INTREN, LLC

2017 GHG Emissions Report

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Table of Contents

Abstract

INTREN's commitment to environmental sustainability has grown in the last couple of years. As the company continues to grow and expand across the country its environmental sustainability efforts will increase as well. In 2017, the company saw employee count increase by 2% from the previous year while hours worked increased 11%. The groundwork placed to develop, communicate, and implement a more mature plan for the future will change as INTREN continues to grow.

This report will provide a detailed overview of GHG emission results for measured emitters, a synopsis of the data collection process, and suggested initiatives for the future.

Keywords: GHG emissions, fuel usage, diesel, biodiesel, purchased electricity, LED, renewable energy, employee commuting, natural gas, therms, business travel, water consumption, waste generation, SGEC calculation tool, data collection analysis, Scope 1, Scope 2, Scope 3, $MTCO_2e$.

GHG Emission Results Summary

The following summary will list the largest contributor of GHG emissions at INTREN to the smallest contributor. Two of the five categories measured saw an increase. With the number of work hours increasing from 2016 to 2017 by 11%, INTREN was able to see a minimal increase in total GHG emissions during that time frame of approximately 8% from 2016 to 2017.

- **Fuel use 12% increase from 2016-2017.** This increase is due to a 11% increase of hours worked and a 23% increase in vehicles & equipment.
- **Employee commuting 8% decrease from 2016-2017.** This decrease is likely due to the 23% decrease in office employee hires when compared to 2016.
- **Purchased electricity 40% decrease from 2016-2017.** The decrease is due to the installation of LED lighting at INTREN's main headquarters in June of 2017 which resulted in a savings of 157,365 kwh when compared to the same time frame in 2016. In addition to LED lighting INTREN offset 761,859 kwh by purchasing renewable energy certs which has a zero-emission factor.
- **Purchased Natural gas 9% decrease from 2016-2017.** The decrease is likely due to obtaining actual bills for leased locations where therm usage was estimated for previous years.
- **Business travel 1% increase from 2016-2017.** This increase is most likely due to an increase in INTREN's customer base. Additional travel to ensure INTREN's continued growth contributed to the increase in business travel GHG emissions.

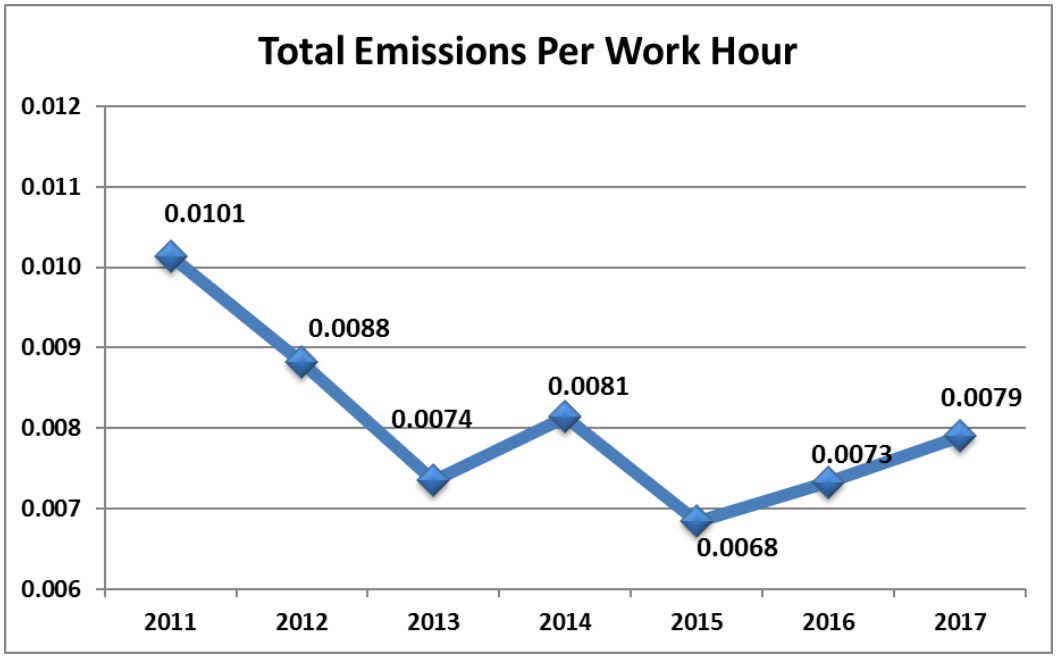
GHG Emissions [$MTCO_2e$]										
Reporting Year	Fuel Use	Purchased Electricity	Employee Commuting	Business Travel	Natural Gas	Total GHG Emissions	Man hours	% -/+ previous yr. comparison total GHG Emissions	Emissions Per Work Hour	% -/+ previous yr. comparison Emission/work hour
2011	8,684	1,060	690	39	117	10,590	1,044,088		0.0101	
2012	10,945	1,122	684	82	60	12,893	1,461,616	22%	0.0088	-13%
2013	10,916	1,042	679	78	172	12,887	1,753,086	0%	0.0074	-17%
2014	13,900	1,331	779	48	210	16,268	1,998,087	26%	0.0081	11%
2015	14,061	1,106	715	27	241	16,149	2,359,476	-1%	0.0068	-16%
2016	17,747	943	856	91	371	20,007	2,729,977	24%	0.0073	7%
2017	22,002	625	871	101	374	23,973	3,034,826	20%	0.0079	8%

GHG Emissions Results

The information provided in the following report will provide a detailed overview of INTREN's measured and trended GHG emissions over seven years and an individual data collection analysis for:

- Fuel usage
- Purchased electricity
- Employee commuting
- Natural gas usage
- Business travel
- Water consumption
- Waste Generation

The following data was collected for the GHG emission calculations. The data was then compared to INTREN's growth via hours worked for the reporting year as well as past years. As INTREN continues to grow, it is important to factor in the amount of growth when calculating GHG emissions.

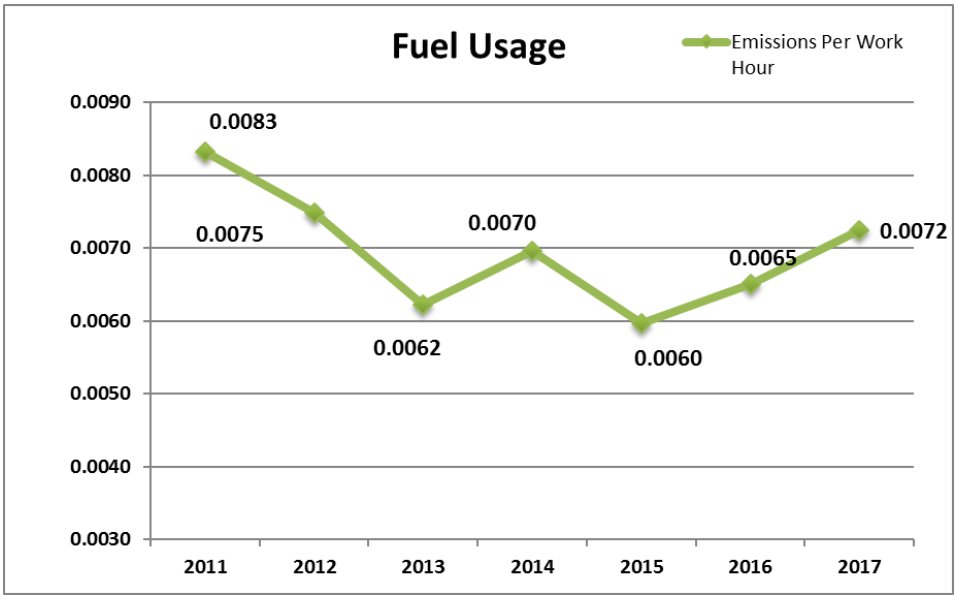


Fuel Use – Scope 1 Emission

The largest contributor of GHG emissions at INTREN in 2017 was fuel use, the same as 2011 through 2016. INTREN uses gasoline, diesel, and ethanol fuel for company-owned on-road vehicles and off-road equipment. In 2017, INTREN began using Biodiesel which accounted for 7% of the organization's total fuel usage. Fuel usage is a Scope 1 emission and increased by approximately 12% from 2016 to 2017. The fuel usage increase is due to a 11% increase of hours worked combined with a 23% increase of vehicles and equipment (179 heavy duty trucks, 103 light duty trucks, and 168 pieces of construction equipment).

Below is a breakdown of the past seven years of fuel use and associated GHG emissions. While calculations are made based on the fuel types (regular gasoline, diesel, etc.), for simplicity the table below only shows the total gallons of fuel used and the associated GHG emissions.

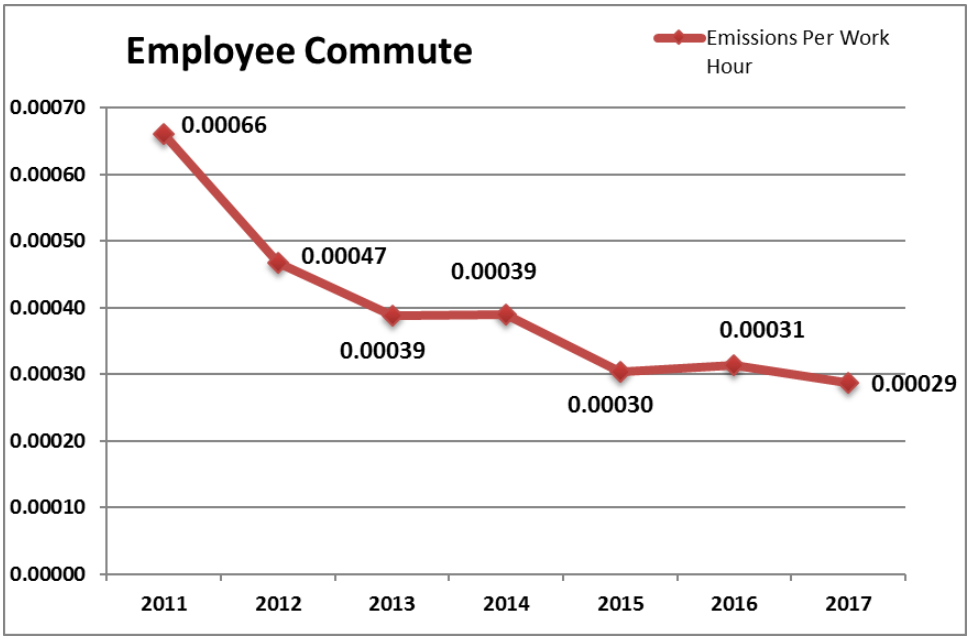
Fuel Use (Scope 1)					
Reporting Year	Gallons	GHG Emissions [$MTCO_2e$]	% -/+ previous yr. comparison	Emissions Per Work Hour	% -/+ previous yr. comparison Emission/work hour
2011	912,103	8,684		0.0083	
2012	1,141,277	10,945	26%	0.0075	-10%
2013	1,136,190	10,916	0%	0.0062	-17%
2014	1,447,568	13,900	27%	0.0070	12%
2015	1,484,158	14,061	1%	0.0060	-14%
2016	1,871,743	17,747	26%	0.0065	9%
2017	2,337,724	22,002	24%	0.0072	12%



Employee Commuting – Scope 3 Emission

The second largest contributor of GHG emissions at INTREN in 2017 was employees' commute to and from work, which previously was the third largest emitter from 2011 through 2016. The GHG emissions as a result of employee commuting decreased 8% in 2017 from 2016 when compared to hours worked. This decrease is like due to the 23% decrease in office employee hires when compared to 2016. Employee commuting is categorized as a Scope 3 emission. Below is a breakdown of GHG emissions for the past seven years resulting from employee commuting.

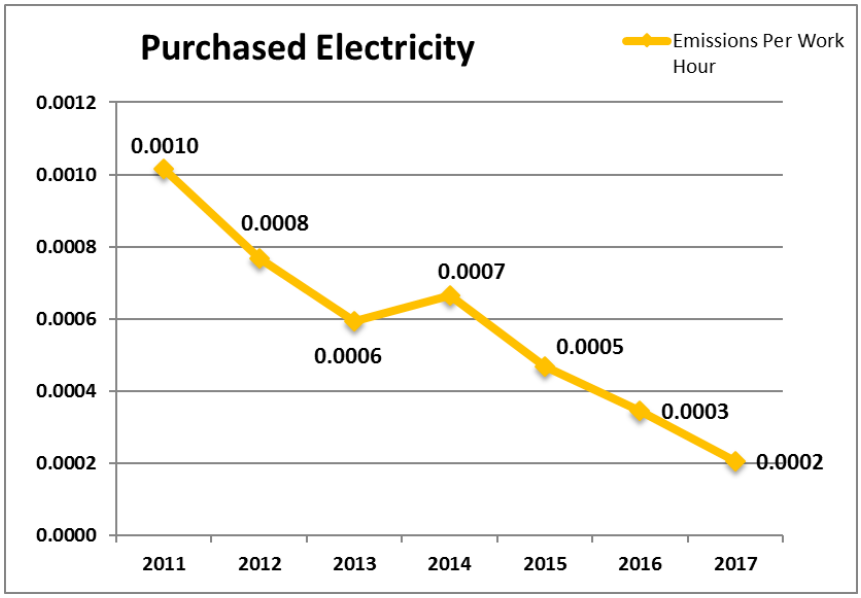
Employee Commuting (Scope 3)				
Reporting Year	**GHG Emissions [$MTCO_2e$]**	**% -/+ previous yr. comparison**	**Emissions Per Work Hour**	**% -/+ previous yr. comparison Emission/work hour**
2011	690		0.00066	
2012	684	-1%	0.00047	-29%
2013	679	-1%	0.00039	-17%
2014	779	15%	0.00039	1%
2015	715	-8%	0.00030	-22%
2016	856	20%	0.00031	3%
2017	871	2%	0.00029	-8%



Purchased Electricity – Scope 2 Emission

The third largest contributor of GHG emissions at INTREN in 2017 was purchased electricity, which previously was the second largest emitter from 2011 through 2016. Emissions from purchased electricity decreased from 2016 to 2017 by 40%. The decrease is due to the installation of LED lighting at INTREN's main headquarters in June of 2017 which resulted in a savings of 157,365 kWhs when compared to the same time frame in 2016. In addition to LED lighting INTREN offset 761,859 kWhs by purchasing renewable energy certs which have a zero-emission factor. Purchased electricity is categorized as a Scope 2 emission. Below is a breakdown of the past seven years of electricity use and associated GHG emissions.

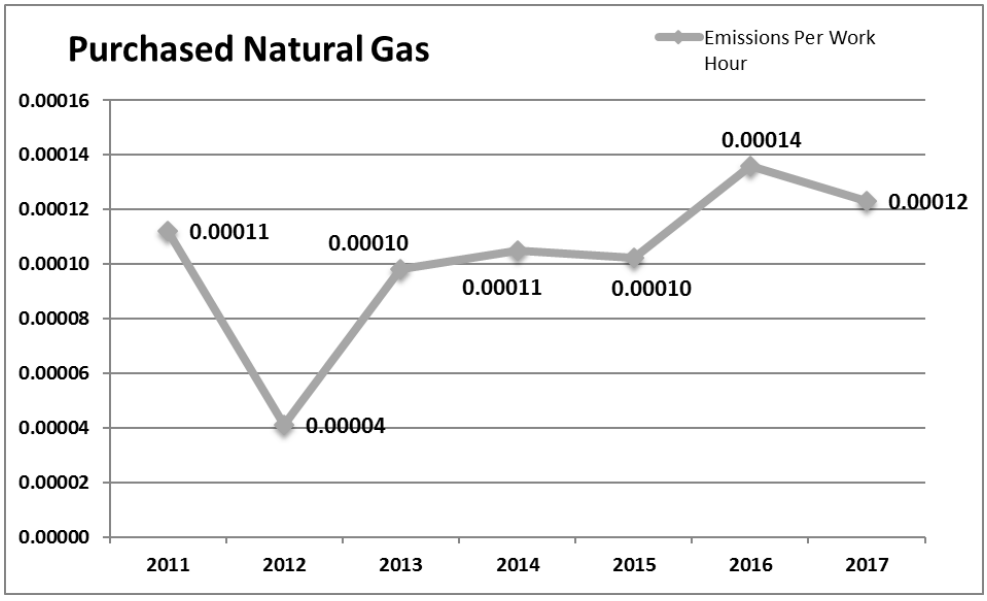
Purchased Electricity (Scope 2)					
Reporting Year	**kWH**	**GHG Emissions [$MTCO_2e$]**	**% -/+ previous yr. comparison**	**Emissions Per Work Hour**	**% -/+ previous yr. comparison Emission/work hour**
2011	1,523,858	1,060		0.0010	
2012	1,565,811	1,122	6%	0.0008	-24%
2013	1,573,453	1,042	-7%	0.0006	-23%
2014	1,981,087	1,331	28%	0.0007	12%
2015	1,699,188	1,106	-17%	0.0005	-30%
2016	1,920,931	943	-15%	0.0003	-26%
2017	1,900,792	625	-34%	0.0002	-40%



Purchased Natural Gas – Scope 1 Emission

The fourth largest contributor of GHG emissions at INTREN in 2017 was natural gas, the same as in 2011 through 2016. Natural gas is used to heat the company's buildings. From 2016 to 2017 GHG emissions from natural gas usage decreased by approximately 9%. The decrease is likely due to obtaining actual bills for leased locations where therm usage was estimated for previous years. Natural gas emissions are categorized as a Scope 1 emission. The breakdown of natural gas usage over the past seven years and associated GHG emissions are below.

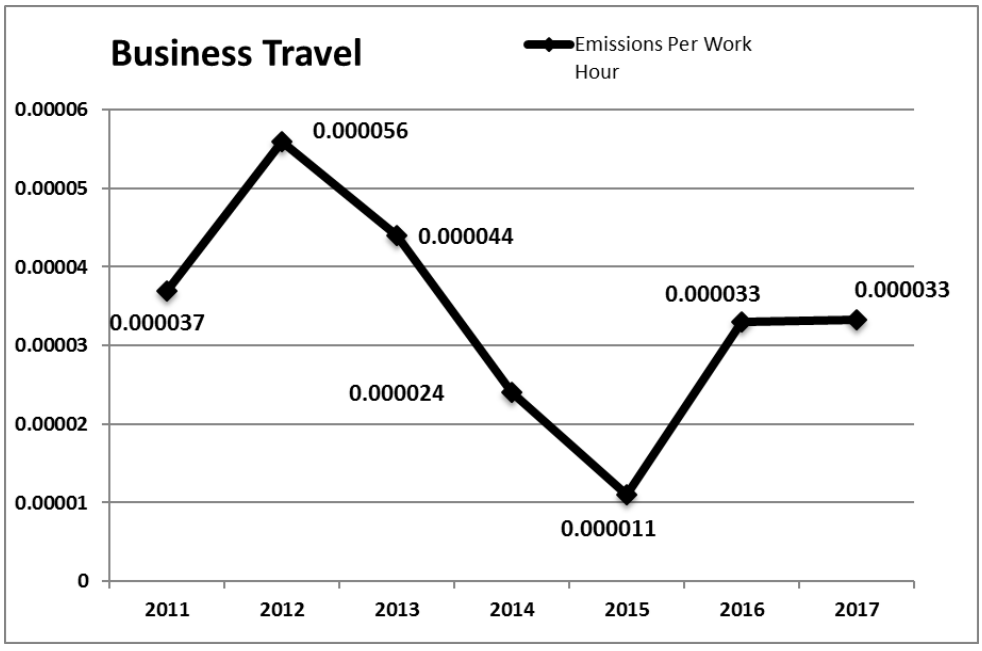
Purchased Natural Gas (Scope 1)					
	Therms	GHG Emissions [$MTCO_2e$]	% -/+ previous yr. comparison	Emissions Per Work Hour	% -/+ previous yr. comparison Emission/work hour
2011	44,524	117		0.00011	
2012	11,537	60	-49%	0.00004	-63%
2013	33,417	172	187%	0.00010	139%
2014	37,681	210	22%	0.00011	7%
2015	45,768	241	15%	0.00010	-3%
2016	70,423	371	54%	0.00014	33%
2017	70,326	374	1%	0.00012	-9%



Business Travel – Scope 3 Emission

The fifth largest contributor of GHG emissions at INTREN in 2017 was employee business travel, the same as in 2011 through 2016. This category includes travel for employees outside of their normal commute to and from their regular reporting location, which was captured in the Employee Commuting category. This category primarily captures air travel to INTREN's various locations across the country. This category saw an increase in GHG emissions by approximately 1%. This increase is most likely due to an increase in INTREN's customer base. Additional travel to ensure INTREN's continued growth contributed to the increase in business travel GHG emissions. Business Travel emissions are categorized as a Scope 3 emission. The breakdown of total air miles and the associated GHG emissions is below.

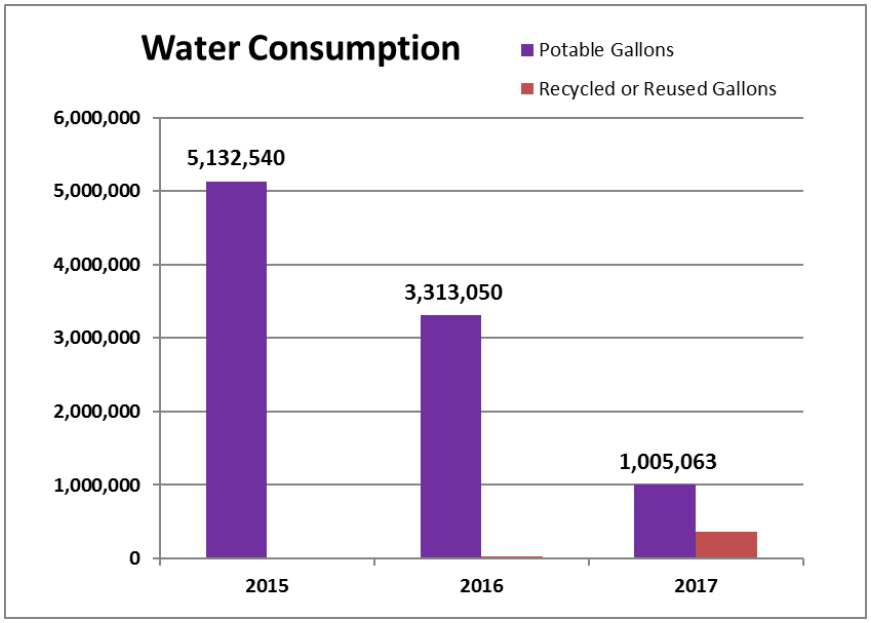
Business Travel (Scope 3)					
	Miles	GHG Emissions [$MTCO_2e$]	% -/+ previous yr. comparison	Emissions Per Work Hour	% -/+ previous yr. comparison Emission/work hour
2011	227,335	39		0.000037	
2012	482,994	82	110%	0.000056	51%
2013	473,506	78	-5%	0.000044	-21%
2014	286,662	48	-38%	0.000024	-45%
2015	160,370	27	-44%	0.000011	-54%
2016	608,658	91	241%	0.000033	200%
2017	697,867	101	11%	0.000033	1%



Water Consumption

Water consumption is the portion of water use that is not returned to the original water source after being withdrawn and is no longer available for reuse. This category includes water used for directional drilling operations at INTREN in 2017. The total estimated water usage for 2017 was 1,005,063 gallons. INTREN used approximately 70% less water than in 2016. This reduction is likely due to more accurate data obtained, a 27% increase in non-potable water usage and a reduction in directional drilling operations.

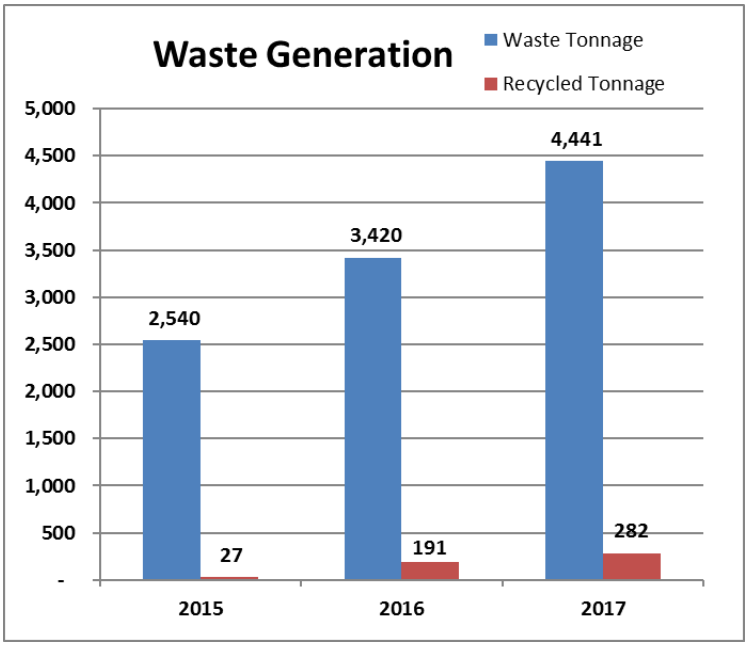
Water Consumption				
	Potable Gallons	Recycled or Reused Gallons	% -/+ previous yr. comparison (Potable)	% Recycle/Reused
2015	5,132,540	500		0%
2016	3,313,050	31,000	-35%	1%
2017	1,005,063	366,000	-70%	27%



Waste Generation – Scope 3 Emission

Waste generation the weight or volume of materials and products that enter the waste stream before recycling, composting, landfilling, or combustion takes place. Waste generation is a scope 3 emission and includes waste generated from INTREN in 2017. From 2016 to 2017 the total amount of waste generated by INTREN increased by 30% with the total amount of waste recycled increasing by 48%. The increase of waste generated is likely due to the increase in INTREN locations and its growth.

Waste Generation (Scope 3)					
Date	Waste Tonnage	Recycled Tonnage	Percentage Recycled per Year	% -/+ previous yr. comparison (Waste)	% -/+ previous yr. comparison (Recycled)
2015	2,540	27	1.08%		
2016	3,420	191	6%	35%	599%
2017	4,441	282	6%	30%	48%



ADDENDUM

Data Collection Analysis

For calendar year 2017, below is an analysis of each GHG category in which data was collected. Future data collection points are suggested where needed within each individual category. To assist with estimating GHG emissions for the first five categories listed, the SGEC calculation tool, provided for free by the United States EPA was utilized.

Fuel Use

The fuel data was supplied by INTREN's Fleet Department and is retrieved from the company responsible for maintaining the fuel cards employees use to purchase fuel. The data was provided by INTREN in the same manner as 2016, which includes a monthly summary by fuel type, and was suitable for this exercise.

Purchased Electricity

The data collection for purchased electricity for 2017 was completed in the same manner as 2016. Electric bills were obtained to calculate total kWhs used for each INTREN location.

Employee Commuting

INTREN reported 2017 employee commuting data in the same manner as 2016. A report was run to obtain all employees working during 2017 which included their home address and reporting office. Google Maps was used to determine the travel distance for each office employee from their home to their reporting office. The actual work days for each employee were also calculated to assist with obtaining the total miles driven for each individual employee working at INTREN in 2017.

Purchased Natural Gas

Similar to maintaining the data collection improvements made with electricity, the 2017 GHG emission calculations for natural gas were completed utilizing actual bills received from natural gas providers.

Business Travel

The data collected for 2017 business travel was done in the same manner as 2016. INTREN's credit card vendor provided charges for air travel in a report that included destination and departure information which was then used with a flight and time calculator from Airplane Manager. This tool can be found online at https://airplanemanager.com/FlightCalculator.aspx.

Water Consumption

In 2017, INTREN utilized a job cost code to track all purchased water for directional drilling and generated a report showing total gallons used. INTREN also utilized a third-party vendor to deliver non-potable water in increments of 6,000 gallons per delivery which was also tracked via the job cost code in its accounting system.

Waste Generation

The method used to obtain data for this category is sufficient due to waste disposal vendors having the ability to record tonnage during pickups and provide reports detailing amounts of waste generation across INTREN's organization. The total tons of waste to landfills and recycled were obtained from the four waste disposal vendors associated with INTREN.

Future Suggested Initiatives

In order for INTREN meet the main goal of reducing overall GHG emissions by 10%, it is important to implement the following initiatives to each GHG emission category listed below.

Fuel Usage

INTREN used 1,298,238 gallons of diesel fuel in 2017 for multiple light and heavy-duty vehicles as well as construction equipment. Diesel fuel accounts for approximately 56% of the total amount of fuel used in 2017. With fuel usage being the highest GHG emitter for INTREN, considering the use of bio-diesel as an alternative would be a good option.

Biodiesel is a renewable, biodegradable fuel manufactured domestically from vegetable oils, animal fats, or recycled restaurant grease. It is a cleaner-burning replacement for petroleum diesel fuel. The most common bio-diesel concentrate is B20. B20 is a common biodiesel blend in the United States. B20 is popular because it represents a good balance of cost, emissions, cold-weather performance, materials compatibility, and ability to act as a solvent.

Purchased Electricity

INTREN successfully installed LED lighting at their main headquarters which reduced their energy usage by 367,013 kWh from July through December at that location in 2017. In conjunction with 50% renewal energy purchased for other INTREN location, the company saw a total reduction of 761,859 kWh that year.

It is important efforts are continued within this category as the organization increases office locations. It is suggested to consider installing LED lighting at other INTREN-owned locations and increase renewable energy efforts at all office locations to 60% beginning in 2019.

Employee Commute

INTREN employee commute emissions decreased 8% in 2017 which is mainly due to the 23% decrease in office employee hires when compared to 2016. It is suggested INTREN continues to look for strategically located offices and possibly move current employees into locations that are closer to their home. The last suggestion would be to allow all or some office employees the ability to work from home at least 1 day a month. This gesture would reduce commute mileage by approximately 6% annually.

Natural Gas

Although there are no renewable natural gas options at this time, it would be beneficial for INTREN to have an energy assessment completed at the two locations that have the highest total therms used in 2017. This assessment will help determine where and if energy is being wasted and offer projects that can help the issue.

Water Consumption

In 2017, INTREN began using non-potable water for directional drilling operations in the state of Illinois. It is recommended the organization proceed within other states performing the same task. It would also be beneficial for INTREN to look into other operations within the organization where potable water can be substituted with non-potable water.

Waste Generation

Waste generated at INTREN increased by 30% in 2017. It is suggested INTREN ramp up its Recycle & Waste Minimization program and work with their supply chain to determine how supplies are delivered. Increasing recycle options in areas that are not currently setup is also an option to consider.