Efficient
CH$_4$ Emissions Reduction

Using off the shelf business intelligence tools to identify areas with potential methane/fugitive emissions releases

What are BI (Business Intelligence Tools?

- Software tools for visual data analysis

- 100s available with lots of variation in capabilities

- Free versions & free training available online

- See Gartner Inc. Magic Quadrant for market space leaders

CHALLENGERS | LEADERS

- Microsoft
- Tableau
- MicroStrategy
- ThoughtSpot
- Qlik
- Looker
- Sisense
- Salesforce
- TIBCO Software
- SAS
- GoodData
- Domo
- BOARD International
- SAP
- Yellowfin
- Logi Analytics
- Oracle
- Information Builders
- IBM
- Pyramid Analytics
- Birst

NICHE PLAYERS | VISIONARIES

COMPLETENESS OF VISION   As of January 2019   © Gartner, Inc

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Why are we here?

- Help you begin thinking about ways you can use systems your company already has to find and identify potential emissions sources.

- Provide real world examples you can use to make the mitigation effort more efficient.

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Where do you think you need to improve?

What is your evidence?

- What are the largest sources of leaks at your facilities? Which require the most frequent maintenance?

- When does it become more cost effective to replace equipment over constantly repairing it?

- Which facilities have the most blowdowns? Is there any correlation to the time of year or overall company production?

- If you had budget to install a vapor recovery unit, which site would you want to put it at in order for it to be the most effective?

- Which LDAR survey groups are detecting the most leaks? How are these effective are their repairs?

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Planning

What data are you already collecting and how are you collecting it?

How do you store this data.

What pieces of data are you missing that might answer your questions from the last slide?

Is there the potential to collect more data, or improve what you already have?

Collecting Data and Building Models

- What story is my data telling?
- What other questions arise when you view the data?
- What other pieces of data can I bring into my models to answer my new questions?
- How do I want to group my data?

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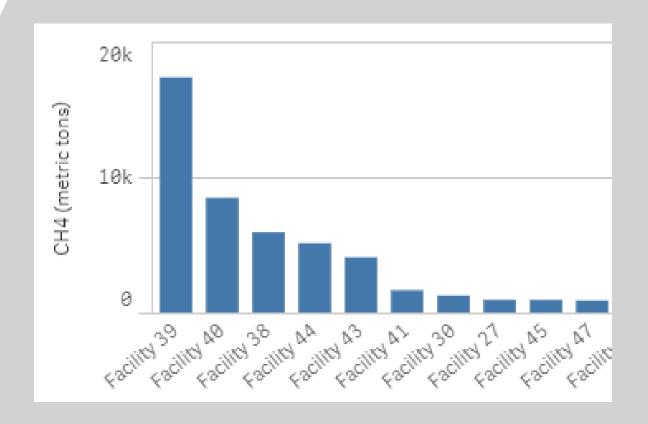# Case Study: Facility-wide CH4 Emissions at a Gas Plant

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What story is my data telling?

- Facility 39 has the highest CH4 emissions during the previous reporting year.

What other questions arise?

- Does facility 39 have the largest CH4 emissions because it processes the most gas or because there aren't efficient controls in place?

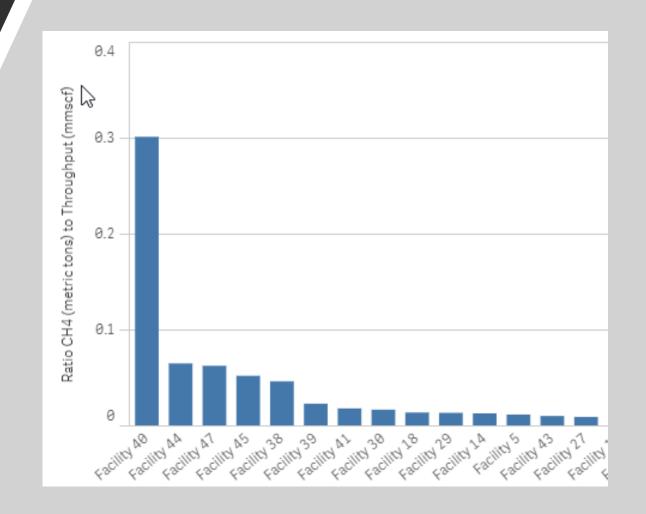# Case Study: Facility-wide CH4 Emissions at a Gas Plant

What other pieces of data can I bring into my models to answer my new questions?

- If I can bring in the facility throughput, I can have a better understanding of how much gas was processed.

How do I want to group my data?

- By creating a ratio of facility CH4:Throughput, I can determine which facilities are the least efficient at controlling CH4 leaks.

From this, we can determine that Facility 40 might be the most inefficient at controlling CH4 emissions.

Make Business Decisions

- Answers to your questions provide the opportunity to make business decisions based on those answers.

- Being able to present business decisions visually will increase buy-in from resources not as familiar with the subject matter.
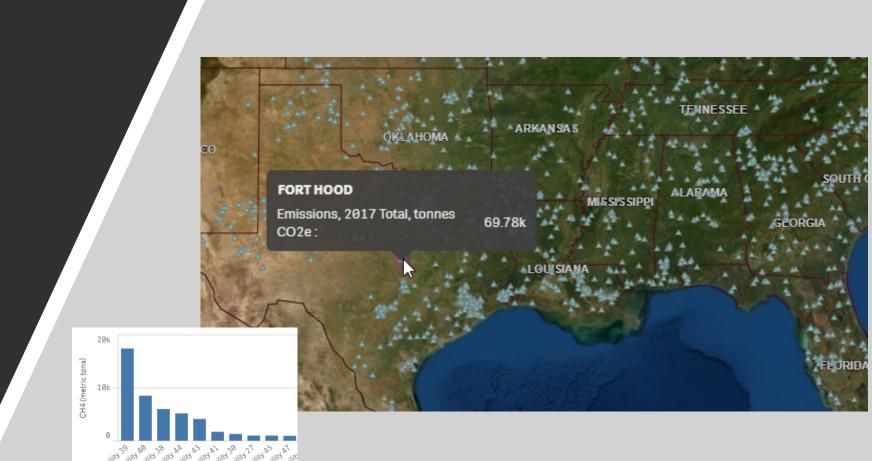
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Case Study: Technician Site Prioritization

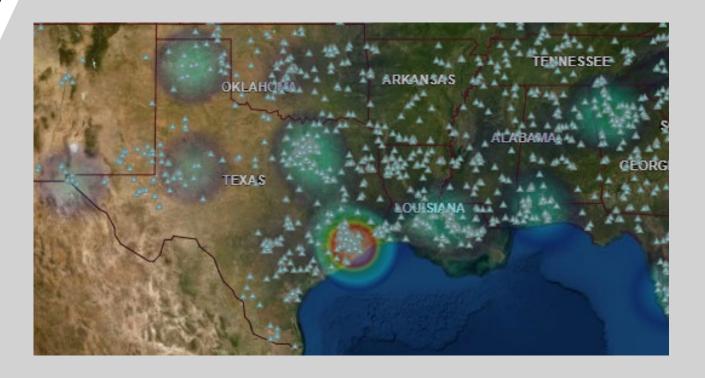How are your technicians supposed to prioritize where they should spend their time?

- You want to prioritize the facilities that leak the most CH4, but don't want to have to have the team travel back and forth across the country.

- You look at a map of your 500 facilities. Trying to compare this map to the emissions data you have is difficult.

FORT HOOD

Emissions, 2017 Total, tonnes CO2e : 69.78k

Case Study: Technician Site Prioritization

By creating a heat map, you can understand which geographical areas leak the highest concentrations of CH4 and have your technicians prioritize repairs within this area.

Review Effectiveness of Decisions

- Continue to look for new ways to review the effectiveness of your business decisions.

- Just because you might be performing well in one metric doesn't mean that you are performing well across all metrics.

- Challenge yourself to ask other questions. The end goal is to continue to build your understanding of your operations and how operations are affected by your business decisions.

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Case Study: Reviewing Cost of Repairs vs Cost of Gas Lost

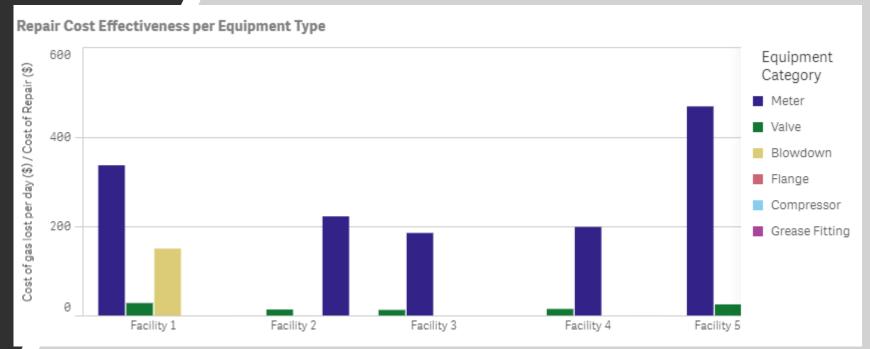I'll leave you with a more complex visualization to show how far you may take advantage of BI tools.

At some point, the cost of repairing a leak will be less than the cost of gas lost. BI tools could potentially give you the ability to repair more leaks at a quicker rate, while also saving the company money.

Station - Location	Equipment Category	Cost of Gas ($/scf)	Cost for Repair ($)	Leak Rate (MSCFD)
Totals		**6.08**		**12.514478**
Facility 1	Blowdown	7.40	1.35	0.18273726
Facility 1	Blowdown	5.42	7147.26	1318.9555
Facility 1	Blowdown	5.10	1.04	0.20397636
Facility 1	Flange	5.42	0.59	0.10849603
Facility 1	Flange	5.19	0.04	0.0082080916
Facility 1	Meter	8.01	151.62	18.938729
Facility 1	Meter	8.00	240.62	30.094672
Facility 1	Meter	7.98	170.87	21.424273
Facility 1	Meter	7.93	162.58	20.50125
Facility 1	Meter	7.85	180.76	23.025841
Facility 1	Meter	7.82	132.50	16.937379
Facility 1	Meter	7.81	240.30	30.759195
Facility 1	Meter	7.76	124.45	16.027175
Facility 1	Meter	7.75	251.13	32.394167

Case Study: Reviewing Cost of Repairs vs Cost of Gas Lost

BI tool will calculate total cost of gas lost per day and compare that to the expected cost for repair.

Repair Cost Effectiveness per Equipment Type

LET'S CHAT

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