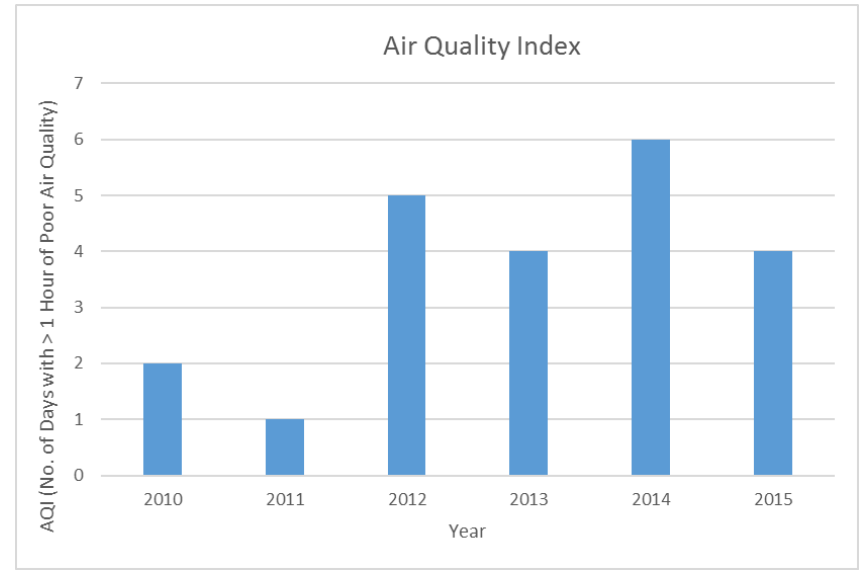
**Figure 1.5: Air Quality Index: Annual Particulate Matter Concentration**



The graph for concentrations of particulate matter (PM2.5), which contributes to smog, shows the measurements in the year reported. The value for Vaughan is an average annual mean concentration from four Toronto sites. In the future, the annual mean concentration from the North Toronto site (Yonge Street and Hendon Street) may be reported as the GDV indicator. Due to a change in the PM2.5 monitoring method in 2013, it is not appropriate to calculate a change over time or a temporal trend.

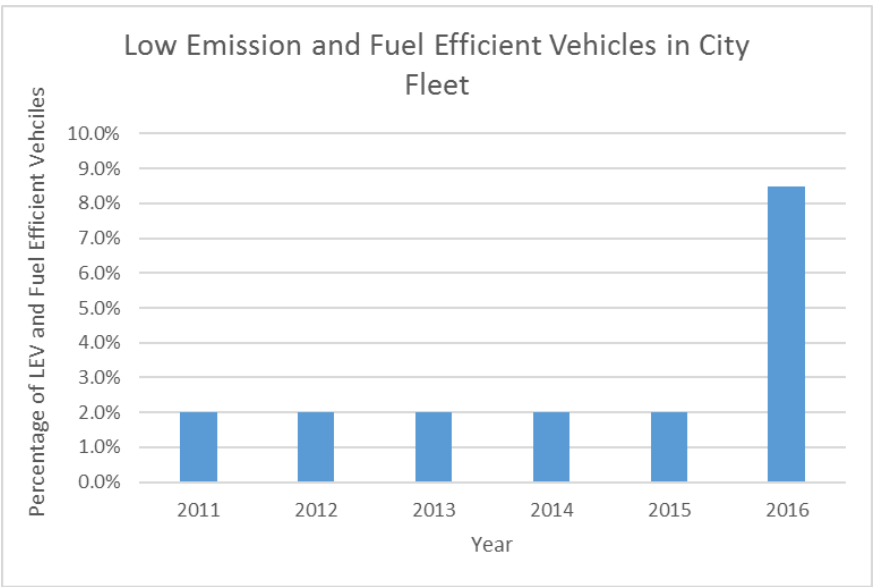
The Canadian Ambient Air Quality Standard for particulate matter is 10 micrograms per cubic metre, such that observed particulate matter is below the health standard (i.e. better than the health standard).

**Figure 1.6: Air Quality Index - Number of Days when the Air Quality Index (AQI) is Poor**



Before 2015, the AQI was measured as a composite score where a score > 49 represented poor air quality. In 2015, the air quality score composite was revised where a score > 6 represents poor air quality. In all cases, the AQI is the number of days in which poor air quality is recorded for longer than one hour.

**Figure 1.7: Proportion of Low Emission and Fuel Efficient Fleet Vehicles**



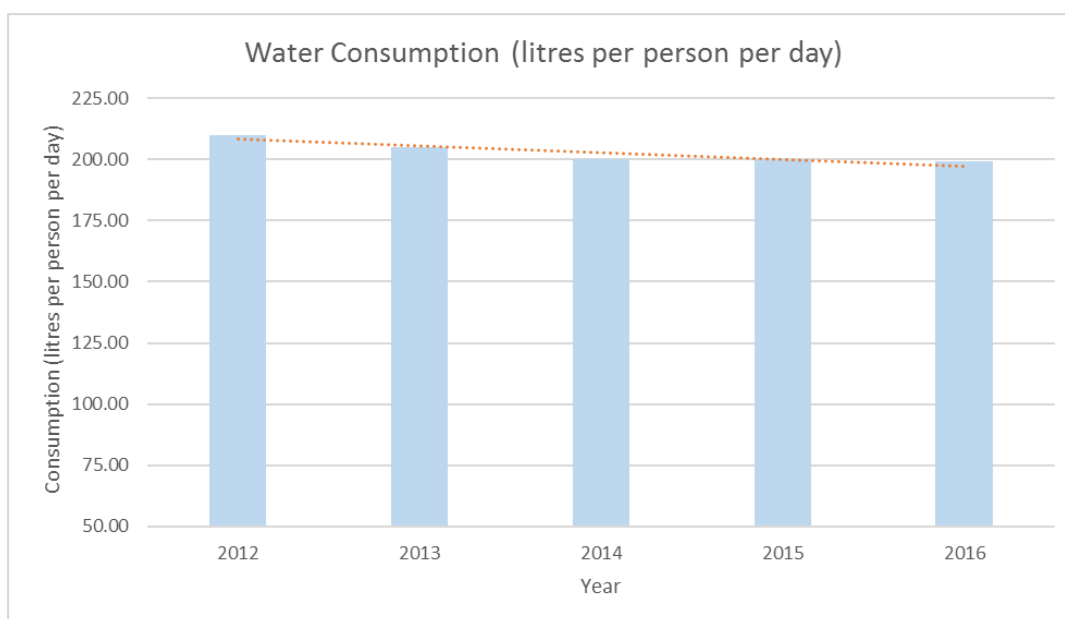
It is likely that the inclusion of fuel efficient vehicles in 2016 accounts for the increase as a proportion of the fleet vehicles shown in Figure 1.7. The 2016 calculation is based on the criteria for low emission and fuel efficient vehicles used in the Leadership in Energy and Environmental Design (LEED) standards. A “Greenscore” above 40 qualifies a vehicle according to LEED criteria and this data set was cross-referenced to the City fleet. Of the 271 on-road fleet vehicles, 23 have a Greenscore above 40.

**Table 1.3: Indicator Trends for Water and Stormwater**

GOAL 1	INDICATOR	2011	2012	2013	2014	2015	2016
WATER & STORMWATER	Daily volume of water used per person (L)	*	210	205	200	200	199
	Percentage of area with stormwater controls (%)	92%	*	92%	92%	*	*

\* Data unavailable for reporting year.

**Figure 1.8: Residential Water Consumption Per Capita**



Water consumption data is provided by York Region from the Region's Long Term Water Conservation Strategy. York Region has a 2050 target for residential water consumption of 150 litres per person per day.

Future consideration will be given to calculating water consumption specifically for Vaughan to complement the Region-wide data.

### Stormwater Management

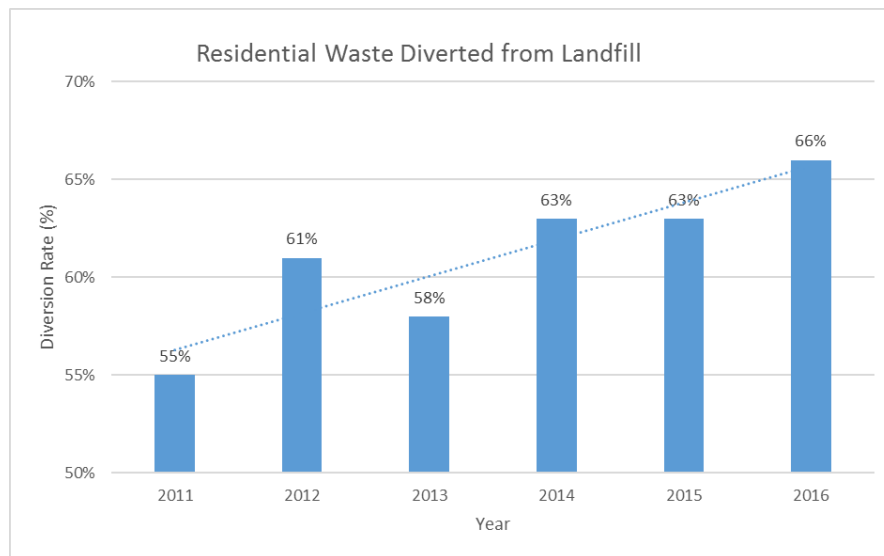
Essentially all of Vaughan has stormwater controls given its recent build out. This indicator will be replaced in future updates with an indicator more closely aligned with the World Council on City Data and/or the tracking for the stormwater charge through internal processes.

**Table 1.4: Indicator Trends for Solid Waste**

GOAL 1	INDICATOR	2011	2012	2013	2014	2015	2016
SOLID WASTE	Residential waste diverted from landfill (%)	55%	61%	58%	63%	63%	66%
	Waste diverted from landfill in City facilities (%)	12%	6%	5%	d	d	21%

<sup>d</sup> Data unavailable for reporting year. Weights were not provided in 2014 and 2015. The contract for corporate waste management was renewed in 2015 and monthly weights are provided as part of the waste contract.

**Figure 1.9: Residential Waste Diversion**



Waste diversion refers to the amount of waste avoided from landfill by means of recycling and/or composting. Residential waste diversion is recorded through the Resource Productivity and Recovery Authority (RPRA) as part of the *Waste-Free Ontario Act, 2016*. RPRA is an oversight, compliance, and enforcement organization.

**Figure 1.10: Corporate Waste Diversion**



Corporate waste diversion is calculated by using the weigh bills from the waste hauler servicing City facilities. Data was unavailable for 2014/2015 due to a change in service contractor.

## GOAL 2: HOW WE GROW

Goal 2 aims to ensure sustainable development and redevelopment across Vaughan.

**Table 2.1: Indicator Trends for Land Use, Urban Forest, and Sustainable Built Form**

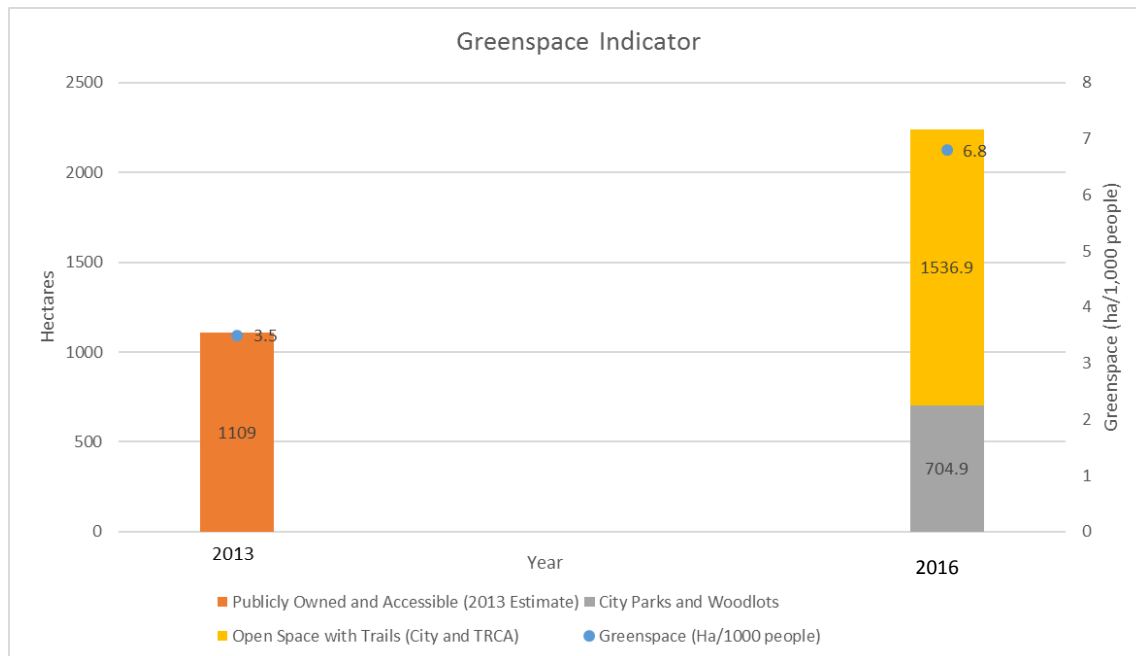
Goal 2	INDICATOR	2011	2012	2013	2014	2015	2016
LAND USE	Greenspace (hectares per 1000 people)	*	*	3.5	e	e	6.8
URBAN FOREST	Tree canopy cover as a percentage of urban area (%)	19.5%	19.5%	19.5%	f	f	f
SUSTAINABLE BUILT FORM	Building floor area (ft <sup>2</sup> ) certified under recognized green building programs (LEED and BOMA BEST)	2,107,696	2,446,787	2,356,954	3,118,683	5,128,023	6,163,233

\* Data unavailable for reporting year.

e Data not compiled in 2014 and 2015.

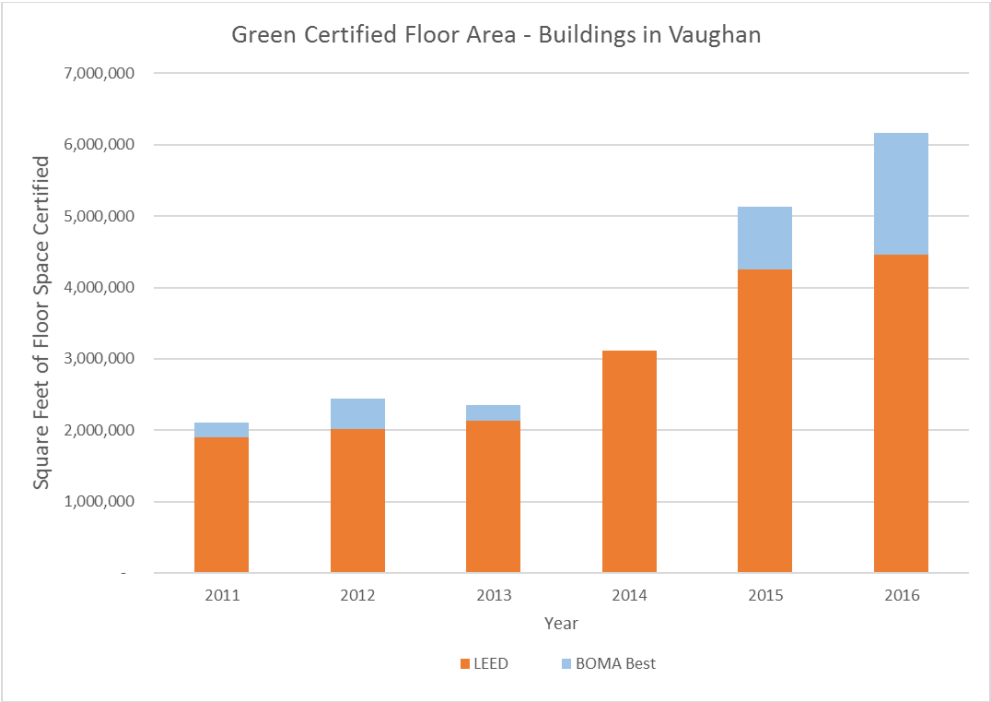
f A City project is currently assessing the tree canopy cover in Vaughan using recent aerial photography.

**Figure 2.1: Greenspace Hectares per 1000 People**



Greenspace refers to publicly accessible lands in public ownership. The increase in 2016 reflects the inclusion of Toronto and Region Conservation Authority (TRCA) lands that are considered publicly accessible in addition to the City parks and City woodlands. Lands in public ownership (City and TRCA) that are not yet publicly accessible are not included. It is noted in the TRCA's Living City Report Card 2016 that there is no agreed standard for optimum greenspace, but the average in urban areas across Canada was 8.4 hectares per 1,000 people in 2011.

**Figure 2.2: Building Floor Area Certified Under Recognized Green Programs**



Green certified floor area in Vaughan includes LEED (Leadership in Energy and Environmental Design) certified facilities and BOMA BEST. Buildings under the BOMA BEST certification must maintain annual membership to the program. Therefore, total floor space under the certification system can fluctuate year over year as buildings renew their certification. The number of buildings certified to LEED standards continues to increase year over year.

**Urban Forest**

The urban tree canopy is measured only once every 4 or 5 years. The original analysis undertaken by TRCA and York Region identified trees and shrubs covering 19.5% of Vaughan and tree canopy cover at 17% of Vaughan. The recent York Region Forest Management Plan (2016) uses the 17% tree canopy cover as the baseline and identifies a target to improve total canopy cover to between 25%-35% and woodland cover (a subcomponent of overall tree cover) to between 14%-17%. Current woodland cover is approximately 11% (not shown) based on the findings of the Natural Heritage Network Study. The Corporate Asset Management team is leading an innovative tree canopy assessment project and results should be available for the next GDV reporting update.



### GOAL 3: HOW WE GET AROUND

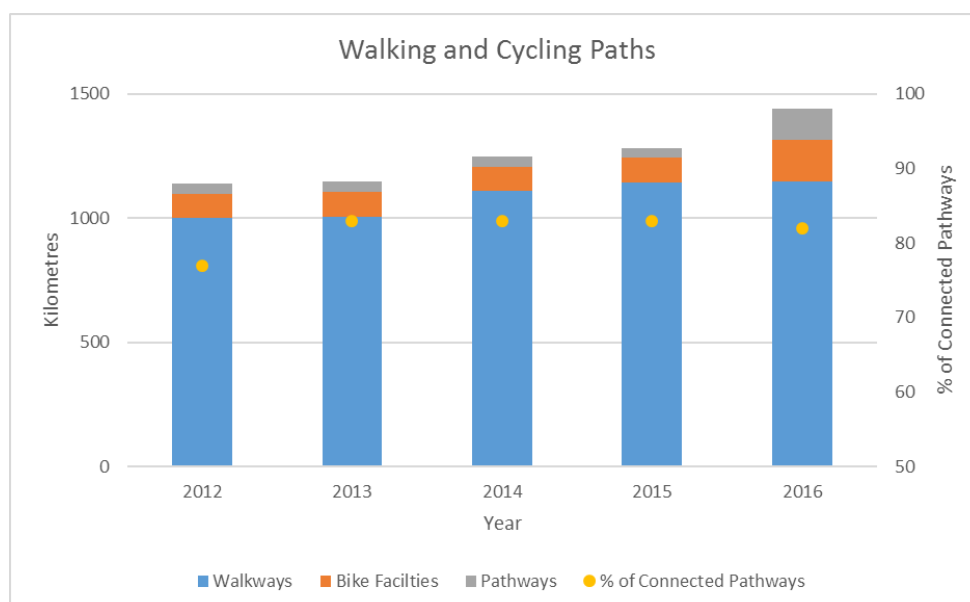
Goal 3 aims to ensure that getting around Vaughan is easy and has a low environmental impact.

**Table 3.1: Indicator Trends for Walking & Cycling Paths and Transit**

GOAL 3	INDICATOR	2011	2012	2013	2014	2015	2016
WALKING AND CYCLING PATHS	Length of walkways and cycling paths (km)	*	1,138	1,149	1,247	1,282	1,438
	Percentage of walkways and paths which are linked (%)	*	77%	83%	83%	83%	82%
TRANSIT	Passenger trips per person per year (#/pp)	18.2	*	20.09	19.61	21.35	20.69

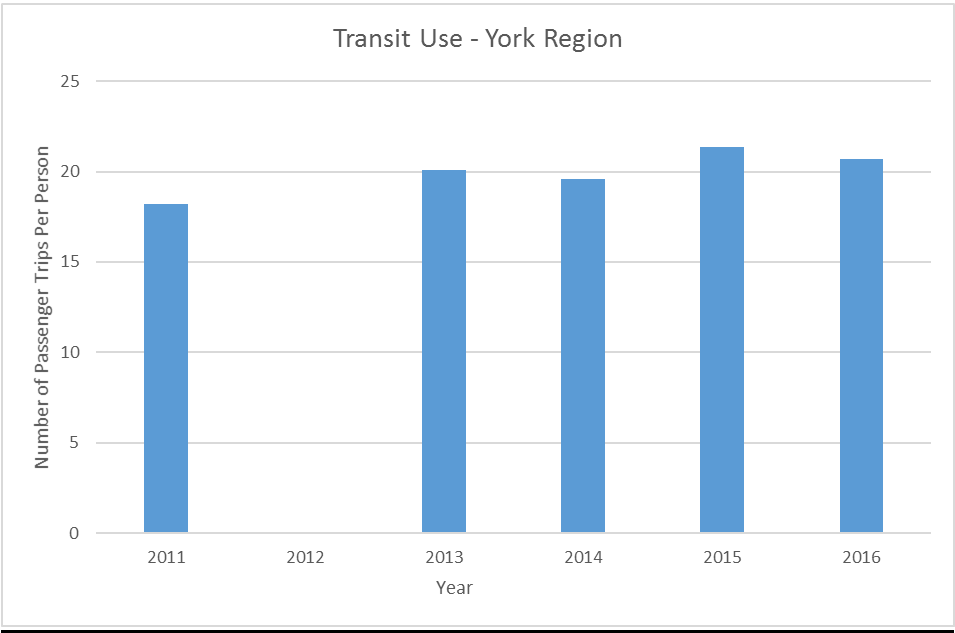
\* Data unavailable for reporting year.

**Figure 3.1: Length of Walkways and Cycling Paths in Kilometres**



The City of Vaughan's Active Together Master Plan (ATMP) identifies expanding the local system of pedestrian and bicycle pathways, trails, and routes through ongoing coordinated planning strategies as a key focus. It also recognizes a greater need to provide pedestrian and cycling options to assist in the development of a sustainable and environmentally responsible City that supports active living. With the forthcoming update to the ATMP in 2018, it is expected that walking and cycling facilities will improve uptake of alternative transportation modes in Vaughan. The Pedestrian and Cycling Strategy update will provide a blueprint for implementing active transportation infrastructure.

**Figure 3.2: Transit Passenger Trips Per Person Per Year**



Transit passenger trip data is provided by York Region and measures the number of transit passenger trips taken by the average person in a year. Transit usage remains steady at about 20 transit passenger trips per person per year. The Toronto Transit Commission, by contrast, records about 150 transit passenger trips per person per year for Toronto residents. The 2016 Transportation Tomorrow Survey results will be released in 2018. The 2011 Transportation Survey data for York Region identifies that between 65% to 70% of trips are by single occupancy vehicles with 5 - 9% transit trips and up to 4% of trips by GO train ([http://dmg.utoronto.ca/pdf/tts/2011/regional\\_travel\\_summaries/York.pdf](http://dmg.utoronto.ca/pdf/tts/2011/regional_travel_summaries/York.pdf)).

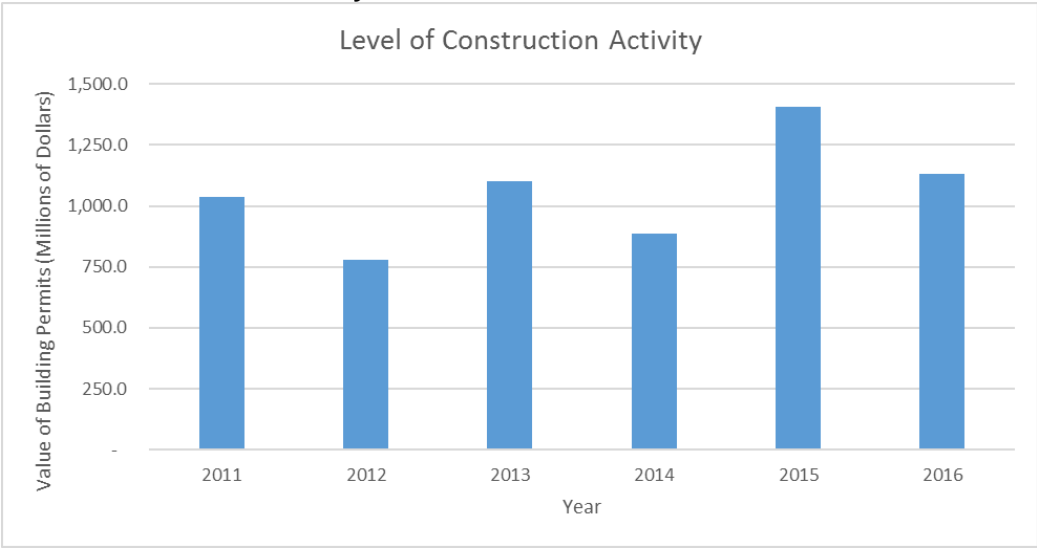
#### **GOAL 4: HOW WE LIVE**

Goal 4 aims to create a vibrant community for citizens, businesses, and visitors.

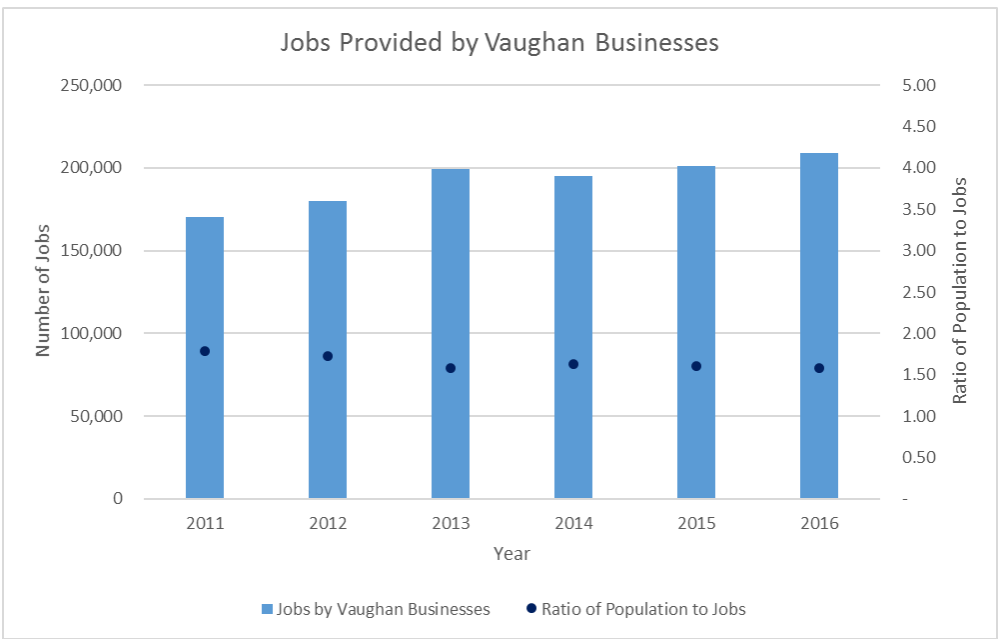
**Table 4.1: Indicator Trend for Economic Activity, Active Community, and Creative Community**

<b>GOAL 4</b>	<b>INDICATOR</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
<b>ECONOMIC ACTIVITY</b>	Level of construction activity (value of building permits in millions of dollars)	1038.9	778.8	1102.4	886.9	1405.1	1131.7
	Ratio of population to jobs	1.79	1.73	1.58	1.63	1.61	1.58
	Number of jobs provided by Vaughan businesses (#)	170,140	180,200	199,470	194,900	201,008	208,827
<b>ACTIVE COMMUNITY</b>	Total participant hours for recreation programs	11,717,422	13,414,830	14,354,123	14,059,714	14,226,267	14,394,793
	Number of stakeholders in involved in different community mechanisms (community meetings, social media, on-line newsletter)	746,955	820,347	177,266	810,423	888,200	2,928,277
<b>CREATIVE COMMUNITY</b>	Number of cultural initiatives supported and endorsed by the City (#)	40	40	50	52	55	57

**Figure 4.1: Level of Construction Activity**



**Figure 4.2: Number of Jobs Provided by Vaughan Businesses**



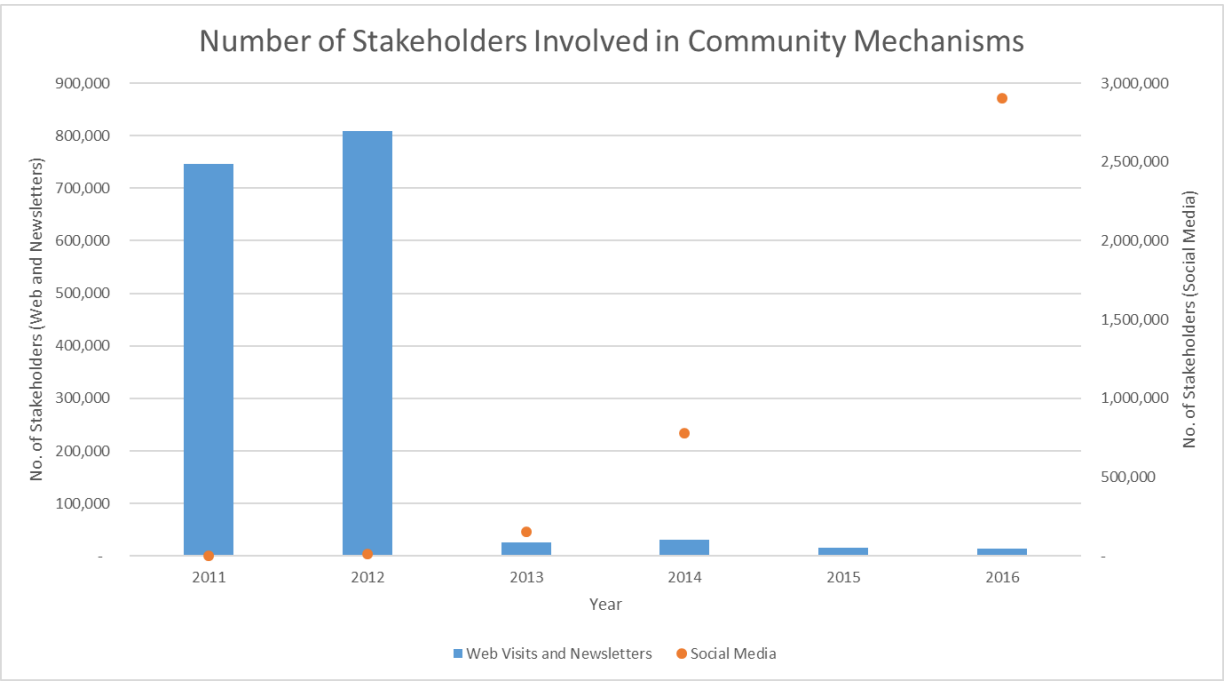
Over a five-year period (2011-2016), Vaughan’s employment growth outpaced regional, provincial and national labour force growth. The manufacturing and construction sectors are the strongest sectors in Vaughan, holding the largest share of employment in 2016. Manufacturing posted the greatest gains between 2015 to 2016, adding nearly 1,350 jobs.

**Figure 4.3: Total Participant Hours for Recreation Programs**



Participant hours in recreation programs reflects a gradual increase in the approximate number of hours residents spent participating in special events, registered programs, drop in programs and permitted programs. This supports the City's mandate to provide quality community programs and events in an accessible, equitable and efficient manner to enhance the quality of life of the City's growing and diverse population.

**Figure 4.4: Stakeholders Involved in Different Community Mechanisms**



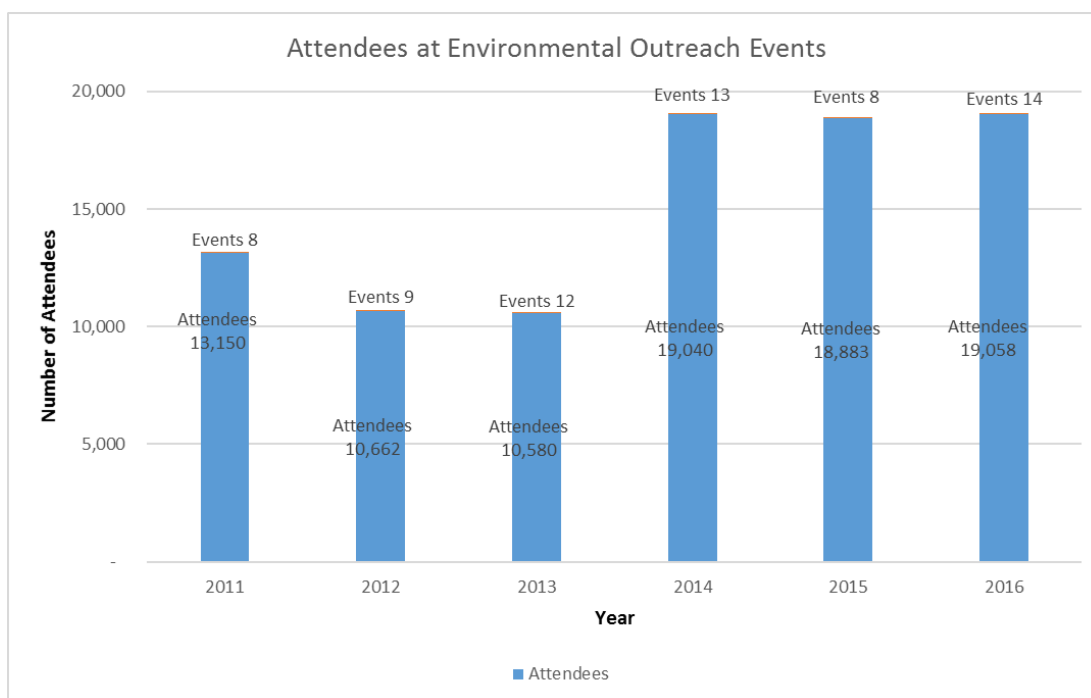
## **GOAL 5: HOW WE LEAD**

Goal 5 supports the City of Vaughan to be a leader on sustainability issues.

**Table 5.1: Indicator Trends for Engagement**

GOAL 5	INDICATOR	2011	2012	2013	2014	2015	2016
ENGAGEMENT	Number of environmentally related public outreach events held by the City of Vaughan	8	9	12	13	8	14
	Number of attendees at these events (#)	13,150	10,662	10,580	19,040	18,883	19,058

**Figure 5.1: Number of Attendees at Environmental Outreach Events**



Every year, a variety of events are coordinated to engage residents and staff in environmental sustainability. Signature events include Earth Hour Vaughan (an initiative to raise awareness on climate change), 20-Minute Makeover (a community litter pick up campaign to celebrate Earth Day), and Environmental Days sponsored by Public Works staff.

## ATTACHMENT 3

### Green Directions Vaughan Objectives – High Level Summary and Outlook

Objective	Summary and Outlook
1.1 To reduce greenhouse gas emissions and move towards carbon neutrality for the City of Vaughan's facilities and infrastructure	Energy efficiency of City assets, and consequent reduced GHG emissions, is a "leading by example" initiative. Progress to reduce facility energy consumption and the LED Streetlight Retrofit project follow program efforts in joining Partners for Climate Protection, developing the Energy Conservation Demand Management Plan in accordance with O. Reg. 397/11, and implementing an Energy Manager Agreement with Alectra. This objective remains highly relevant in light of the Province's Climate Change Action Plan and funding opportunities through the Province's GreenON program and the Federation of Canadian Municipalities.
1.2 To promote reduction of greenhouse gas emissions in the City of Vaughan	Changes to Provincial legislation and policy direction make climate change a matter of Provincial interest. Climate change mitigation in the community will require more emphasis in the revision of GDV in support of the Province's direction towards low carbon communities. While approval of the Municipal Energy Plan in 2016 is a key accomplishment, actual outcomes in the community require additional effort.
1.3 To support enhanced standards of stormwater management at the City and work with others to care for Vaughan's watersheds	The Stormwater Charge is a key accomplishment to promote appropriate maintenance of stormwater assets. Watershed planning has more prominence in the Growth Plan 2017 and the Province's stormwater management guidelines place more emphasis on a treatment train approach to managing stormwater through measures such as low impact development and other forms of green infrastructure.
1.4 To ensure efficient and appropriate use of potable water in City facilities	Like energy conservation and waste reduction, reducing water consumption at City facilities is an opportunity to demonstrate leadership. Water conservation can also support energy efficiency and requires greater attention in anticipation of its possible inclusion in Broader Public Sector reporting.
1.5 To reduce the amount of waste generated in City owned facilities and procure sustainable products for the City's use	While waste diversion at City facilities has improved, it lags waste diversion efforts in the broader community. Exploring changes to the City's procurement approach can promote a variety of key sustainability initiatives by including requirements of bids and proposals, such as improved waste diversion and attention to recycled and reclaimed content guidelines.
1.6 To continue to reduce the amount of waste generated by Vaughan citizens, businesses and institutions	The City and Region have made steady progress in reducing waste going to landfills. While the Waste Free Ontario Act, 2016 may result in changes to municipal waste diversion programs, the Provincial policy direction is clearly setting a target for the circular economy and zero waste.
2.1 To achieve sustainable growth and development by completing and implementing Vaughan Tomorrow, the City's Consolidated Growth Management (Complete Communities) Strategy-2031, and by ensuring that the strategy is subject to periodic review and renewal.	It is likely that objectives addressing administrative items will be recommended for removal in favour of outcome-oriented objectives. There is tremendous alignment of Provincial policy to balance growth and conservation through compact development, resilient infrastructure and attention to complete streets and green infrastructure. In particular, climate change adaptation and resilience will require suitable attention to action in the revised GDV and the VOP 2010 review.

Objective	Summary and Outlook
2.2 To develop Vaughan as a City with maximum greenspace and an urban form that supports our expected population growth	The continuum of green infrastructure, from street trees to low impact development measures to open space to natural heritage features, will figure prominently in revised actions in support of this objective. This objective integrates issues such as complete streets, alignment with the objectives of health agencies around the theme of “ecohealth”, and attention to green infrastructure asset management. The Humber Walk, the Service Excellence Strategy initiative to re-establish the urban tree canopy, and the City's community gardens represent City achievements.
2.3 To create a city with sustainable built form.	The City-wide Streetscape Implementation Manual, Secondary Suites policy and Sustainability Performance Metrics are accomplishments in support of sustainable built form. Changes to the <i>Municipal Act</i> and Ontario Building Code, together with new policy direction in the Climate Change Action Plan, point to a more integrated approach to resilient infrastructure and urban development with lower ecological footprints.
3.1 To develop and sustain a network of sidewalks, paths and trails that supports all modes of non-vehicular transportation	The City has made progress in the creation of off-road paths and trails and the Pedestrian and Cycling Strategy update is underway. Active transportation is highlighted in the Growth Plan 2017 and Climate Change Action Plan and has important co-benefits related to improving health and social cohesion.
3.2 To develop and sustain a network of roads that supports efficient and accessible public and private transit	The Province has made significant investments in transit in Vaughan that will continue for several more years. The transit hierarchy in the Growth Plan 2017 creates the opportunity for more transit-supportive development, complete streets and compact communities.
3.3 Reduce single occupant vehicle (SOV) trips by supporting active transportation, car pooling and public transit	The revised Transportation Master Plan has integrated options for transportation demand management and reduced parking rates are in effect in the VMC reflecting City efforts under this objective. Reducing single occupancy vehicles remains an important outcome to improve commuter mobility and goods movement and it will be a challenge to craft actions in GDV that address shared mobility options, micro-transit and driverless vehicles.
4.1 To foster a city with strong social cohesion, an engaging arts scene, and a clear sense of its culture and heritage	<p>The YMCA joint venture, the VMC Culture and Public Art Strategy and City-wide Public Art Policy implemented through specific programs and events, the development of the City-wide Urban Design Guidelines, and the Older Adult Strategy represent progress towards this objective. Future actions may include support for a civic engagement strategy, supporting the objectives of health agencies, attention to “social enterprises”, and interpreting the Province’s policy direction regarding community hubs.</p> <p>The prominence of the Agricultural System and Agri-Food Network in the Growth Plan 2017 suggests a stand-alone objective in the revised GDV to promote agricultural viability in the Provincial Plan areas, local food, promotion of the food processing sector, and urban agriculture initiatives including community gardens.</p>
4.2 Ensure that the City of Vaughan attracts businesses and investment that will result in well-paying jobs for Vaughan citizens, a sustainable tax base and continuing prosperity into the 21st Century	With employment lands available for build-out, the City is in a position to promote the low carbon economy and circular economy. This is an area where the City’s influence is more “enabling” than regulatory and actions in GDV will likely point to the need for strategic partnerships to achieve outcomes demonstrating that environmental sustainability equates to financial sustainability and brand enhancement.



Objective	Summary and Outlook
4.3 To encourage the establishment of green businesses and sustainable business practices	The City's support for the Innovation Park at Kortright Centre and partnership with the ClimateWise Business Network reflect progress in encouraging the green economy. The City will identify opportunities to promote businesses that demonstrate tangible sustainability successes. The integration of "smart city" initiatives in Green Directions Vaughan requires further exploration.
5.1 To share sustainable best practices and ideas between and among municipal staff and the community.	The social media landscape and more interactive communications will be a future effort to promote GDV and promote efforts of residents and businesses. Citizen attendance at events such as the 20 Minute Makeover and Earth Hour are evidence of the interest and motivation that can be harnessed for meaningful action.
5.2 To continue the City's role in advocacy and information sharing on environmental issues	City progress is reflected in the collaboration with Partners in Project Green (funding for EV chargers and installation at JOC), the ClimateWise Business Network, Smart Commute and membership in the Clean Air Council. Strategic partnerships are required to implement and demonstrate progress on many sustainability initiatives.
6.1 To fully support the implementation of Green Directions at all levels of City operations	Governance considerations include department roles in accounting for actions and measuring progress, in addition to connections to overarching corporate strategy and Service Excellence initiatives. Revising GDV actions will pay attention to making progress reporting less onerous on the part of the responsible City department while improving progress reporting for stakeholders and residents.