Stuck in the 1950's: Updating Regulatory Mandates for the 21st Century

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Abstract

Utility Regulators' enabling legislation and processes were designed to address the 'monopoly problem'. They can be great at doing that, but if they ignore the 'decarbonization problem' none of it will matter in the long run. What role could utility regulators play in supporting decarbonization (or at least not undermining it), and do we need a complete overhaul of their enabling legislation to achieve this?

Introduction

Professor Malcolm Sparrow states that regulatory agencies exist primarily to control risks to society. Utility regulation dates back to before the 1950s and was put in place to address the risk to society arising from natural monopolies.

While there can be differences between jurisdictions in market design and the type of regulation, the basic nuts and bolts of how utility regulators address monopoly risks are fairly similar worldwide. These include allowing the utility to earn an adequate return on its invested capital, regulatory review of capital and operational expenditures, and setting rates such that the costs of the utility are fairly recovered from all its customers and properly apportioned between customer classes.

However, Professor Sparrow also states that major programs, once created, tend to ossify over time and lack the flexibility to cover the shifting landscape of risks.

What are the new risks to society that have arisen since the 1950s that traditional regulatory processes do not address? What new processes or market design changes would be needed to address these risks, and is the regulator constrained by an outdated regulatory mandate to achieve them?

Where do we start?

This article suggests a roadmap to address these questions. The following steps are recommended and described in more detail in the following sections:

1. Identify the risks to society that an economic regulator could mitigate
2. Understand how these risks affect the utilities and their stakeholders
3. Develop new regulatory processes to address these risks
4. Update the regulator's mandate (if required)

A key item to note is that the update of the regulatory mandate is the last, and not the first, step in the process. Starting with identification of the risks to society instead (as shown in Figure 1 below) will allow for the development of regulatory processes and mandates that are not unnecessarily constrained by the status quo, and so support regulatory innovation.

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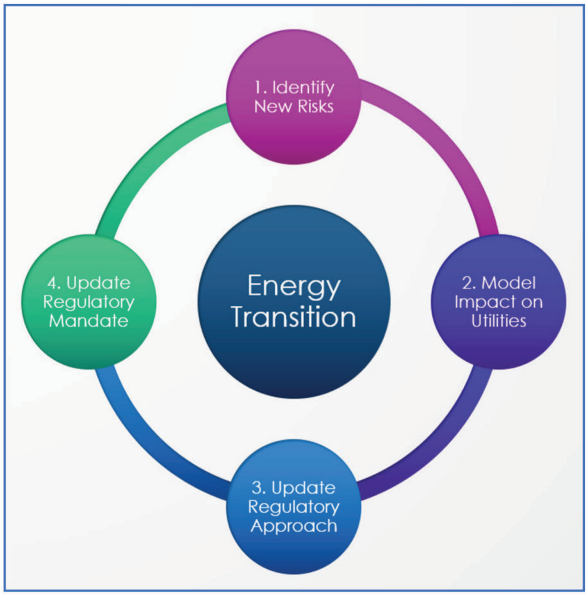

Figure 1: Updating the Regulatory Framework for the Energy Transition

Step 1: Identify risks to society

The first step is to identify the risks to society that an economic regulator could be well placed to mitigate. Professor Sparrow states that risks not addressed by existing programs generally fall into the following categories:

- *Emerging risks* that did not exist or were not understood at the time when the major programs were designed. These could include government decarbonization targets, technology changes and increasing investor and consumer expectations around energy affordability, diversity and indigenous reconciliation
- *Catastrophic risks* related to disasters that do not normally happen (or maybe have never happened yet), and which therefore are not represented in the normal workload. These could include the increased risk of extreme weather events as a result of climate change

- *Invisible risks* related to issues that have sufficiently low discovery or reporting rates such that we do not know the true scope, scale or concentrations of the problem
- *Risk involving conscious adversaries* or adaptive opponents who deliberately circumnavigate controls (such as cyber criminals and geopolitical risks resulting from the Russia-Ukraine war)
- *Boundary-spanning risks* where responsibility for controlling a risk sits awkwardly across the missions of several major public agencies. This could include broader regional integrated planning
- *Persistent risks* where cases of one type keep on surfacing at high volumes so treating these cases one by one is not controlling the underlying problem. This could include existing processes designed for large utilities which may be unnecessarily burdensome for the growing number of small utilities

Economic regulators are not responsible for determining environmental policy or driving social policy. However, these new or emerging risks are those that a utility will face whether they chose to proactively address them or not. An economic regulator could play a role in ensuring that these risks are well managed by utilities

The starting point is therefore a stock-taking of the new risks facing utilities. For example, to better understand decarbonization risks the regulator could identify government 2030 and 2050 targets for decarbonized energy supply (electricity and natural gas) and energy end-uses (buildings, transportation, industrial processes).

Step 2: Understand how these risks affect utilities and their stakeholders

The next step is to understand how these new risks could affect regulated utilities. For example, government decarbonization targets could result in the following risks to utilities and their customers:

- *Natural gas utilities* could face a risk of stranded infrastructure investments if they are unable to deliver decarbonized energy (renewable natural gas and hydrogen) to customers at a comparable cost to electric utilities
- *Natural gas customers* may find that they have to prematurely replace natural gas equipment as it becomes uneconomic to operate. Customers who may have less ability to switch away from natural gas (low-income customers, renters, 'hard to decarbonize' industrial processes) could find themselves shouldering a disproportionate share of the costs
- *Electric utilities* could face a dilemma of building out their network in advance of expected load (and risk not being able to recover all these costs if the load does not materialize) or waiting until the load does appear and then risk not being able to reliably serve it. Electric utilities could also risk over-investing in supply side assets if they do not give enough attention to the increased ability of distributed energy resources to supply this new load
- *Electric customers* - electrification could increase customers' need for a reliable and resilient electric service. However, at the same time increased integration of renewables to meet decarbonization targets may decrease reliability from current levels if not proactively managed

How could a utility regulator obtain this insight? Professor Sparrow recommends that a project is set up for new problems the regulator has identified as important:

> The work is conducted by temporary project-based teams, usually cross functional in nature, organized around a specific problem. These teams are expected to gather the data, study the problem, consult with others as necessary, and then generate a plan or set of plans suitable for tackling the problem.

For the 'decarbonization problem', to allow for better targeted outreach it is recommended that utility regulators launch three separate inquiries into the future of:

- Buildings – how will they be heated/cooled in 2030/2050
- Transportation – how will it be fueled in 2030/2050
- Industrial processes – how will their energy needs be met in 2030/2050

For example, a building inquiry could allow for public debate over renewable natural gas (cost and availability assumptions), electricity renewable integration (alternative approaches and costs) and the role that distributed energy resources could play in meeting future energy needs.

While numerous decarbonization models have already been developed to estimate how 2030/2050 climate targets could be met, they may be of little use if they do not recognize the local context, are undertaken by entities with a vested interest in the outcome, and where key input assumptions have not been tested in a public process.

By contrast, utility regulators are policy and technology agnostic and so regulator led inquiries can be trusted to look at the decarbonization risk from an impartial perspective. Energy regulators are also experts in their local context, which is important as decarbonization pathways could vary significantly between regions.

While it is not expected that we can predict how, for example, buildings will be heated and cooled in 2030 and 2050, it should be possible to at least develop a range of reasonableness, discard unrealistic assumptions and get visibility into the role electric and natural gas infrastructure will likely play in a fully decarbonized world.

Regulators may already have the ability to hold inquiries on their own motion. However, they could lack the resources to undertake one and traditional regulatory proceedings (with rules of evidence) can be complex and difficult for customers to participate in.

It may therefore be more efficient for the government to direct and fund the regulator to undertake

these inquiries, and support a less formal process to ensure wider participation.

Similar inquiries could be held to get visibility into other problems identified by the regulator as important (such as extreme weather events and cybersecurity), although Professor Sparrow recommends that the regulator should not attempt to launch more than a small number of projects at a time.

Step 3: Develop new regulatory processes to address these risks

The third step is to develop new regulatory processes and approaches to address these risks. This is not an easy task – it probably took a talented team of people coming from diverse backgrounds to develop the regulatory processes we have today to address monopoly risk. However, once this process has been done, it could then be rolled out to utility regulators worldwide.

Regulators can look to the finance industry for inspiration, as they have already started on this path in updating their processes to address the decarbonization risk. Mark Carney in his book 'Values' sates:

> When I was named the Special Envoy of the UN Secretary General for Climate Action and UK Prime Minister's advisor for Climate Finance, we formed a small team of experts seconded from the Bank of England and Whitehall and set ourselves a simple but vital task: to have in place by COP 26 in Glasgow all the necessary foundations so that every financial decision takes climate change into an account.
>
> This requires a fundamental reordering of the financial system so that all aspects of finance - investments, loans, derivatives, insurance products, whole markets – systematically take the impact of their actions on the race to net zero. ...
>
> To ensure that every financial decision takes climate change into an account, the COP process has drawn on experts across the private sector, in central banks and regulators and at not-for-profit organizations which had been among the first to identify and advocate some of the necessary changes.

Two previous International Association for Energy Economics (IAEE) articles provide some insight into what these changes could look like for energy regulators' processes:

- *Rate Setting for an Electrified World*: This article proposes rate setting changes if electrification was found to be most likely pathway for buildings, including reviewing residential gas and electric rates and energy efficiency programs together to determine if they encourage (or at least do not discourage) electrification of homes.
- *Hackers and Extreme Weather:* This article suggests that existing regulatory approaches (such as planning reserve margin and reliability metrics) may no longer be sufficient to ensure utilities are adequately addressing cybersecurity and extreme weather risk and proposes the addition of a risk-based framework.

Potential changes arising from decarbonization risk were also identified in *The Challenge of Retail Gas in California's Low-Carbon Future* report prepared for the California Energy Commission by Energy and Environmental Economics (E3).

E3 used a model to evaluate building scenarios that would achieve an 80 percent reduction in California's greenhouse gas emissions by 2050 from 1990 levels. Based on these scenarios, E3 concluded that building electrification is likely to be a lower-cost, lower-risk long-term strategy.

E3 then recommended the development of a natural gas transition strategy which could include: accelerated depreciation of natural gas assets, changes to natural gas cost allocation between customer classes, avoiding future gas system expansion, shut-down of uneconomic gas infrastructure, reducing barriers to electrification, and developing pathways to pay for early retirement of gas assets (such as from electric bills, taxpayers and cap-and-trade revenues).

Redesigning regulatory processes and approaches to address monopoly risk *and* new risks that have arisen since the 1950s will be both difficult and intellectually challenging. However, by working together - and with sufficient resources - utility regulators should be able to effectively build on the legacy of those that have come before us.

Step 4: Update the regulator's mandate

The last step in the process is to determine if the utility regulator has the mandate to put in place the new processes or initiatives it has identified.

Utility regulators are 'creatures of legislation' and their enabling legislation is often designed to mitigate the risk posed by customers from monopoly utilities. For example, it allows regulators to review and accept/reject long-term resource plans, capital and operating budgets, and rate designs.

However, it may not allow a regulator to, for example:

- Initiate strategic targeting of electrification and develop pathways to pay for early retirement of natural gas assets
- Direct gas and electric utilities to file their residential rate design and energy efficiency programs together, or
- Put in place a risk-based framework to address resiliency risk for gas utilities and the electric distribution grid

For example, in a recent Quebec decision (D-2022-061) the utility regulator approved a generic principle whereby the electric utility will compensate the gas utility for 80% of its lost revenues related to the conversion of natural gas clients to a dual (natural gas/electricity) energy system where natural gas is used only for building heating during peak periods. However, one commissioner issued a dissenting decision, saying the deal's costs "can't be considered a necessary expense in the service of distribution of electricity."

This decision illustrates the difficultly of regulators being asked to address decarbonization risks without having a clear visibility into the nature of the risk and their jurisdiction in addressing it.

This fourth step may also identify regulatory gaps. For example, under Canada's constitution, each province controls the electricity market structure within its borders. Federal government authority is limited to certain aspects of the nuclear generation sector, electricity exports, and inter-provincial transmission. There may therefore be no regulatory body with the authority to ensure broader regional market planning is undertaken in response to the decarbonization risk.

The purpose of this step is therefore to identify any barriers or gaps in the regulator's enabling legislation to implement regulatory processes and initiatives that effectively address new and emerging risks.

It is recommended that this is the last step in the process as it will not be clear what changes to the regulator's mandate will be needed until the regulator has a clear handle on what the new risks are, how they could affect regulated utilities, and how they are best addressed.

There is a risk that, if the regulator's mandate is the starting – and not the ending – point, it will just result in minor tweaks to the mandate to, for example, 'consider GHG emissions' or 'consider affordability' in regulatory decisions. Instead, the proposed approach allows for increased flexibility and innovation to design a solution that maximizes the value regulators can provide to society.

Whose job is it anyway?

Not all regulators have the 'mandate to question their own mandate' or they may lack the funding to do so. In those cases, the ball is in the government's court to initiate this regulatory mandate review process, although the regulator can certainly play a central role in this review.

It is therefore recommended that the government empowers and funds the regulator to get visibility into these new and emerging risks. For the decarbonization risk, tasking the regulator with holding open and transparent inquiries into the future of buildings, transportation and industrial process could be a good place to start.

This approach also has broader benefits of raising public awareness around what the decarbonization pathways are, what they are going to cost and the trade-offs. Trusted regulators could help to both inform energy policy and educate the public.

Conclusion

Professor Malcolm Sparrow describes the purpose of regulation as 'Pick important problems; fix them'. Regulators have been tasked by the government to address the 'monopoly problem' but can be constrained by their regulatory mandate to address new emerging problems such as decarbonization.

To ensure that utility regulators identify and fix important problems of today (rather than just those of the 1950s) requires an understanding of what these new risks are, how they affect utilities they regulate, which problems should be addressed though regulatory processes and how these should be designed. The last step is an update of the regulatory mandate, if required, to allow regulators to effectively manage the new risks.

This is not a herculean task. For example, to better understand the effect of the decarbonization risk on utilities and their customers the regulator could hold time limited inquiries into the future (2030/2050) of buildings, transportation and industrial processes. A cross sector-team could then be created to update regulatory processes (and suggest mandate changes if required) to address this new risk, similar to the work being done by the finance industry.

We don't need a plan, we just need to start planning.

References

Aas, D. et al (2020), California Energy Commission, *The Challenge of Retail Gas in California's Low Carbon Future*

Ashley, J. et al. (2021). *Hackers and Extreme Weather: Using a Risk Based Framework to Protect Consumers from Both*

Carney, M. (2021), 'Value(s): Building a Better World for All', p. 316, 317

Nock, J. (2022), *Rate Setting for an Electrified World*

Rolland, S (2022), Montreal Gazette, *Regulator approves deal between Hydro-Québec and Énergir*

Saunders, O (2004). University of Victoria, *Canada-US Energy Issues: Electricity and Regulatory Sovereignty*

Sparrow, M. (2020), *Fundamentals of Regulatory Design.* Chapter 4