Understanding the challenges facing utilities in the energy transition

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RMI's Carbon Free Electricity team

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TRANSFORMING THE GLOBAL ENERGY SYSTEM TO SECURE A CLEAN, PROSPEROUS, ZERO-CARBON FUTURE FOR ALL.

RMI
ENERGY. TRANSFORMED.

- Nonprofit, nonpartisan, independent, research & collaboration firm
- Founded 1982: 40-year track record of leveraging market driven change
- 300+ staff with offices in California, Colorado, New York, Washington DC, China, India.
- Focus on Market-based approaches to clean energy
- “Think and Do” tank
- History of deep collaboration and coalition-building

Presentation Outline

Please ask questions!

- Climate challenge – the scope and role of the electricity sector
- Challenges utilities face in meeting ambitious emissions reductions for transition
- Role of publicly available data in identifying and understanding barriers to progress, and areas for potential solutions

Utilities have a critical role to play in the successful transition to a decarbonized economy. Accessible public data helps identify the challenges to accelerating the transition, and areas for potential solutions

The electricity sector is crucial to a 1.5C aligned future, and must transition far faster than other sectors

- To limit warming to 1.5°C, RMI estimates that an 83% decline in electricity sector emissions (from 2005 levels) is required by 2030 - the sector must go **beyond its proportional share** to enable other sectors to transition
- Utility commitments, and actions, need to be significantly more ambitious than they are now

Public data highlights challenges to the transition, and identifies areas where solutions might be useful

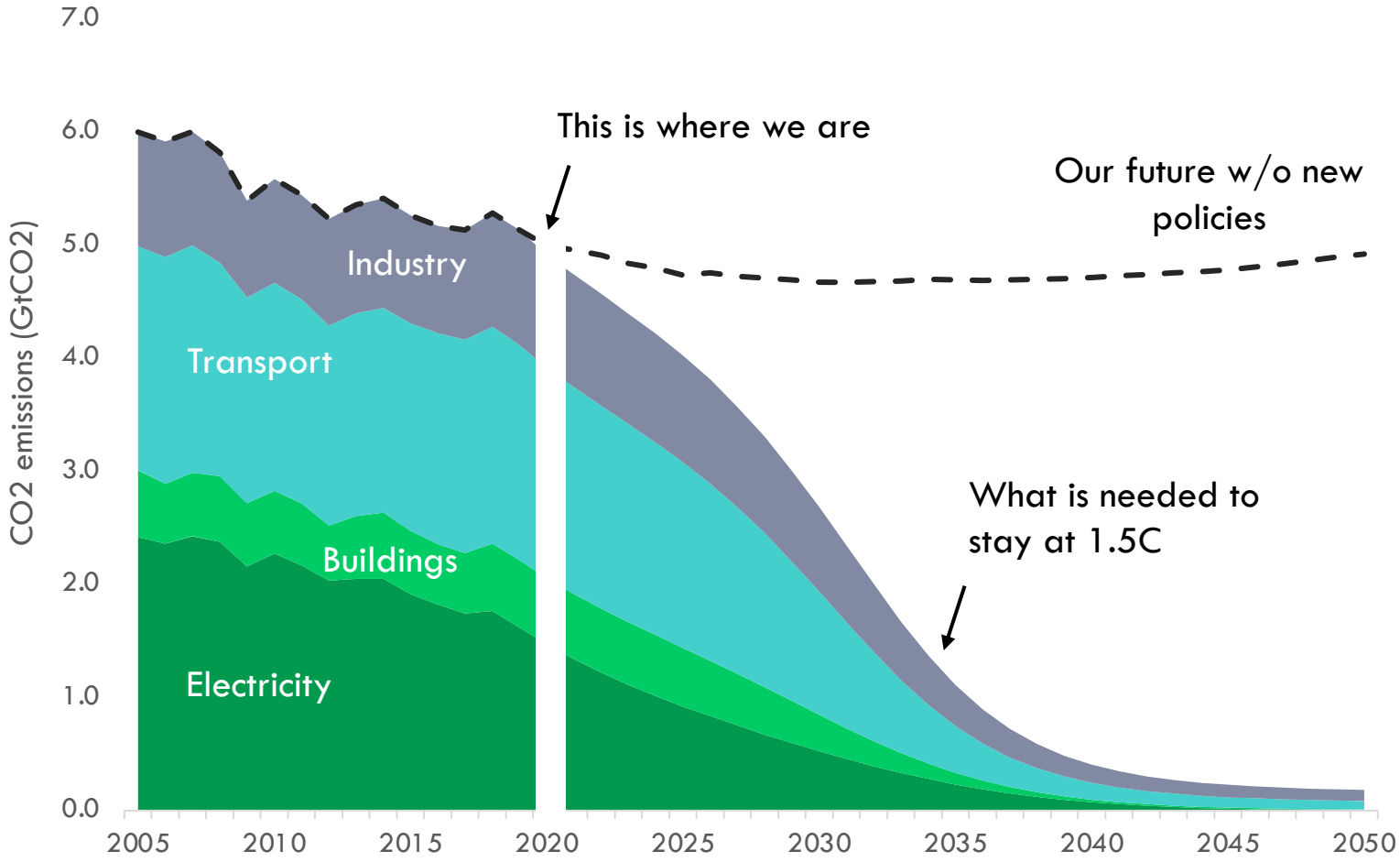
- When made publicly accessible, data provides a common fact base for key stakeholders – **policymakers, regulators, advocates, investors and utilities** – to discuss and establish viable transition pathways, while tracking progress against those pathways

Climate science makes clear that emissions reductions in the next ten years are critical; the electricity sector will play a central role in achieving those reductions

To achieve a 1.5°C aligned pathway, RMI estimates that by 2030, emissions need to decline by:

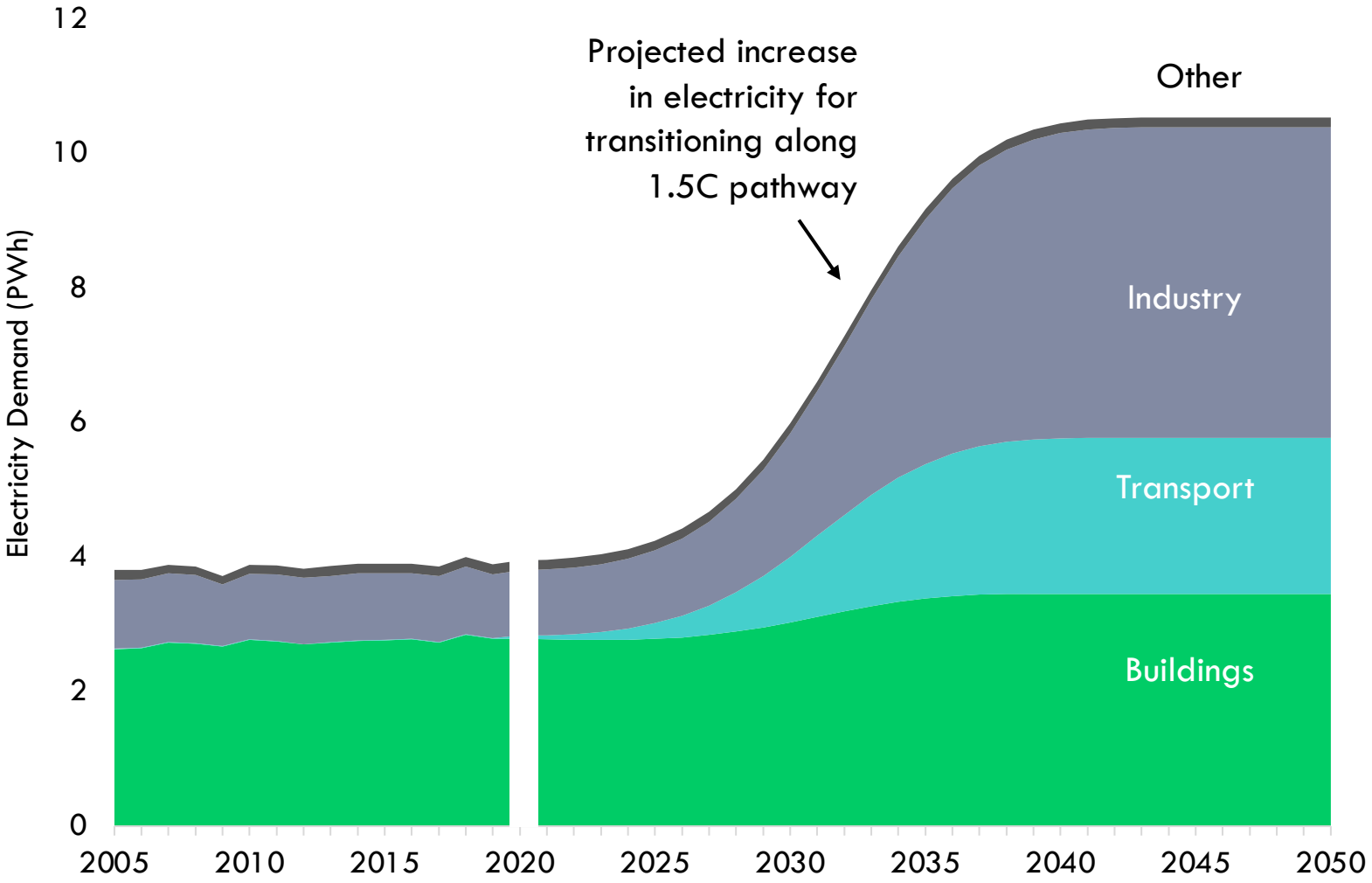
1. More than half for the US economy
2. 45% for the transportation sector
3. 45% for the buildings sector
4. 37% for industry
5. 83% for the electricity sector

…compared to 2005 levels



Source: RMI's Scaling US Climate Ambitions to Meet the Science and Arithmetic of 1.5C Warming report

For a majority of the US economy to decarbonize, utilities need to be far more aggressive in reducing emissions than other sectors



RMI projects that **electrification** of the economy would boost the need for electricity generation **by 60%** compared to 2005 levels

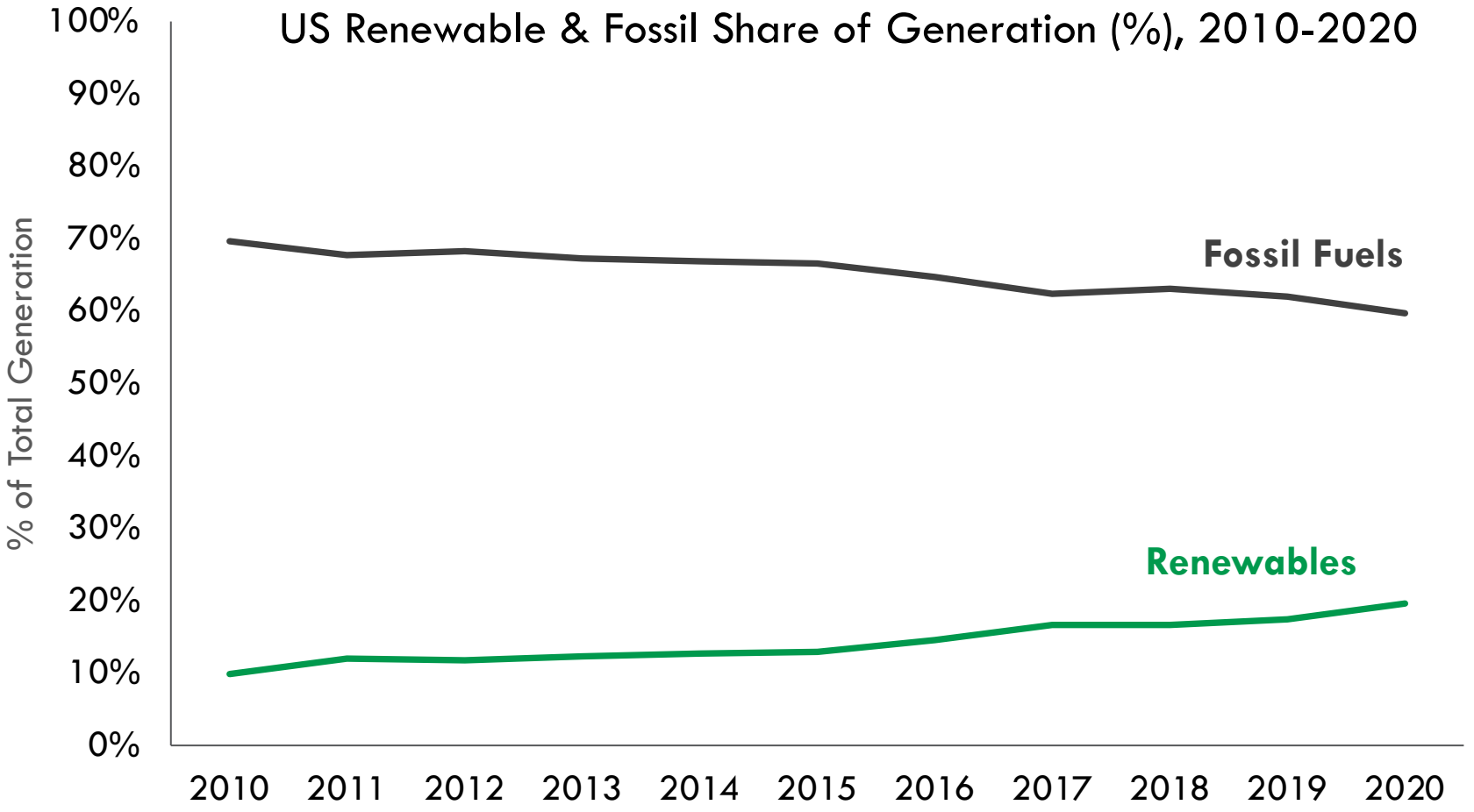
Decarbonization could carry other benefits such as

i) reduced air pollution,
ii) better energy access,
iii) growth in jobs and
iv) reduced inequality

…if considered and executed carefully

Source: RMI's Scaling US Climate Ambitions to Meet the Science and Arithmetic of 1.5C Warming report

While the electricity sector has made progress in reducing emissions, it is still dominated by fossil. It is far from being a zero-carbon sector, or supporting the transition of other sectors.



While coal is in rapid decline, the share of electricity generation from **natural gas is on the rise.**

The share of renewables (of total electricity generation) is rising at <1% per year – **far from the growth rate** necessary for a 1.5°C future.

Source: EIA

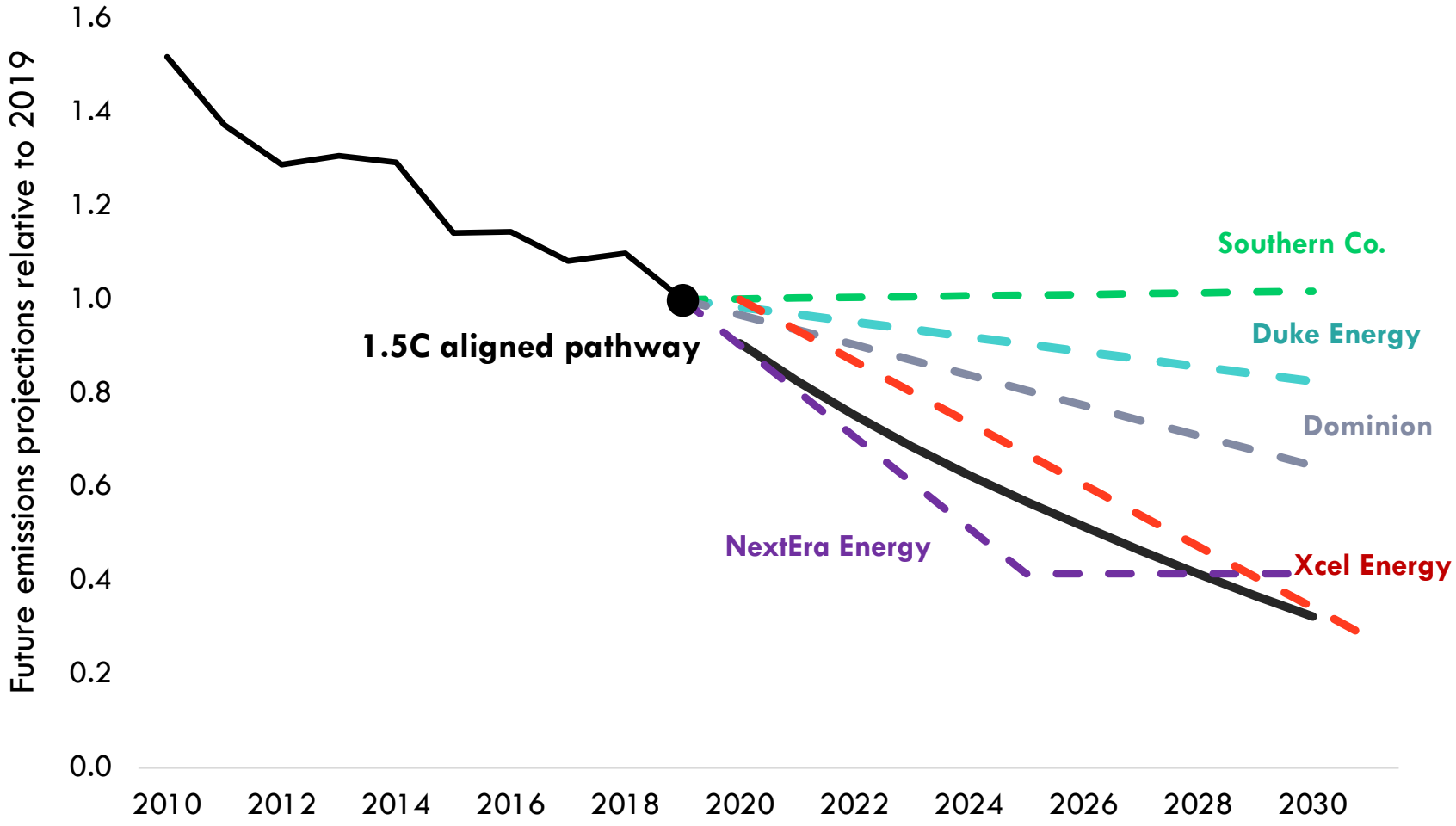
A growing number of U.S utilities have been making emissions reduction commitments, partly due to increasing pressure from policymakers, investors, advocates and customers…

25	29	110 M
Utilities with net-zero by 2050 goal	Utilities with less-ambitious goals	Total customers covered

… however, the commitments set by most utilities are not aligned with a pathway consistent to limiting warming to 1.5°C

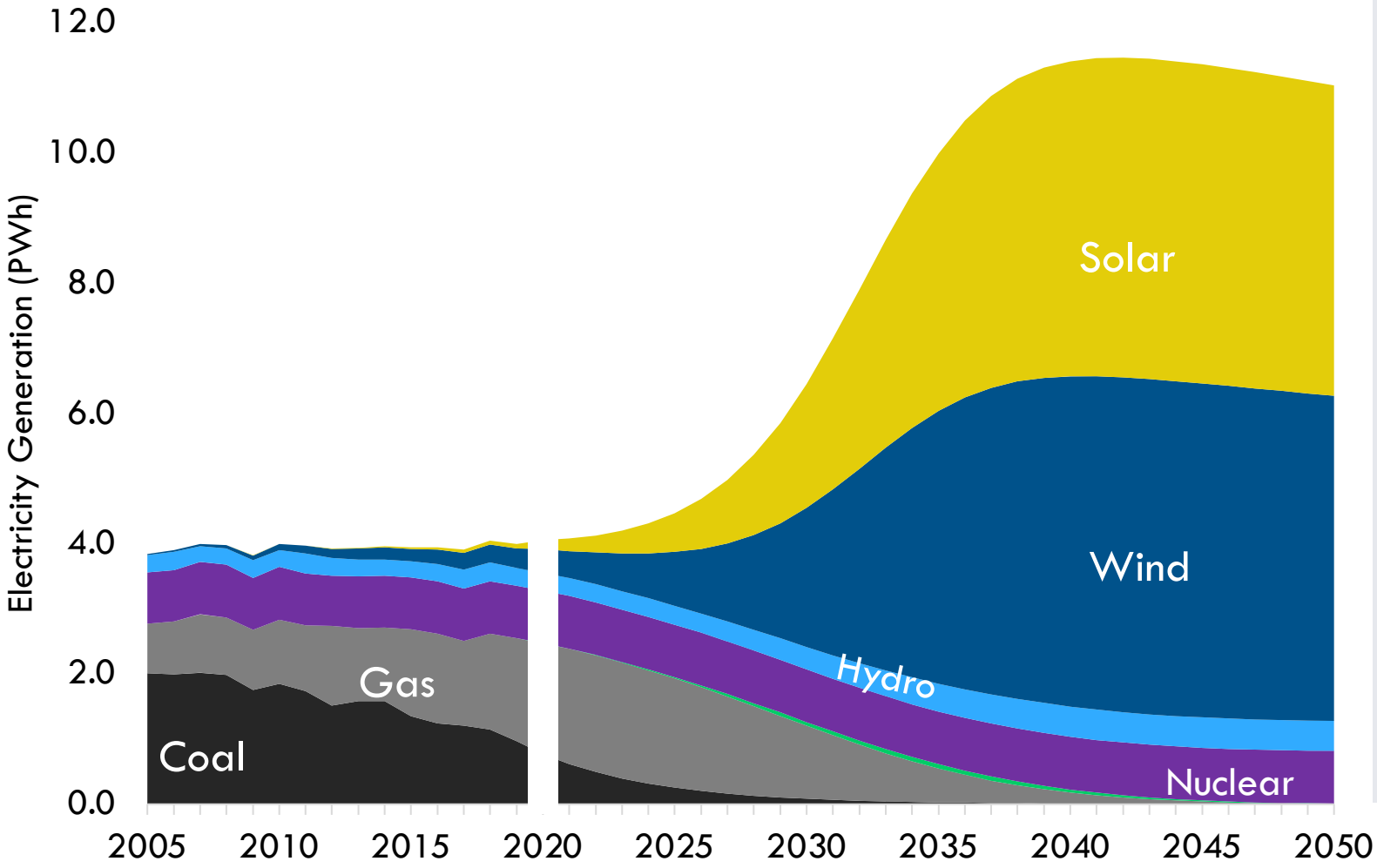
The chart shows projected future emissions relative to 2019, based upon current decarbonization commitments.

The 1.5°C aligned line is RMI's estimate for an emissions pathway consistent with maintaining cumulative emissions within the limits of 1.5°C warming, per the IPCC's recommendations.



Source: SEPA Utility Carbon Reduction Tracker, RMI analysis

A 1.5°C aligned electricity sector would require a mix of generation resources that is dramatically different from the one today



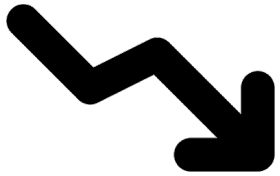
- Coal generation would need to fall to **zero by 2030.**
- Gas generation serves mainly as **"backup" by the 2030s.**
- Carbon-free generation expands **extremely rapidly to electrify other sectors.**
- Greater availability of transmission, demand flexibility & other resources to **balance variable generation w/ load.**

Source: RMI's Scaling US Climate Ambitions to Meet the Science and Arithmetic of 1.5C Warming report

Data can help identify and quantify the challenges faced and potential areas for solutions to support a utility's transition to clean energy

Existing investment in fossil assets that entrenches action on the transition

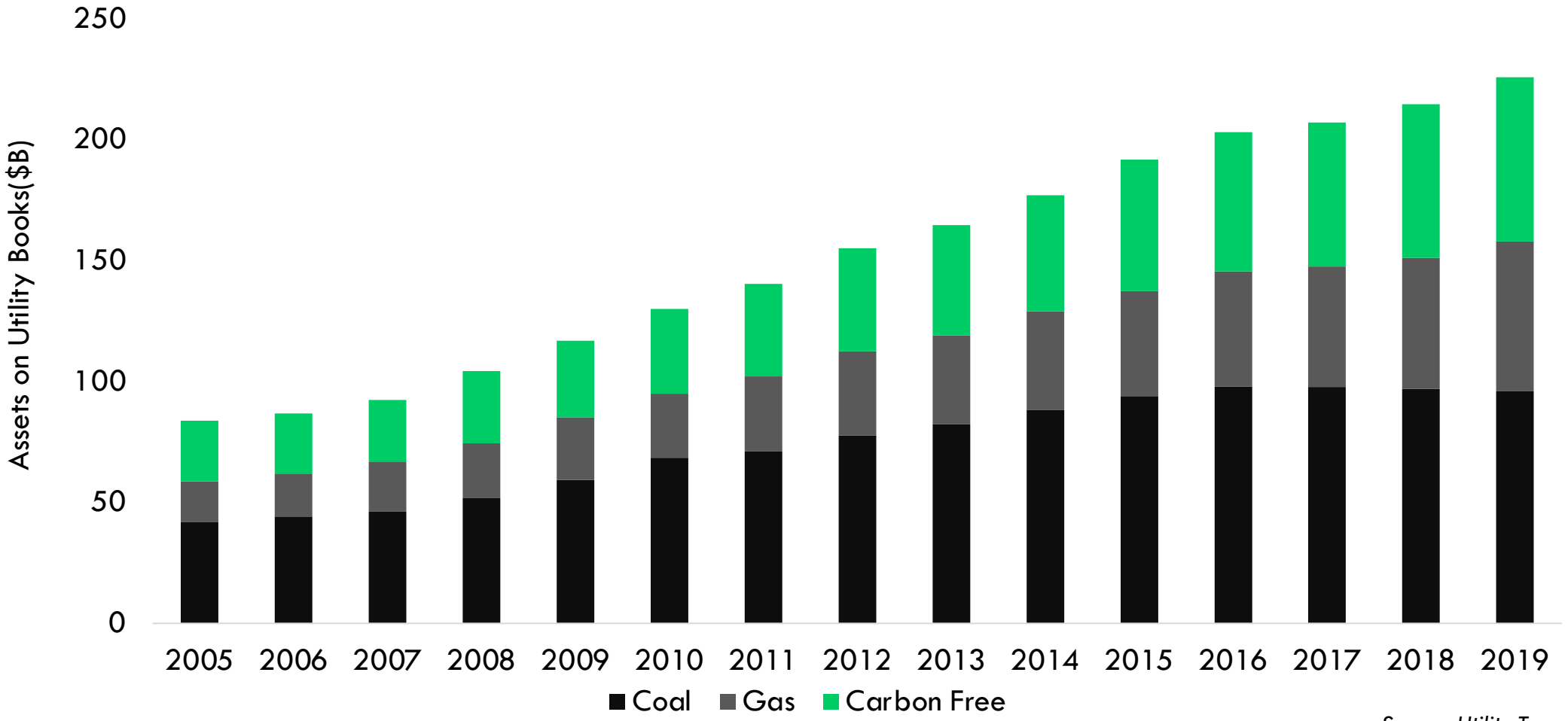
Misaligned incentives due to prevailing utility business model



Future investment in fossil assets that become uneconomic early in their lives

Higher customer costs, job losses, lost tax revenue and other customer & community impacts

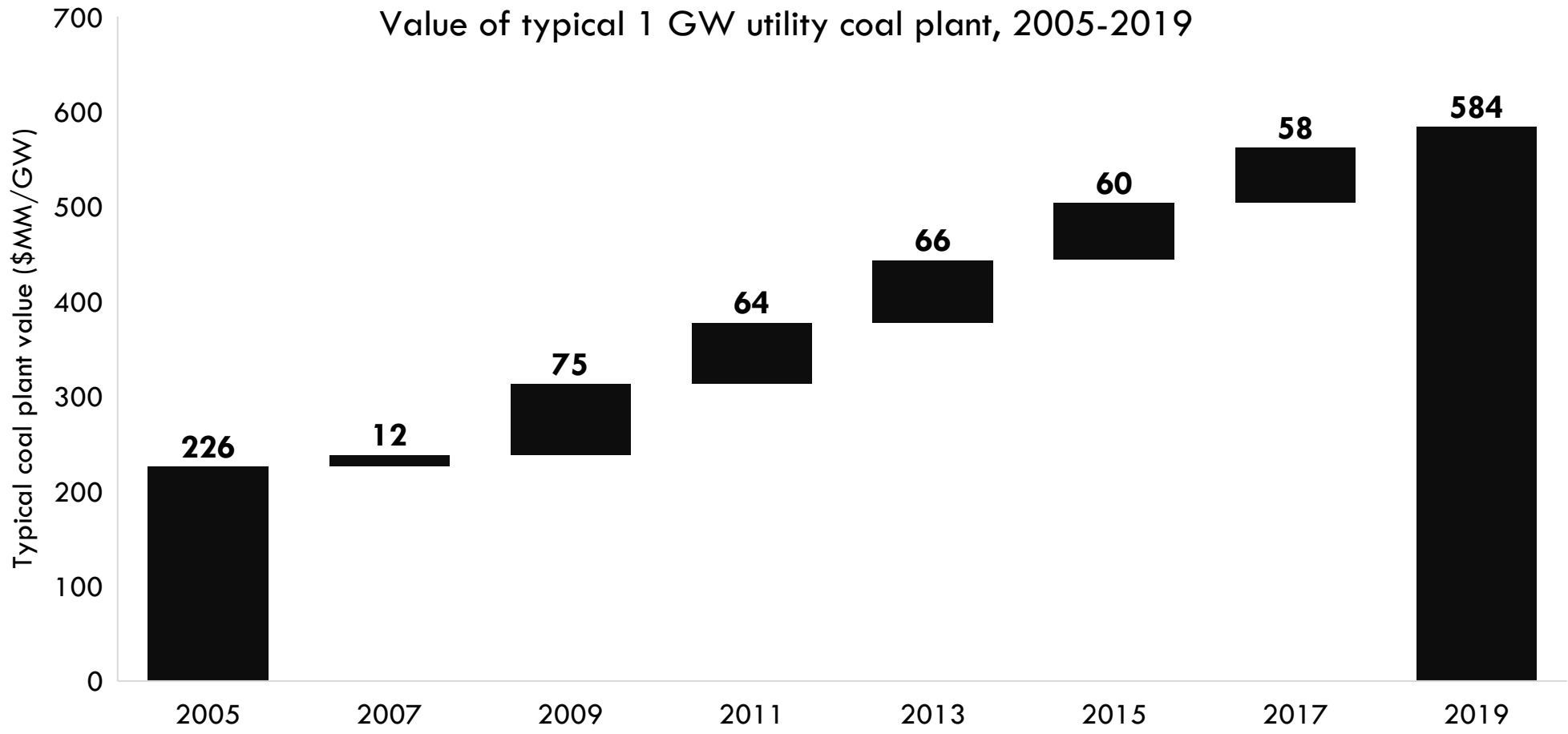
For example: U.S. utilities have more fossil assets on their books than ever before, which entrenches utilities and can limit ambitious climate action



Source: Utility Transition Hub, FERC Form 1

Note: this chart focuses on vertically integrated, investor-owned, regulated utilities

This is particularly acute for coal assets, where the typical 1GW coal plant has almost tripled in value from 2005-2019



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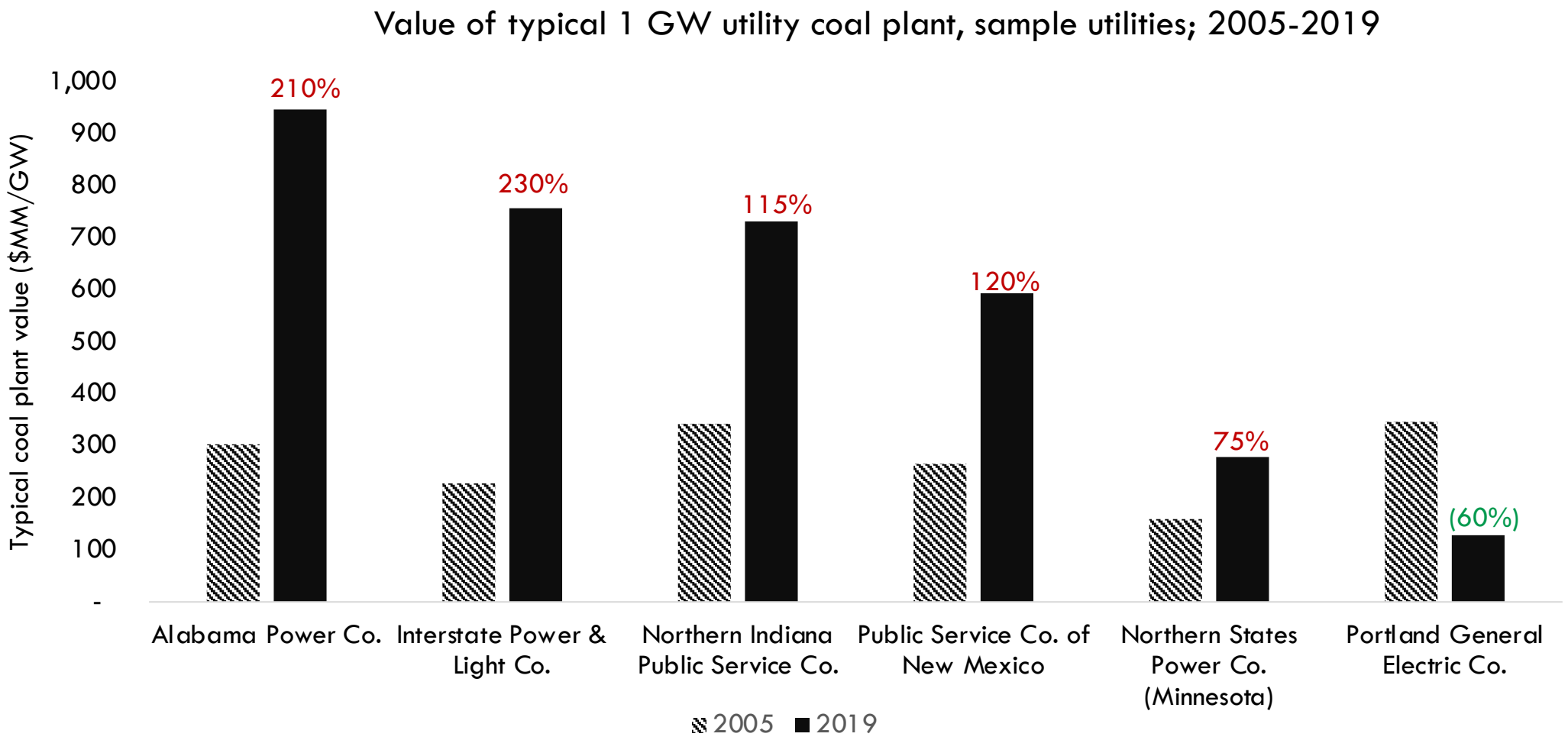
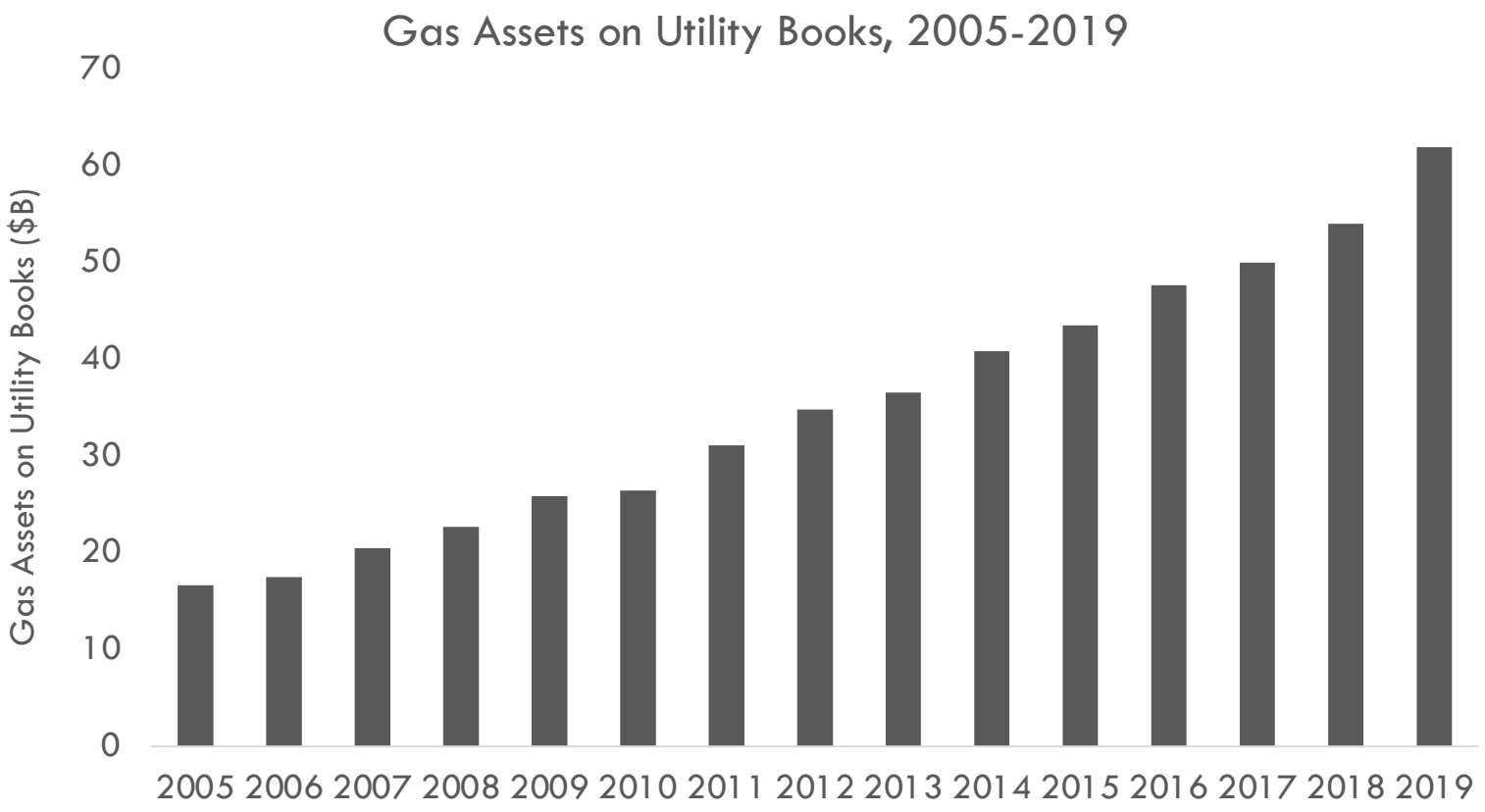
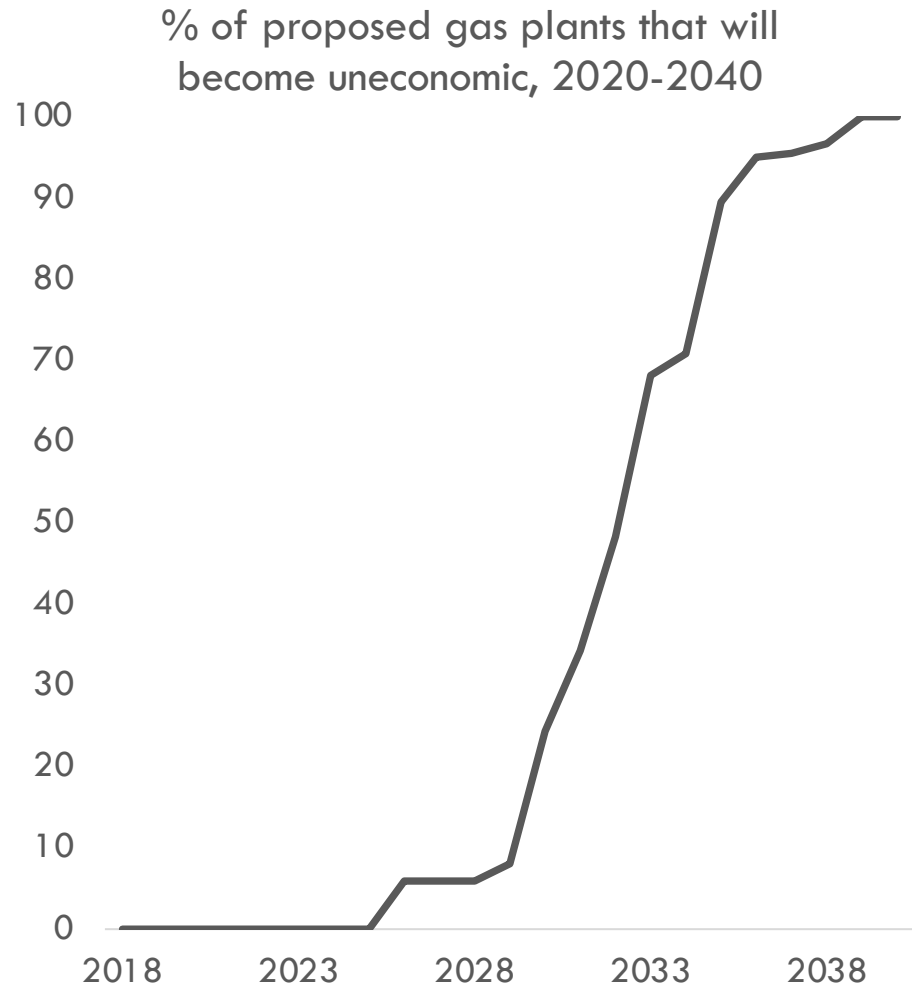
The more a utility invests in a typical plant, the harder it is to retire that plant early and avoid 'locking in' customers; utilities like Portland General Electric have been the exception to the rule



Source: Utility Transition Hub, FERC Form 1

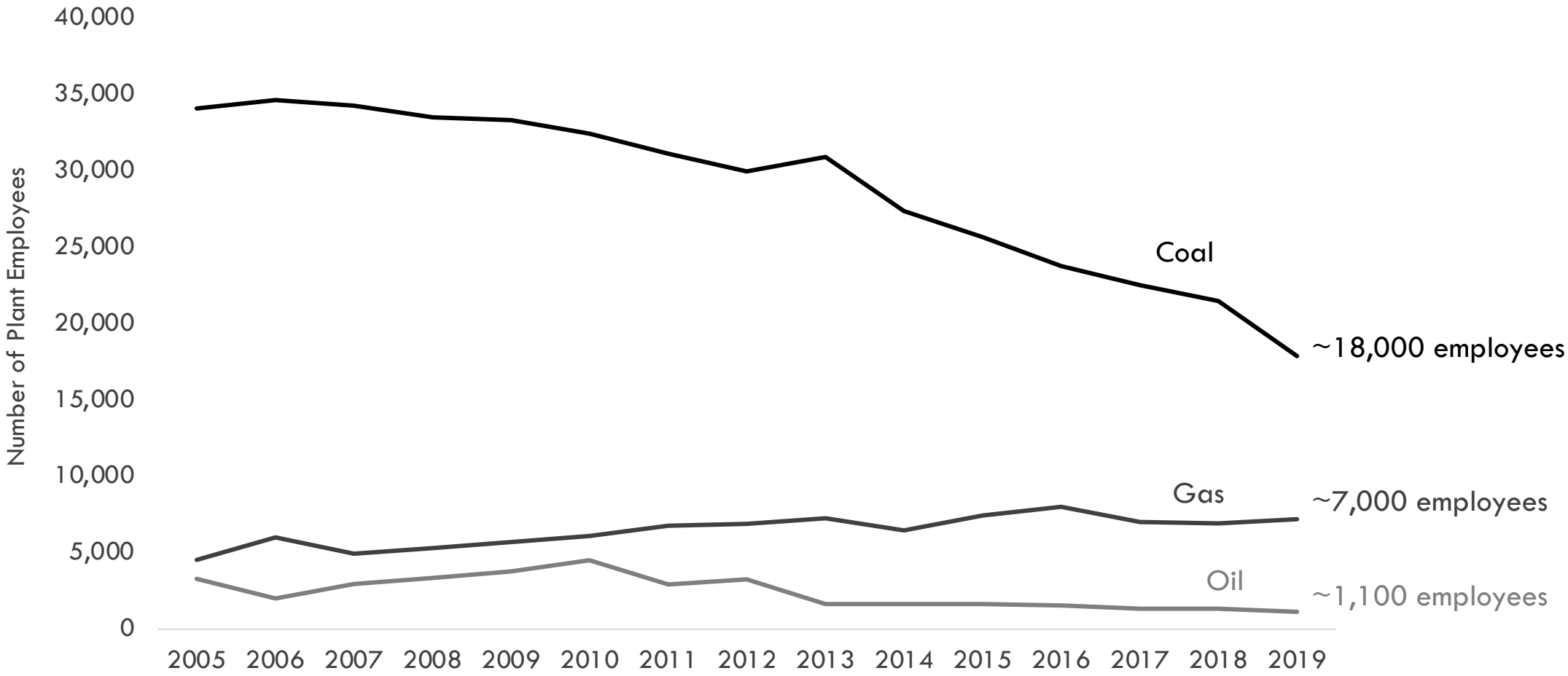
Future investments in fossil – especially gas – risk becoming uneconomic early in asset life, resulting in higher costs and emissions





Source: Utility Transition Hub, FERC Form 1, RMI Clean Energy Portfolio Analysis

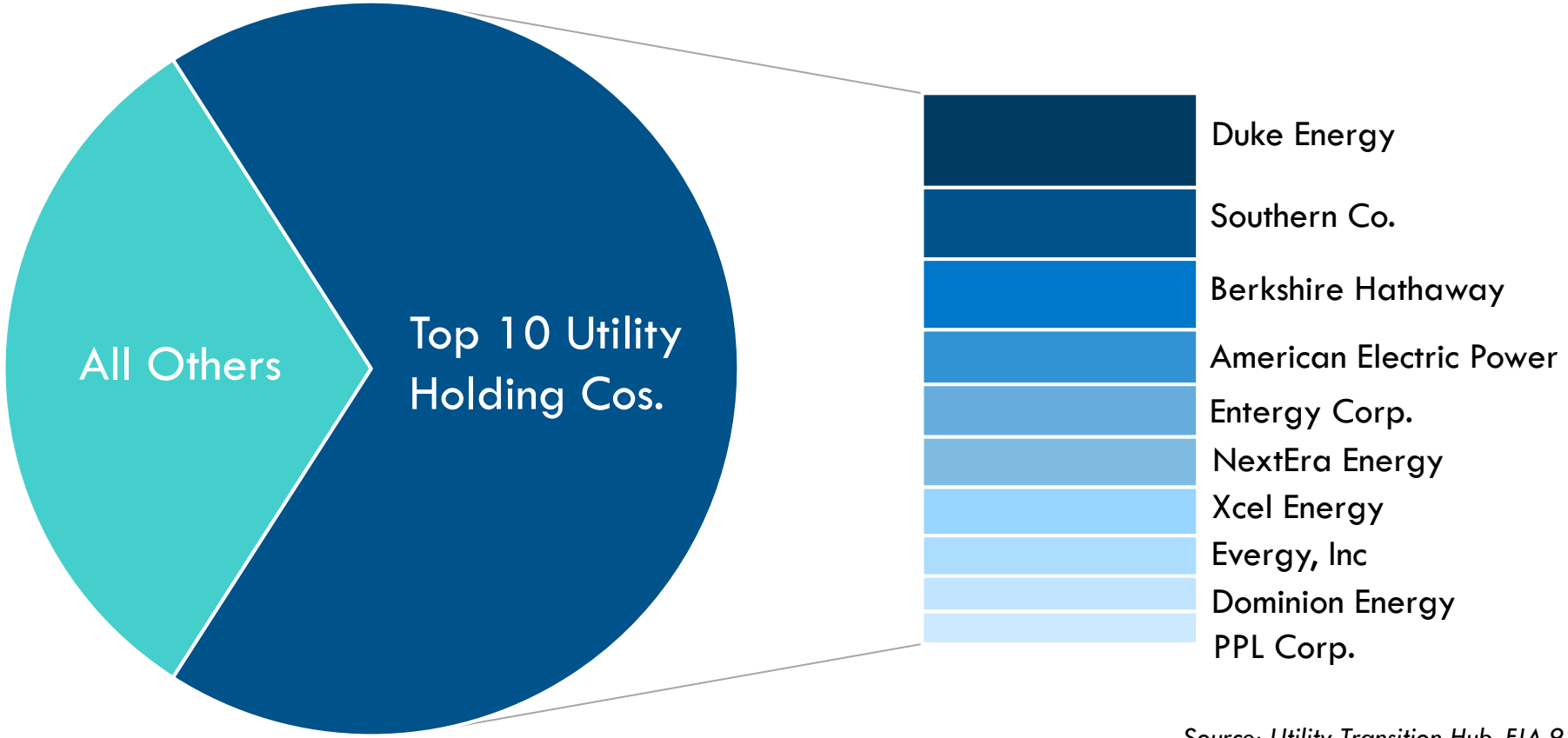
Community and workforce impacts are likely to pose a challenge to the transition, especially for fossil fuel workers; public data shows ~40% of coal workers have been displaced since 2005



Source: Utility Transition Hub, FERC Form 1

The challenges to and opportunities of the utility transition are not evenly distributed – ten utility holding companies represented ~70% of the sector's CO_2 emissions in 2019

Distribution of CO_2 emissions across US utilities, 2019



Source: Utility Transition Hub, EIA 923, EPA APMD

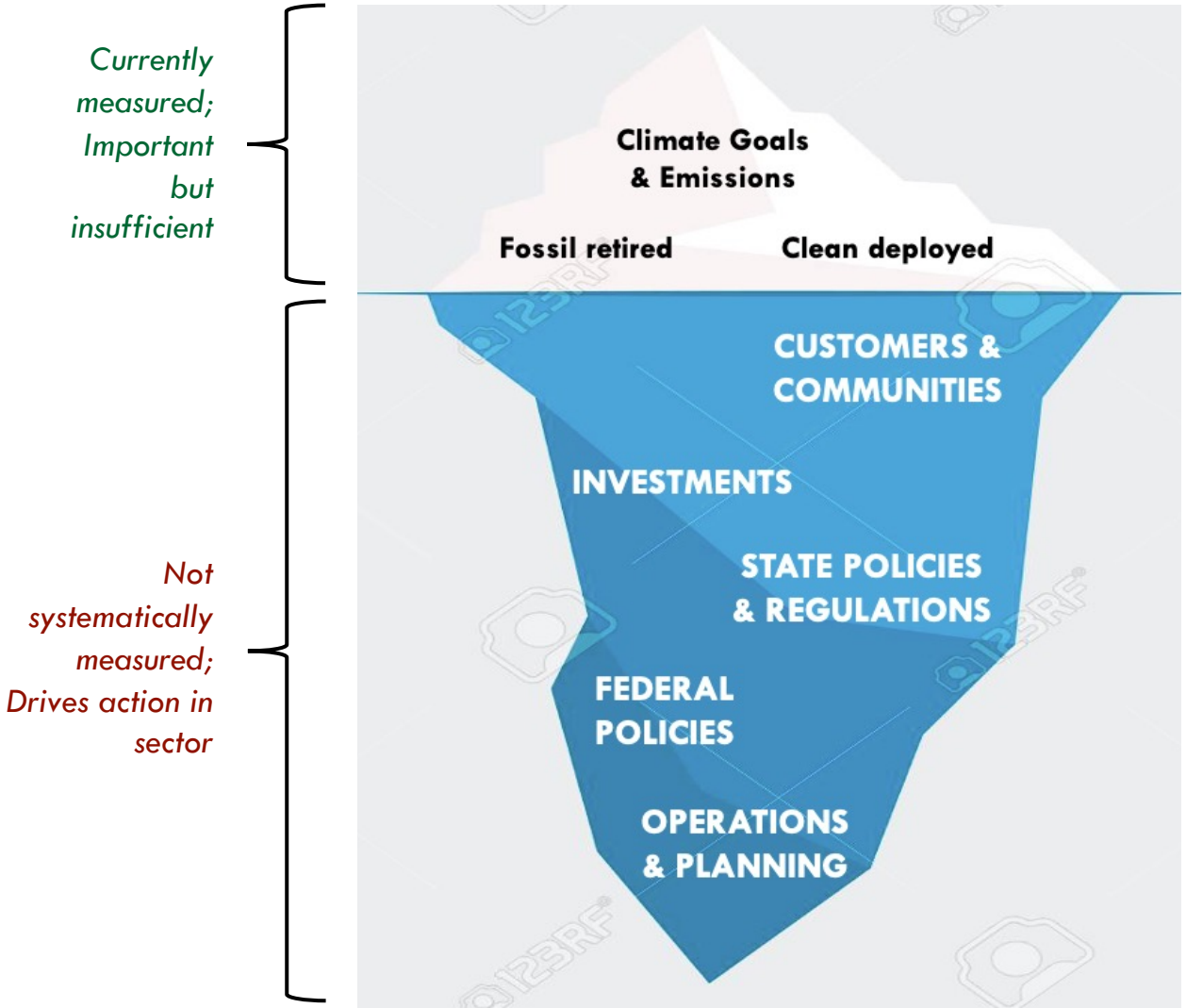
Note: this chart focuses on vertically integrated, investor-owned, regulated utilities, and only on emissions from owned utility plants

RMI's *Utility Transition Hub* is one tool that enables a conversation between key utility stakeholders on viable transition pathways, all using publicly available data

The *Hub* was developed to give key stakeholders – **policymakers, advocates, investors, regulators and utilities** – accessible and understandable data to:

- **Assess the sector's current state** – emissions, investments, customer costs & more
- **Identify the drivers** hindering climate action in the utility sector, and areas to focus attention to bolster progress on the transition

The *Hub* is regularly updated



Key stakeholders – policymakers, investors, regulators, advocates and utilities – can use the *Utility Transition Hub* in various ways to inform action on the transition

Key stakeholder	How the tool could be used
Policymakers	Track utility progress through emissions, and impacts on customer costs; identify areas for policy development
Investors	Track utility progress through emissions, identify clean energy investment opportunities; incorporate climate risks in decisions
Regulators	Track utility performance against state policy goals; benchmark performance against peers; identify areas for regulatory reform
Advocates	Track utility emissions progress against state policy goals; track utility fossil investment and impact on customer costs
Utilities	Benchmark performance on emissions, investments & customer costs against peers

While data is necessary to uncover challenges and target opportunities, collaboration among industry stakeholders is critical to innovative solution development

- To reach a 1.5c aligned pathway, **all utilities** – including IOUs, POUs, and coops – **will need to take action** to shift investments, engage customers, and support communities in new ways

- PUCs, state energy offices, and utilities themselves are utilizing **more collaborative and inclusive approaches** to understand barriers, identify stakeholder needs, and co-create solutions

- **Data access and sharing can increase transparency and provide a common fact base** to serve as a foundation for these discussions

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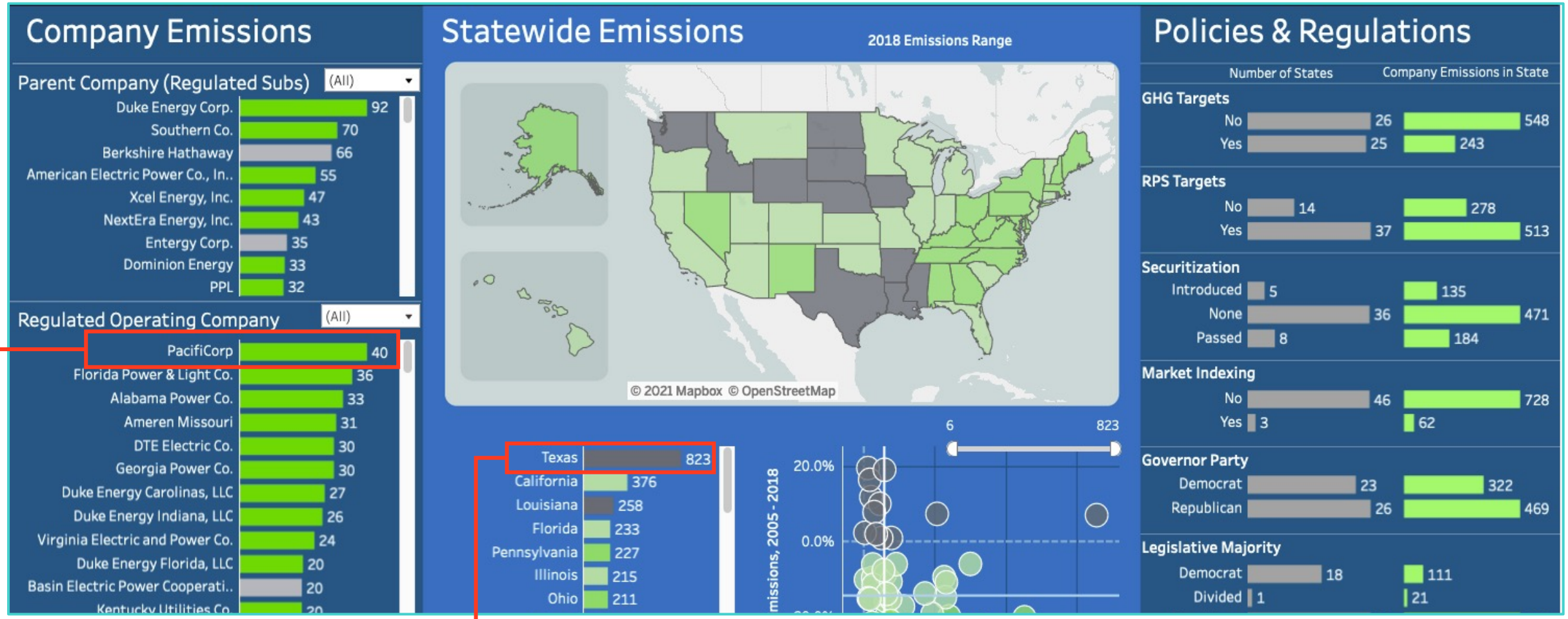
The *Utility Transition Hub* is at https://utilitytransitionhub.rmi.org



Users can select one utility, some utilities or all utilities – at the parent or subsidiary level

Users can select one state, some states or all states to focus on

Similar user functionality & flexibility is available throughout the Hub, for i) Utility investments, ii) Utility operations, iii) Emissions, iv) Customer & Community impacts, v) Alignment w/ 1.5C