



TELUS Greenhouse Gas Report 2015



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Introduction

I. Who we are

A. Business operations

TELUS (TSX: T, NYSE: TU) is Canada's fastest-growing national telecommunications company, with \$12.6 billion of annual revenue and 12.4 million customer connections, including 8.4 million wireless subscribers, 1.4 million residential network access lines, 1.6 million high-speed Internet subscribers and 1.0 million TELUS TV customers. TELUS provides a wide range of communications products and services, including wireless, data, Internet protocol (IP), voice, television, entertainment and video, and is Canada's largest healthcare IT provider.

In support of our philosophy to give where we live, TELUS, our team members and retirees have contributed \$440 million to charitable and not-for-profit organizations and volunteered and more than 6.8 million hours of service to local communities since 2000.

B. Climate change goals

Our goal is to achieve an absolute reduction in Energy use and Greenhouse Gas emissions by 2020, using 2010 as our base year.

- 10 per cent absolute energy reduction by 2020 over 2010 levels
- 25 per cent absolute GHG emission reduction by 2020 over 2010 levels

Setting absolute reduction goals rather than efficiency goals presents a challenge in our industry given the ongoing expansion of our networks and increasing demand from our customers for data and connectivity – all requiring more power. We estimate our annual demand for energy will increase by 3.35% each year. More commonly, organizations will use intensity metrics to measure their Energy and GHG performance. Intensity metrics are often expressed as ratios, with an impact (such as energy or emissions) in the numerator and an output (such as revenue or customer count) in the denominator. Expressing intensity metrics as ratios provide a way to relate environmental performance with economic performance.

TELUS maintains an aspirational goal of absolute reductions despite the tremendous growth in customer data usage and the resulting impact on our networks. Customer demand for data has grown significantly from 2010 to 2015 across our wireline and wireless networks. This increase in customer data usage and related energy consumption presents a challenge for TELUS and our industry as a whole in achieving energy reduction goals. As part of our balanced approach to addressing climate change and to address our energy use challenge, we are exploring renewable energy solutions to either offset or replace a portion of our energy supply.

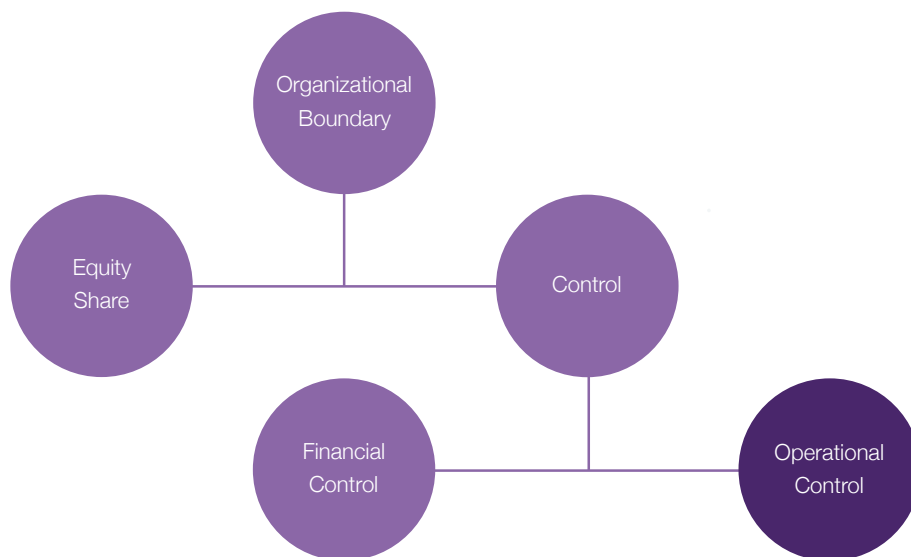
II Methodology

1. Accounting and Reporting Procedures

When reporting energy and GHG usage, we follow the [Greenhouse Gas Protocol](#) methodology. Emission factors are collected from the [Canadian National Inventory Report](#).

A. Organizational Boundary

When reporting GHG emissions, the organizational boundary must be defined in order to determine which part of the business is included in the report. TELUS uses Operational Control to define the organizational boundaries in which GHG emissions are collected. Operational Control is where the organization has authority to introduce and implement its own operating policies.



B. Operational Boundary

We categorize our energy and GHG consumption according to the GHG Protocol guidelines:

- **Scope 1:** direct energy sources such as fuels that include natural gas, gasoline, diesel, propane and heating oil
- **Scope 2:** indirect energy sources such as electricity
- **Scope 3:** other energy sources. TELUS defines “other” as air travel, employee commuting and mobile device use

The energy footprint, as defined for our climate change goals, consists of direct energy and indirect energy for our domestic owned and leased real estate properties, cellular sites, vehicle fleet, and remote generator fuel.

C. Base Year

The base year for TELUS’ GHG reporting is 2010.

Our climate change objectives were introduced in 2010. In 2013, we changed our base year from 2009 to 2010 so we could incorporate data associated with our leased properties into our disclosure. This was after our analysis determined there was material, reliable data for our leased properties, dating back to 2010.

D. Inventory Quality

The type of inventory included and omitted is assessed through ongoing discussions with each energy manager. Decisions are based on reliability, accuracy and relevancy of data. Regular reviews with energy managers may uncover new inventory sources.

E. Inventory Exclusions

Energy use and GHG emission data for our office buildings in the United States and Europe are currently not included in our Scope 1, 2 or 3 reporting as we assess our ability to collect and analyze data for these locations.

Energy use and GHG emission data associated with our office buildings in the Philippines and Central America are reported separately. These locations are not included in our baseline or targets for our climate change goals as data reliability was an issue when the targets were set.

F. Emissions Adjustments

i. Policy for recalculation: Where energy data is missing and errors are uncovered, TELUS will correct the errors and apply the missing data as applicable from current year to base year. Data will be restated with explanation back to 2010 as required in our annual Sustainability Report and/or our GHG report.

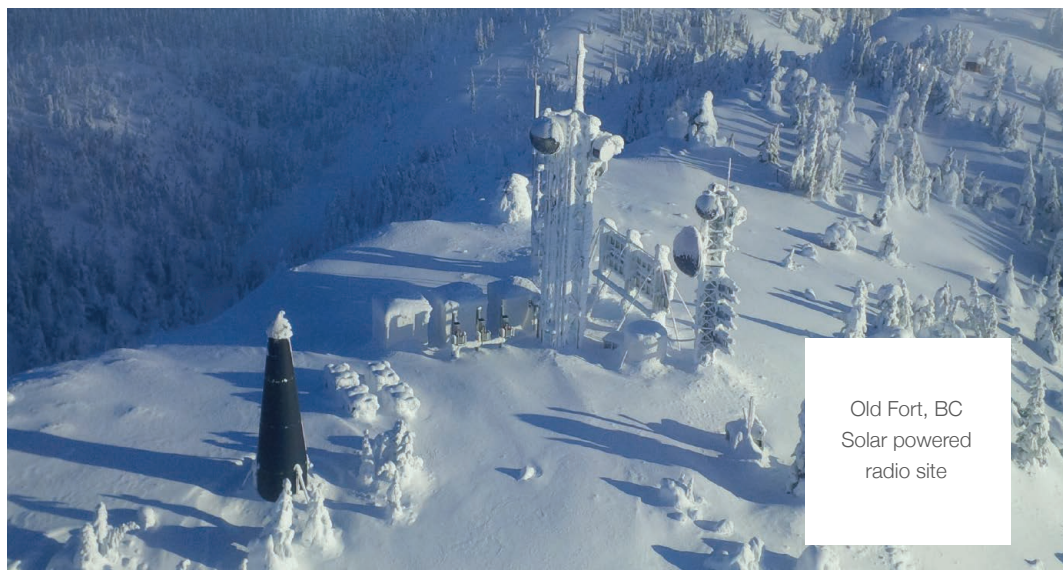
ii. When energy data is unavailable: We will apply historical data and use assumptions (with accompanying rationale) to enhance the quality of our disclosure.

iii. Acquisition and Divestures recalculation:

- TELUS will not recalculate its base year data when acquisitions and divestitures occur unless it can be determined the newly available data is material, currently defined as accounting for more than 10 per cent of total energy and/or GHG emission inventory.
- If an acquisition is made and the associated energy use and GHG emission data is deemed material we will determine, based on our organizational boundaries, if it should be included in our Scope 1 or 2 disclosure. If it is included and historical data isn't available, we will utilize available energy data and use assumptions (with accompanying rationale) to restate our disclosure as applicable from current year to base year.
- For a divestiture, we will remove any associated data from current to base year



Solar Installation
Lendrum Building,
Edmonton, AB



Old Fort, BC
Solar powered
radio site

G. Data Storage

- i. Inventory from each energy manager is submitted and input into a master inventory document.
- ii. The master document is stored on a secure SharePoint site.
- iii. The master document includes the most up-to-date emission factors.
- iv. Emission factors used are from [Canada's National Inventory Report](#) (NIR) and footnotes reference the location of the emission factor on the NIR.

H. Quality Control and Verification

i. Internal Controls:

1. Energy data from across the organization is produced by 12 energy managers and consolidated by one GHG inventory quantifier (GHG IQ).
2. Utility bill management and payment is decentralized. This function is performed by energy managers within TELUS and by external partners.
3. The consolidation of utility data and application of emission factors is centralized and performed by one GHG IQ.
4. The energy data is reviewed and verified by TELUS' GHG IQ who performs the following tasks:
 - Applies emission factors to the energy data
 - Applies equivalent kilowatt hours to relevant energy inputs
 - Performs quality control and verification measures including:
 - Discussing input with energy managers
 - Reviewing inputs and questioning variances
 - Checking CO₂e and kWh conversions
 - Reviewing inputs against previous year's inventory for irregularities

ii. External Controls

- GHG and Energy inputs related to specific GRI disclosure requirements are reviewed and assured by an independent third-party professional services firm.

III GHG Inventory

1. GHG Emissions Inventory for 2015

A. Emissions by Scope		tonnes CO ₂ e
Scope 1		75,483
Scope 2		290,373
Total		365,856

Scope 1 emissions include: Stationary fuel sources such as diesel and natural gas, propane, light oil, and halocarbon

Scope 2 emissions include: Electricity, heating/cooling loop and steam.

B. Emissions by Commodity		%
Source		
Vehicle Fuel		8.03
Electricity		79.07
Natural Gas		10.73
Stationary Diesel		1.09
Other Stationary Fuel		0.06
Halocarbons		0.71
Heating Cooling Loop		0.03
Steam		0.26

Electricity use accounts for the majority of emissions in our operations with natural gas being the second largest source of emissions. Electricity and natural gas are used to power our office spaces, retail locations, network operations and cellular sites. Our vehicle fleet, which is used to support delivery of our wireless and wireline products and services, accounts for eight per cent of our greenhouse gas emissions.

C. Energy and emissions by Province		
	eMWH %	CO ₂ e %
Alberta	41.5	85.9
British Columbia	27.9	6.1
Manitoba	0.3	0.1
Nova Scotia	0.5	0.5
Ontario	16.2	5.6
Quebec	13.3	1.4
Saskatchewan	0.3	0.4

Greenhouse Gas emissions are concentrated in Alberta, accounting for nearly 86 per cent of overall emissions. This is partially due to the higher electricity emission factor in the province. The electricity emission factor is 54 per cent higher in Alberta than neighbouring British Columbia. This means that for every tonne of CO₂e emitted in Alberta, it accounts for 54 per cent more emissions than if it were in B.C.



Grande Cache, AB
Solar powered
radio site

D. Scope 3

In previous years, TELUS' Scope 3 reporting consisted solely of emissions from business related air travel. For 2015, we expanded our Scope 3 disclosure to include emissions associated with employee commuting and mobile device manufacturing.

Scope 3	
	tonnes of CO ₂ e by Source
Business Air Travel	7,182
Employee Commuting	27,157
Mobile Devices	279,556

Business air travel data is produced by a dedicated energy manager using an internal database and data collected from our flight agency partners. This information is reliable and consistent year over year.

Employee commuting data is determined by using behavioural assumptions, employee surveys and commuting related data from Statistics Canada.

Emissions from mobile devices are measured using a combination of manufacturer data and internal inventory databases to collect and calculate the upstream and downstream impact of our mobile devices.

2. Emissions over time

A. Tracking emissions from 2010 to today											
tonnes of CO ₂ e											
	2015	% change	2014	% change	2013	% change	2012	% change	2011	% change	2010
Domestic Scope 1	75,483	-9.4	83,273	3.0	80,852	-1.4	82,015	-4.3	85,656	-2.8	88,165
Domestic Scope 2	290,373	3.4	280,766	11.4	252,028	-16.6	302,089	0.2	301,340	-7.4	325,257
Total Domestic	365,856	0.5	364,039	9.4	332,880	-13.3	384,104	-0.7	386,996	-6.4	413,423

GHG emissions are dependent on internal factors, such as actual energy usage and external factors, such as emission factors that are applied to TELUS' energy usage depending on the location and type of energy used.

In 2015, our GHG emissions increased only by 0.5 per cent over 2014. The small increase was due to the increased emission factor in B.C. coupled with the 32% growth of our wireless network in Western Canada in 2015.

B. Trending

Total domestic scope 1 and 2 GHG vs. base year	2015	Compared to base year (%)	2010
Scope 1	75,483	-14.4	88,165
Scope 2	290,373	-10.7	325,257
Total	365,856	-11.5	413,423

Since 2010 our emissions have decreased by 11.5 per cent. While we are pleased with the progress we have made, we are still assessing how to further decrease our GHG emissions using a balanced approach that includes internal energy reduction programs, purchasing carbon offsets, and investing in renewable energy projects.

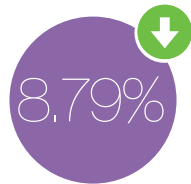
3. Key Emission Source Analysis

tonnes of CO ₂ e by Source	
Buildings	272,006
Cellular Sites	57,855
Fleet	29,394
Other	6,602

Each year, we continue to consolidate our real estate footprint through Workstyles, a program that enables employees to work when, where and how they are most effective. While our buildings account for the majority of our emissions footprint, we have realized consistent improvement in our square foot per employee ratio by giving our team the flexibility to work from home or in the office when it makes sense to them.

Square foot per full time employee equivalent (FTE)

2015	2014	2013	2012
195.2	197.1	207.9	214.0



Our workspace square footage per full time employee equivalent has been reduced -8.79% since 2012

4. Emission Intensity Metrics

Emission intensity is used to examine emissions efficiency against a relevant business indicator. Customer connections and revenue are an example of indicators that are used to measure growth in an organization. When measured against both customer connections and revenue, we have become much more efficient by reducing relative emissions while realizing business growth.

A. GHG Intensity: Customer Connection

	2015	Compared to Base Year	2010
Customer Connections (M)	12,495	18.3%	10,560
tonnes of CO ₂ e per customer connection	29.3	-25.0%	39.1

B. GHG Intensity: Revenue

	2015	Compared to Base Year	2010
Annual Revenue (\$M)	12,502	27.7%	9,792
tonnes of CO ₂ e per revenue	29.26	-30.7%	42.22



Firth Lake, BC
Radio site

IV Renewable Energy

A. New Solar Installations in 2015

In 2015 we installed solar panels at three different TELUS sites. Our Banff and Edmonton sites were solar trials where we utilized renewable energy to help bring down the location's reliance on traditional power. Our solar installation at TELUS Garden in Vancouver, the largest in the region, helped contribute to the building obtaining LEED Platinum certification.

- Banff Central Office, AB: 44 solar panels generating 13,000 kWh per year
- Lendrum Building, Edmonton, AB: 150 solar panels generating 44,000kWh per year
- TELUS Garden, Vancouver, BC: 288 solar panels generating 65,000 kWh per year.

B. Existing Solar Installations

TELUS has approximately 27 mountain top solar arrays used to power remote sites. As well, we have an 11 kilowatt solar installation at TELUS' West Telephone Service Centre producing 14,000 kWh per year.

C. Renewable Energy Goals for 2016

In 2016 we are exploring further investments in renewable energy. We plan to incrementally increase our renewable energy infrastructure as well as purchase renewable energy certificates or offsets to help bring us closer to achieving our climate change goals.



Solar Installation
West Telephone
Service Centre,
Edmonton, AB