

# Harmonizing the Gas and Electric Industries: Why It Matters

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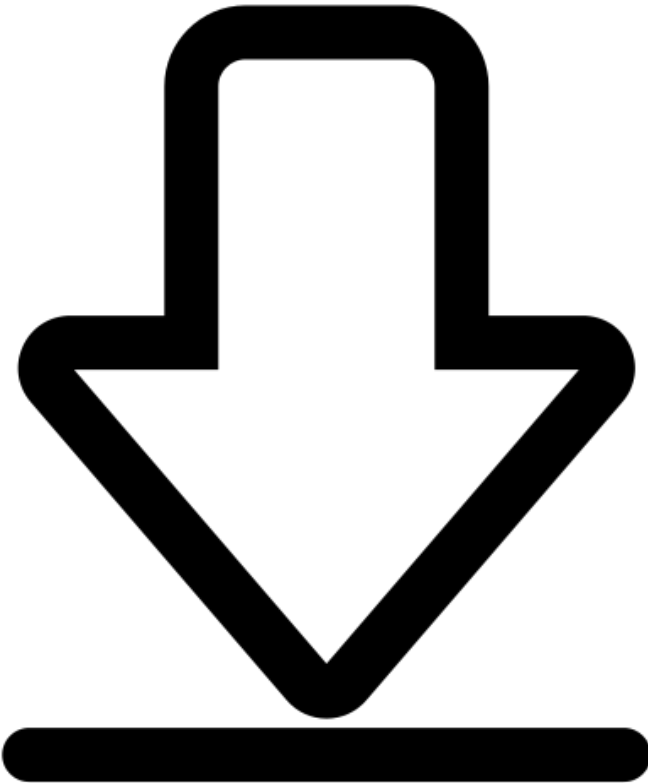
## Gas/Electric Harmonization

### My remarks:

- **Focus on my remarks: Why this topic matters**
- **Less focus on: Needed actions, recommendations**  
(they're the subject of other panels)



## Gas/Electric Harmonization: Why Does it Matter?



### The bottom line

- The gas and electric industries are critical to the nation.
- These industries are already more dependent on each other than ever before.
- There have been some recent, bad events and close calls due to misalignment of industries' actions.
- Things are likely to get harder – and especially so if “business as usual” persists.
- There won't be much political tolerance if reliability deteriorates.

## My point of view

### Things I've learned from

- Prior geographies, jobs, projects, studies
- Industry transitions
- Industry discussions
- Events and their aftermaths



## Starting point

**The two industries provide absolutely critical services to households, businesses, workers, and the nation's economy.**



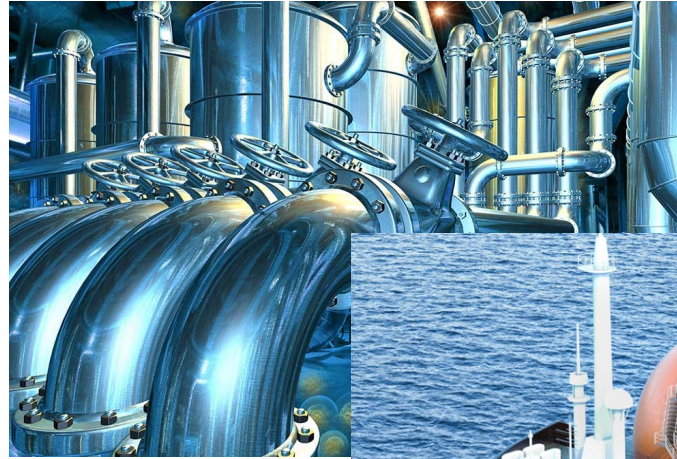
**When things work great, people take them for granted.**

**When things don't work great, it can have dangerous, unsafe, costly outcomes.**

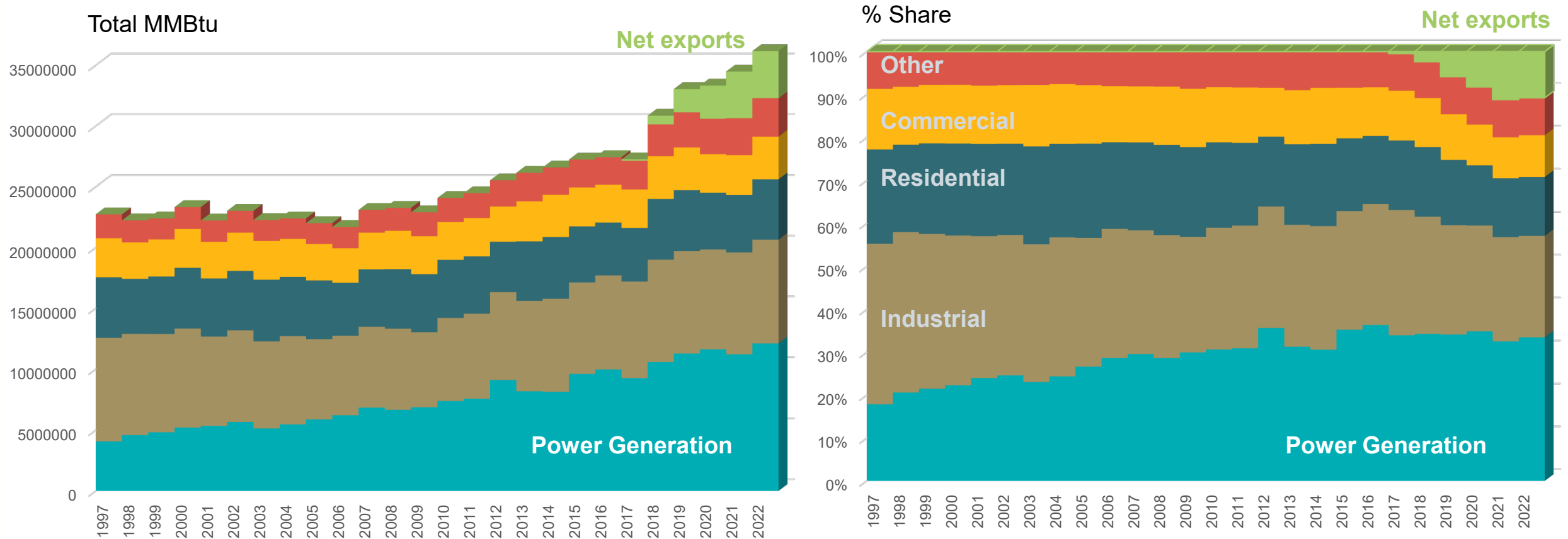


## Natural Gas – critical to today's domestic economy

Natural gas production grew by 70% since 2010.  
Its share of total energy grew from 30% to 38%.



# Trends in natural gas consumption





## Electricity – critical to today's economy



**Gas-fired generation grew 180% since 2000, and 70% since 2010.**

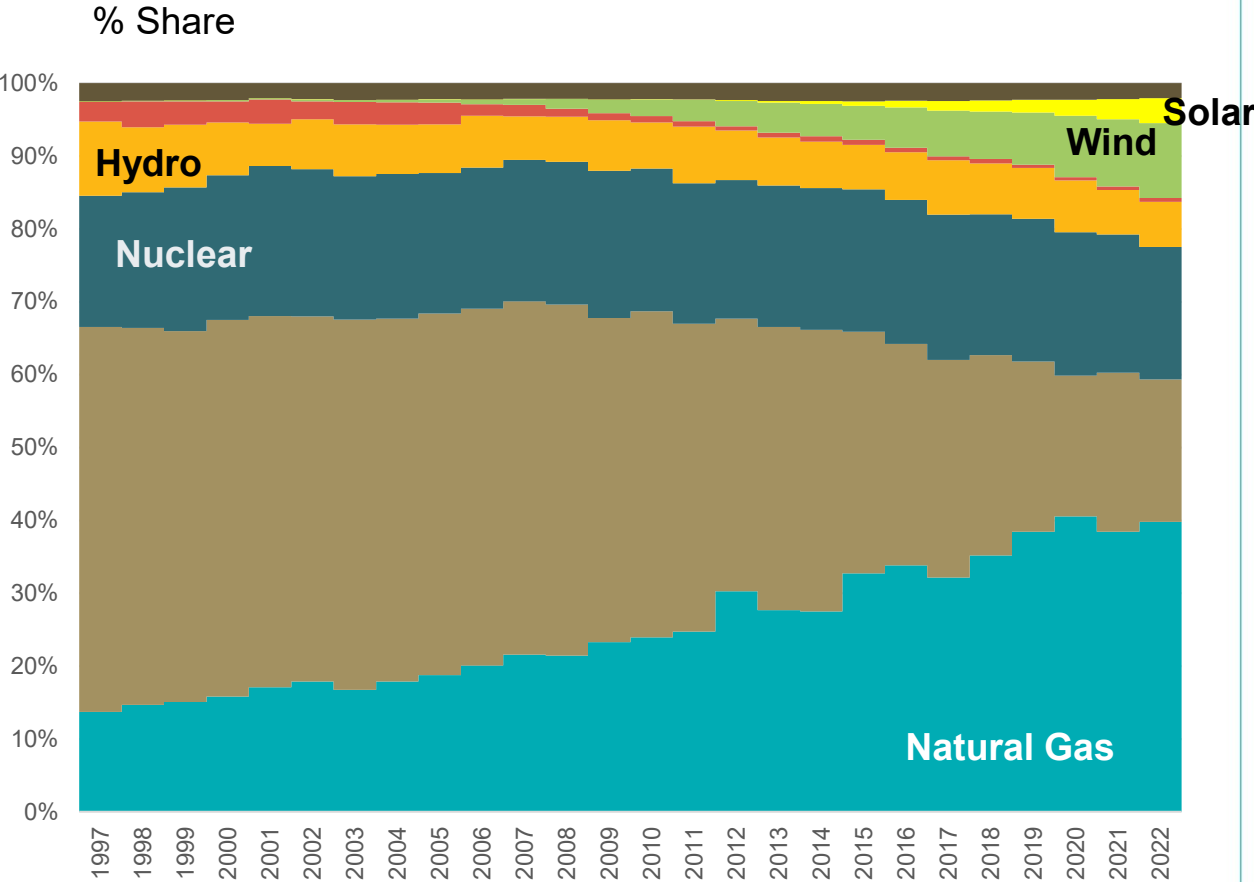
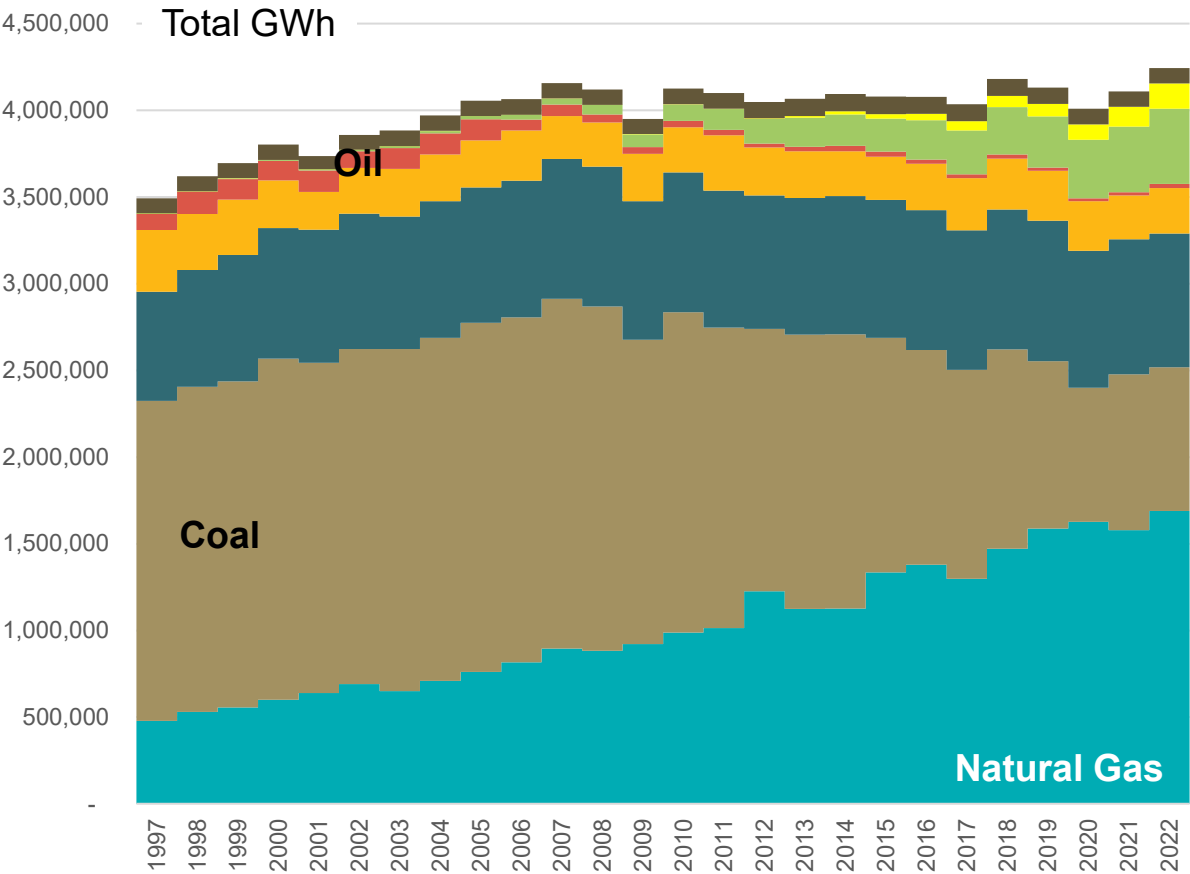


**Total electricity use grew 15% since 2000, but only 4% from 2010-2022.**





# Trends in electric power generation sources



## Outlook for gas and electricity production and use

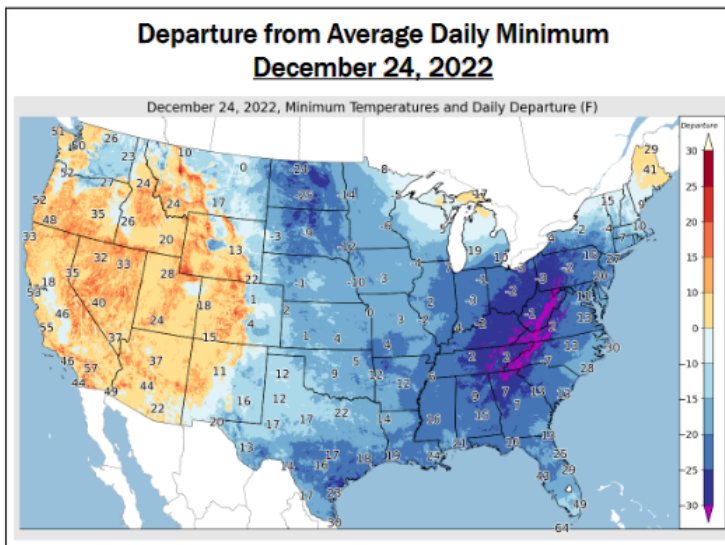
	Compared to 2022 levels:	By 2030	By 2035
Gas production (total US)	EIA AEO 2023	Up slightly (~+2%)	Up slightly (~+8%)
	Princeton REPEAT 2023	Down by ~6%-9%	Down by ~12%-18%
Gas use (total US)	EIA AEO 2023	Down by ~12%	Down by ~13%
	Princeton REPEAT 2023	Down by 18%-20%	Down by 29%-33%
Gas-fired power generation (US)	EIA AEO 2023	Down by ~5%-40%	Down by ~10%-50%
	Princeton REPEAT 2023	Down by ~35%-50%	Down by ~60%-68%

**Drivers of overall change in next decades (assuming current policy, including IRA, states, etc.)**

- Electrification of buildings' use of natural gas
- Growth in overall electricity use (e.g., buildings, electric vehicles)
- Incremental capacity additions from renewables (wind, solar, storage)
- Retirements of coal plants
- Continued operation of gas-fired power plants (but changing capacity factors)

## Recent close calls (and worse) in gas/electric harmonization

- “Rare” weather events occurring more frequently – adversely affecting energy infrastructure
- Gas-production impacts in many regions
- Gas-fired generation especially hard hit



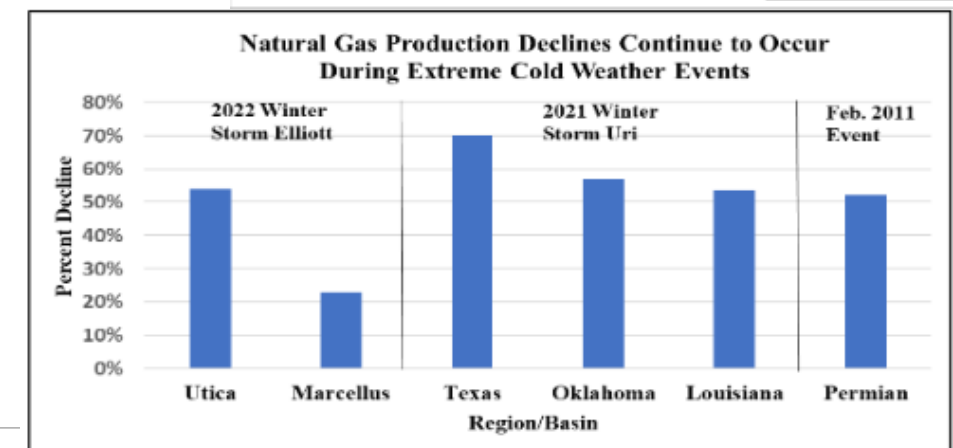
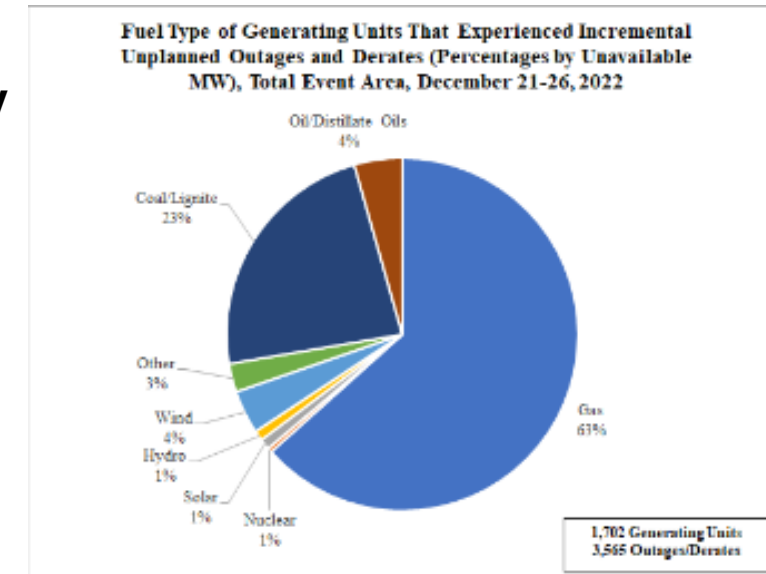
(Source: NOAA)

- The Event is the **FIFTH** in the past **11** years in which unplanned cold weather-related generation outages jeopardized bulk-power system reliability:

- 2011 – 29,700 MW
- 2014 – 19,500 MW
- 2018 – 15,800 MW
- 2021 – 61,300 MW
- **2022 – 90,500 MW**

The **90,500 MW** of incremental coincident unplanned outages during Winter Storm Elliott **represented 13%** of the U.S. portion of the anticipated resources\* in the Eastern Interconnection.

(\*Based on data from NERC 2022-2023 Winter Reliability Assessment)



## Recent close calls (and worse) in gas/electric harmonization

Impacts are not limited to gas production and delivery

	2011 Event	2014 Event	2018 Event	2021 Event	2022 Event
Significant levels of incremental unplanned electric generating unit losses with top causes found to be mechanical/electrical, freezing, and fuel issues.	✓	✓	✓	✓	✓
Significant natural gas production decreases occurred, with some areas of the country more severely affected.	✓			✓	✓
Short-range forecasts of peak electricity demands were less than actual demands for some BAs in event area.	✓		✓	✓	✓
Significant natural gas LDC outages or near miss	✓				✓



## Recap:

- **Electricity production is the largest sector for natural gas use.**
- **Gas-fired power generation is the largest source of power supply.**
- **Today's interdependencies are likely to continue and become even more challenging**
  - **Changes in power plant portfolio (e.g., more variable generation)**
  - **Changes in demand for electricity (e.g., daily, seasonal shapes and levels)**
- **The public and politicians will not tolerate outages**

## Challenges in addressing change: part 1

### **Very different characteristics of gas and electric service:**

- **Industrial organization: gas companies along the supply chain, electric companies, RTO**
- **Federal/state regulatory structure: different authorities and tensions**
- **Delivery infrastructure: pipe v network; just-in-time v. instantaneous; ownership; access**
- **Regional profiles, attributes and distinctions: usage patterns, supply portfolios, policy**
- **Reliability mechanisms: voluntary and mandatory standards, contract provisions**

## Challenges in addressing change: part 2

**Very different characteristics of gas and electric service:**

- **Known worsening of climate impacts, with unknown locations and intensity**
- **Infrastructure siting challenges**
- **Industry attitudes about energy / decarbonization trends**
- **Politics of gas production and use: in D.C., in state capitals, in localities**

## Answers to come in the subsequent panels.....



**THANK YOU!**

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### A few links to some relevant reports and statements:

- **2023 Senate testimony on climate impacts on energy infrastructure:**  
<https://www.budget.senate.gov/imo/media/doc/Hon.%20Susan%20F.%20Tierney%20-%20Testimony%20-%20Senate%20Budget%20Committee.pdf>.
- **2023 NAESB report on gas/electric harmonization:**  
[https://naesb.org/pdf4/geh\\_final\\_report\\_072823.pdf](https://naesb.org/pdf4/geh_final_report_072823.pdf)
- **Gas pipeline siting papers and comments:**  
<https://www.utilitydive.com/news/time-to-move-away-from-old-precedents-in-ferc-pipeline-reviews/567512/>;  
[https://www.analysisgroup.com/globalassets/content/insights/publishing/tierney\\_comments\\_ferc\\_pipeline\\_certification.pdf](https://www.analysisgroup.com/globalassets/content/insights/publishing/tierney_comments_ferc_pipeline_certification.pdf).  
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- **Electric wholesale market design in a low-carbon electric system:**  
<https://www.analysisgroup.com/Insights/publishing/wholesale-power-market-design-in-a-future-low-carbon-electric-system/>