

# CGA Energy Nexus & Annual Technical Conference 2025

## Advancing sustainability for energy utilities through AMI

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***Fuelling the Future***

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# Define Sustainability

 sensus



# Sustainability – United Nations



United Nations' Definition of Sustainability: "meeting the needs of the present without compromising the ability of future generations to meet their own needs"<sup>1</sup>

# United Nations' Sustainability Goals 7, 9, 11, 13

## 7 AFFORDABLE AND CLEAN ENERGY



- “Ensuring access to clean and affordable energy”
- 773 million people continue to need electricity
- 60% of GHG (Global Greenhouse Gas) emissions stem from energy usage and production

## 11 SUSTAINABLE CITIES AND COMMUNITIES



- Make “cities and human settlements inclusive, safe, resilient, and sustainable”
- Cities contribute 75% of CO<sub>2</sub> emissions
- Vulnerable to natural disasters

## 9 INDUSTRIES, INNOVATION AND INFRASTRUCTURE



- “Build resilient infrastructure, promote industrialization, and foster innovation”
- Update infrastructure
- Use sustainable technologies

## 13 CLIMATE ACTION

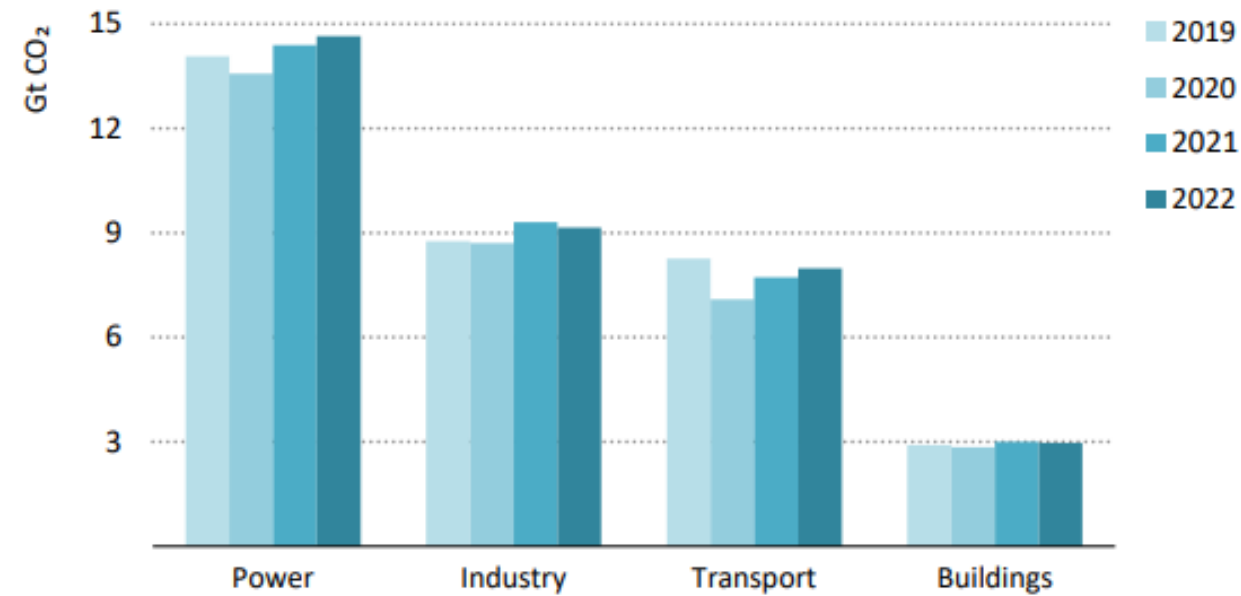


- Limit global temperatures to 1.5 - 2°C
- Achieve net-zero carbon emissions by 2050
- Decrease carbon emissions by half by 2030

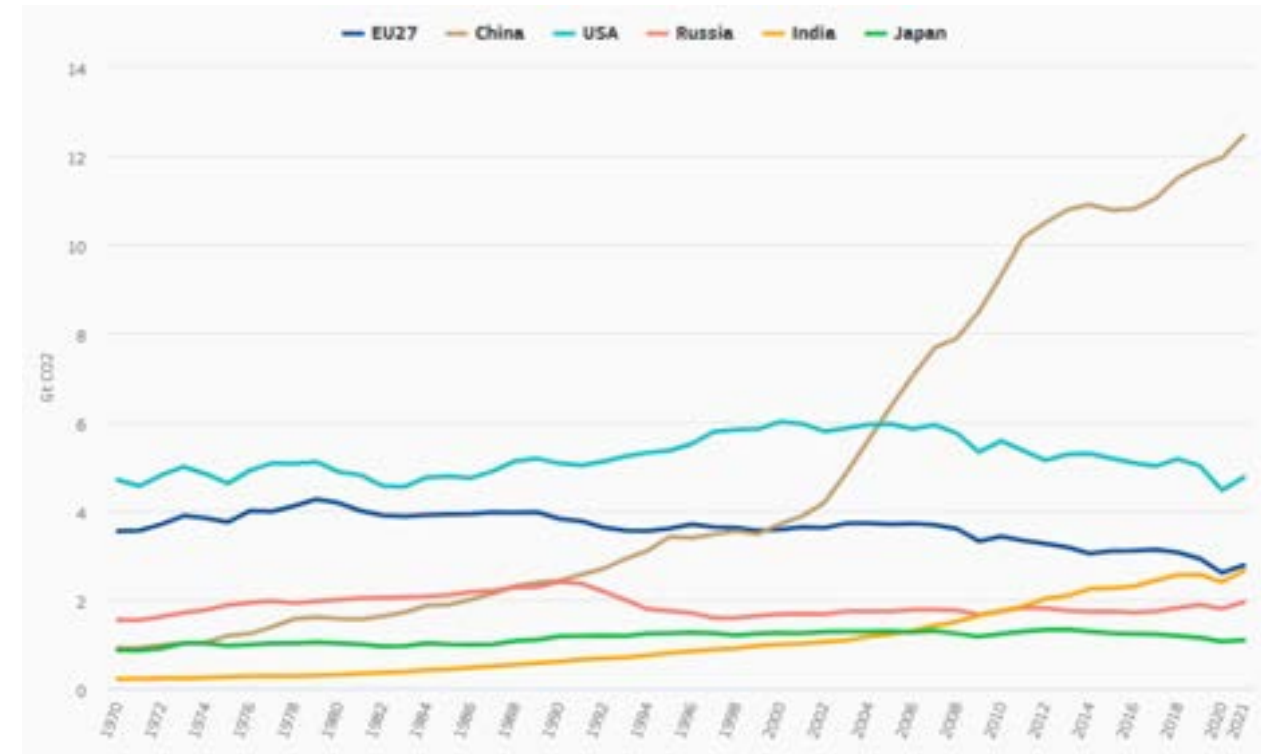
# Carbon Emissions



## Global CO<sub>2</sub> Emissions



## CO<sub>2</sub> Emissions by Country





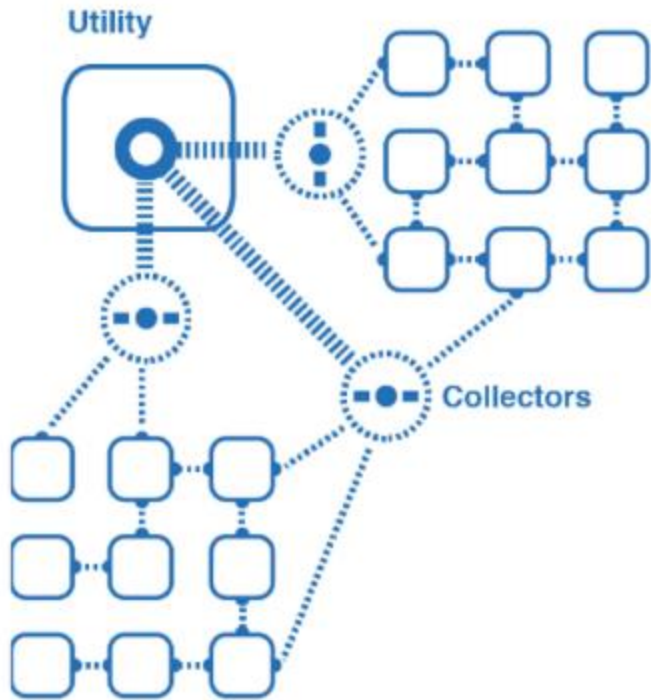
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# What is AMI

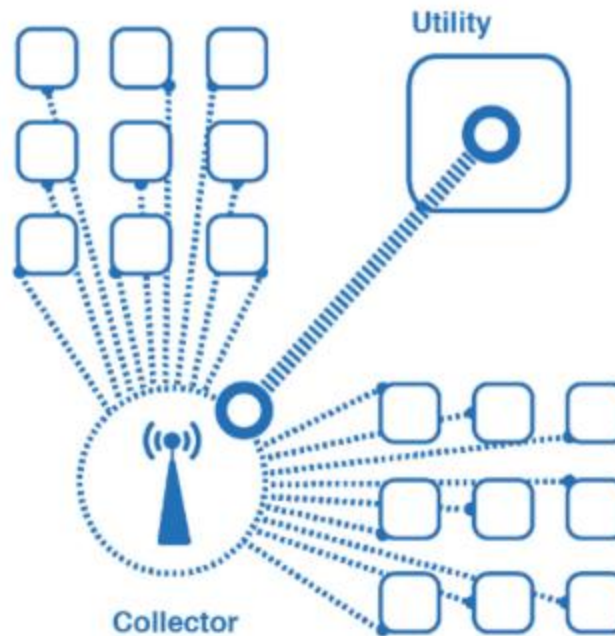
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# Types of Networks

Mesh



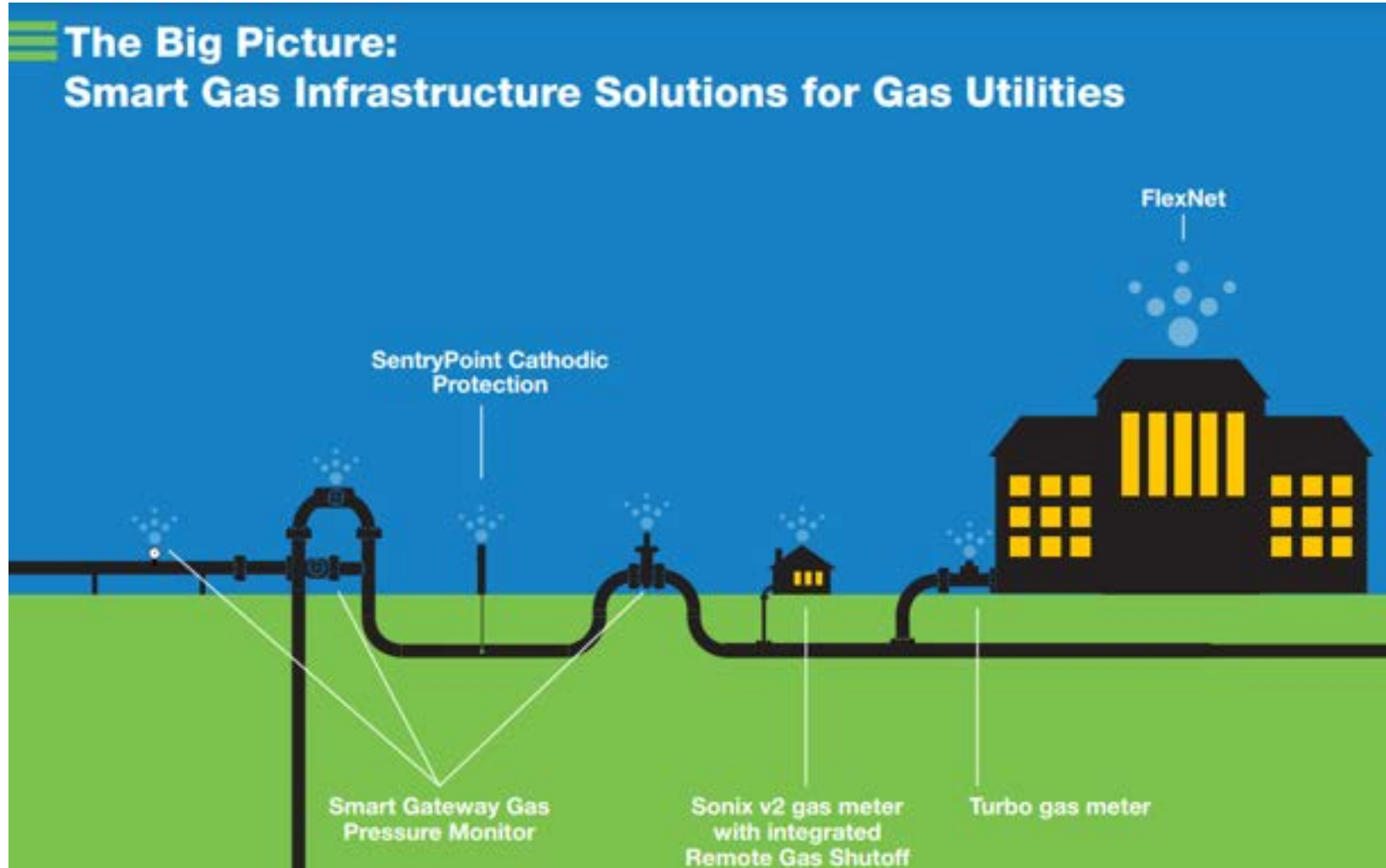
Point-to-Multipoint



Cellular



# Integrating New Technology with AMI



- Smart Meters: remote shutoff and pressure sensors
- Hourly data
- Two-way communication
- Pressure monitoring
- Cathodic protection monitoring



# AMI Solution Benefits

9 INDUSTRIES, INNOVATION  
AND INFRASTRUCTURE



Operational  
Efficiency



Customer  
Engagement



Environmental  
Impact



Employee  
Safety



Cost Savings

**AMI is a key part of building resilient infrastructure.**

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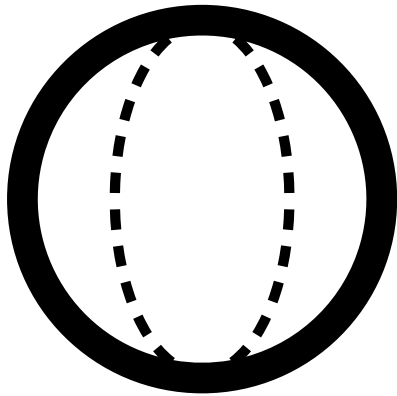
# AMI Advancing Sustainability

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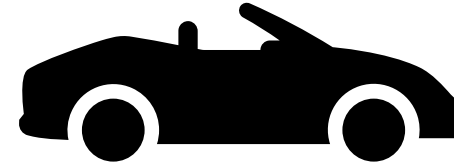
# One Metric Ton of CO<sub>2</sub> Emissions

1



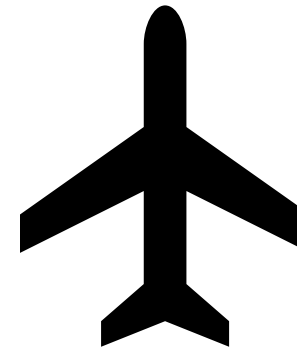
33 ft

2



5 t/year

3

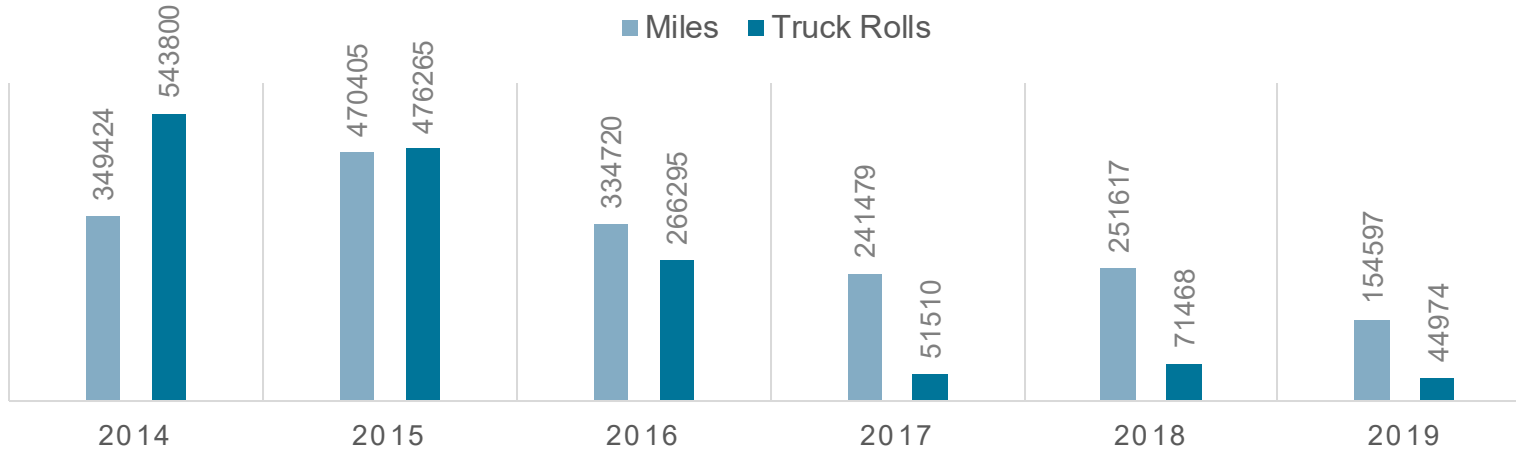


3,000-mile flight = 1 t/passenger

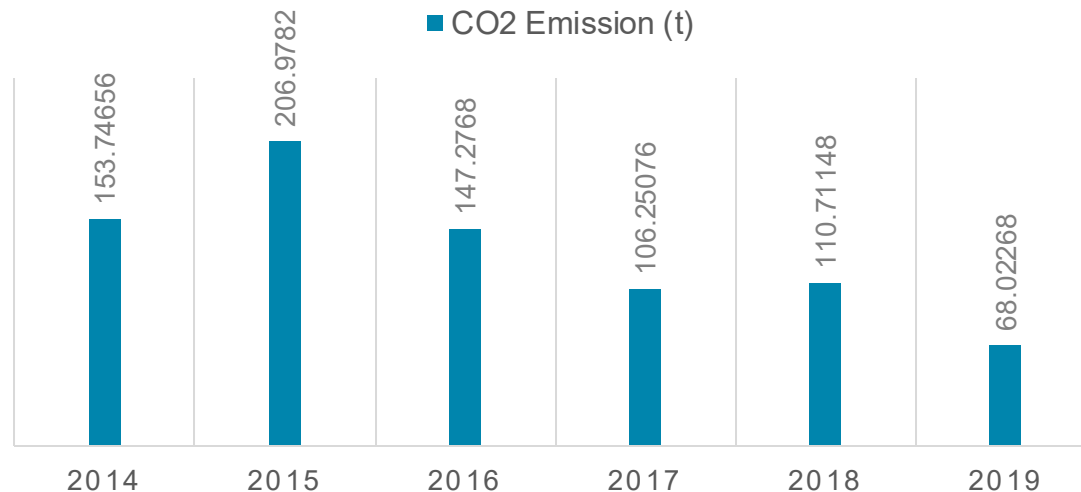
# Fayetteville Public Works Commission



## TRUCK ROLLS AND MILES TRAVELED



## CO2 EMISSION PER MILE



- Mileage reduced by 44% from 349,424 to 154,597 (miles/year)
- Truck rolls reduced by 91% from 543,800 to 44,974
- CO2 Emissions/mile = 440 grams (EPA)
- CO2 Emissions reduced by 44% from 153 metric tons to 68 metric tons (per year)

# Smart Grid Investment Grant Program

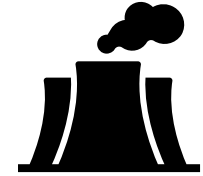
13 CLIMATE ACTION



13.7 million truck rolls



68.3 million miles

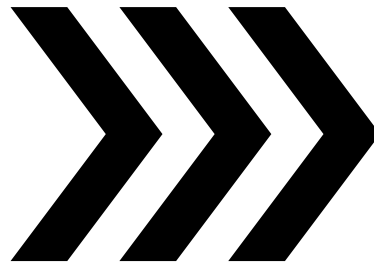


15,160 t of CO<sub>2</sub> emissions

**48 t**

Carbon emissions  
of an average U.S.  
household per year

15,160 t / 48 t



**315**

Average U.S.  
households



# CO<sub>2</sub> Emissions Calculation

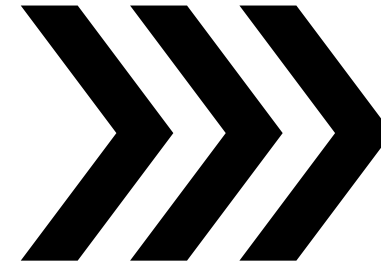
**225,320**

Housing units in  
Raleigh, NC  
\*assume 1 meter/unit

**4.2 miles**

Saved due to AMI  
network per meter  
installed per year

$$\begin{aligned} &M * 4.2 \text{ miles} * .00044 \text{ metric tons} \\ &= \\ &4,163 \text{ t/year} \end{aligned}$$



**86**

Average U.S.  
households/year

**832**

Average cars driven  
per year

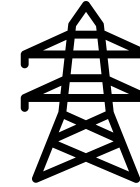
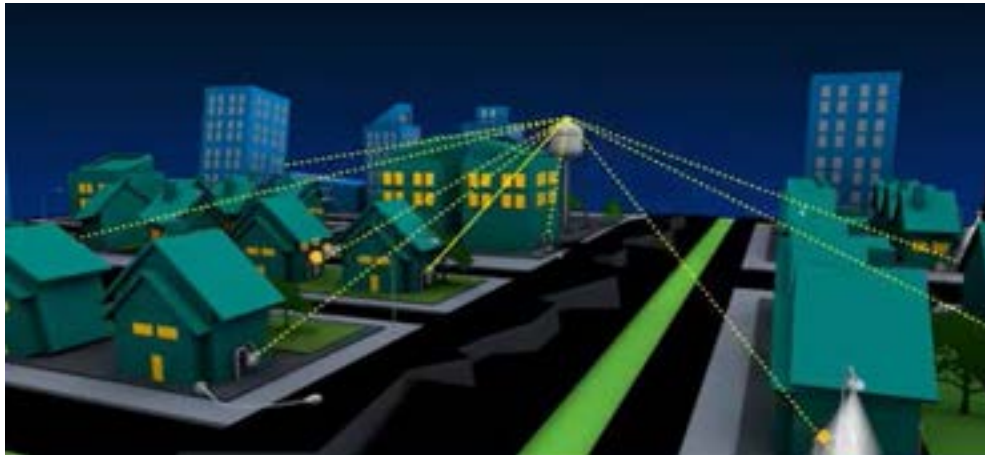
**4,163**

Passengers flying  
3,000 miles

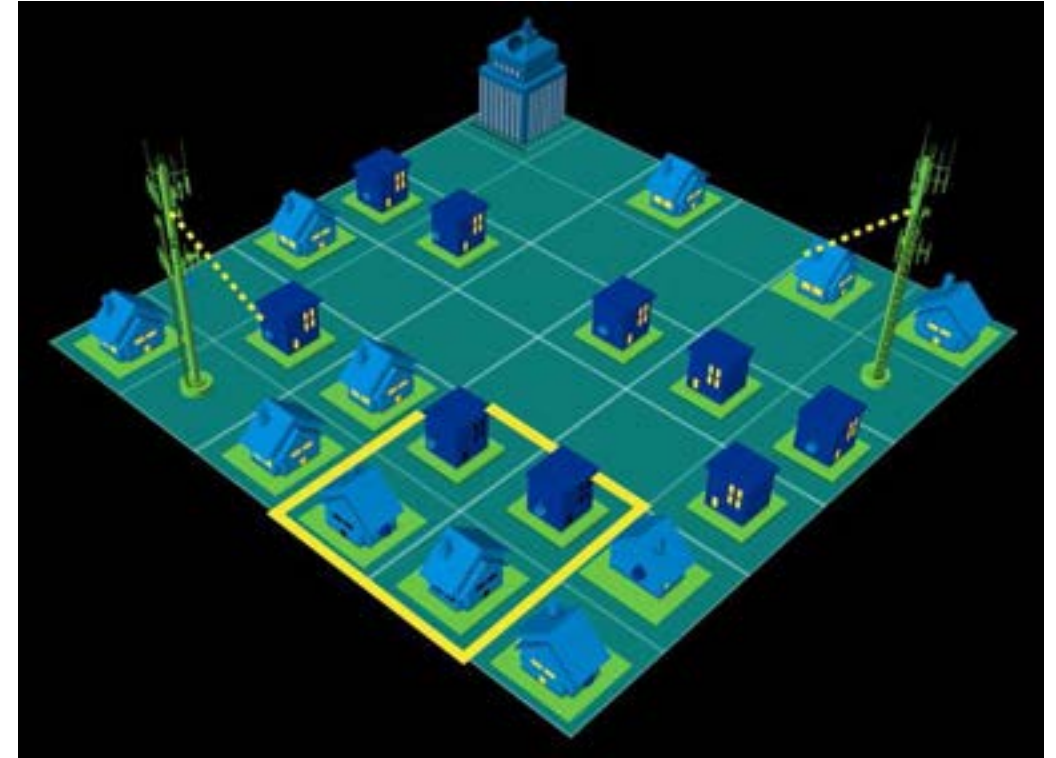
# Safety and Energy Availability



Gas – Remote Shut Off Valve



Electric – Outage Management



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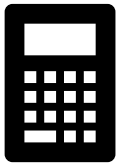
# Calculate CO2 Emissions

sensus

# Understanding your Utility's Carbon Emissions



## Step 1: Gather Data



## Step 2: Calculate Emissions

1

$$\text{Current CO}_2 \text{ Emissions} = T * M * .00044$$

T = Total number of meters deployed

M = Total miles traveled per meter

On average, a vocational vehicle releases 440 grams of CO<sub>2</sub>/mile =  
.00044 t of CO<sub>2</sub>/mile

2

$$\text{CO}_2 \text{ Emission Reduction} = H * 4.2 * .00044$$

H = Number of housing units/number of meters

On average, 4.2 miles/meter/year are saved due to AMI

On average, a vocational vehicle releases 440 grams of CO<sub>2</sub>/mile = .00044 t  
of CO<sub>2</sub>/mile



## Step 3: Invest or Expand AMI

# Overview and Takeaway



Sustainability is more than  
just measuring emissions



First step to improving is  
understanding the  
baseline



AMI is a key part of the  
future of a sustainable  
and secure gas utility  
future





# Thank You!

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# Appendix

- 1 <https://www.un.org/en/academic-impact/sustainability#:~:text=In%201987%2C%20the%20United%20Nations,to%20meet%20their%20own%20needs.%E2%80%9D>
- 2 <https://www.un.org/sustainabledevelopment/energy/>
- 3 <https://www.un.org/sustainabledevelopment/infrastructure-industrialization/>
- 4 <https://www.un.org/sustainabledevelopment/cities/>
- 5 <https://www.un.org/sustainabledevelopment/climate-change/>
- 6 <https://raleighnc.gov/planning/services/city-profile>
- 7 <https://www.iea.org/reports/co2-emissions-in-2022>
- 8 Center for Sustainable Systems, University of Michigan. 2023. "Carbon Footprint Factsheet." Pub. No. CSS09-05
- 9 <https://www.nature.org/en-us/get-involved/how-to-help/carbon-footprint-calculator/>
- 10 <https://view.ceros.com/bank-of-the-west/august-2020-what-even-is-a-ton-of-co2/p/1>
- 11 <https://www.tapio.eco/blog/what-represents-one-ton-co2-emissions/>
- 12 <https://climate.mit.edu/ask-mit/how-much-ton-carbon-dioxide>