Energy Justice Considerations in Policy and Utility Cost Recovery (Rates)

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Overview

- Background: Energy Justice Concepts
- Proposed Public Goods Framework for Just Rates
- System Dynamics Modeling of Energy Justice Factors
- Challenges and Conclusions

Energy Justice Concepts

Definition, Metrics, Examples

Energy Justice Defined

Key Concepts

Mainstream Principles:

1. **Distributional Justice:** How are benefits/costs distributed?

2. **Recognition Justice**: Which groups bear disproportionate harms?

3.**Procedural Justice**: How are decision makers including overlooked communities?

Kirsten Jenkins, Darren McCauley, Raphael Heffron, Hannes Stephan, Robert Rehner, "Energy justice: A conceptual review", Energy Policy, 2015

"Frontline" Vision Principles:

1. Being place-based
2. Addressing the root causes and legacies of inequality
3. Shifting the balance of power in existing forms of energy governance
4. Creating new, cooperative and participatory systems of energy governance and ownership
5. Adopting a rights-based approach
6. Rejecting false solutions

Salma Elmallah, Tony Reames, C. Anna Sprulock, "Frontlining energy justice: Visioning principles for energy transitions from community-based organizations in the United States", Energy Research and Social Science, 2022

Energy Justice in Practice

Morongo Tribe and SCE

- ~50 years ago, the federal government approved the construction of transmission lines across the reservation

- In 2011, SCE sought to renew expiring ROW's and upgrade existing lines

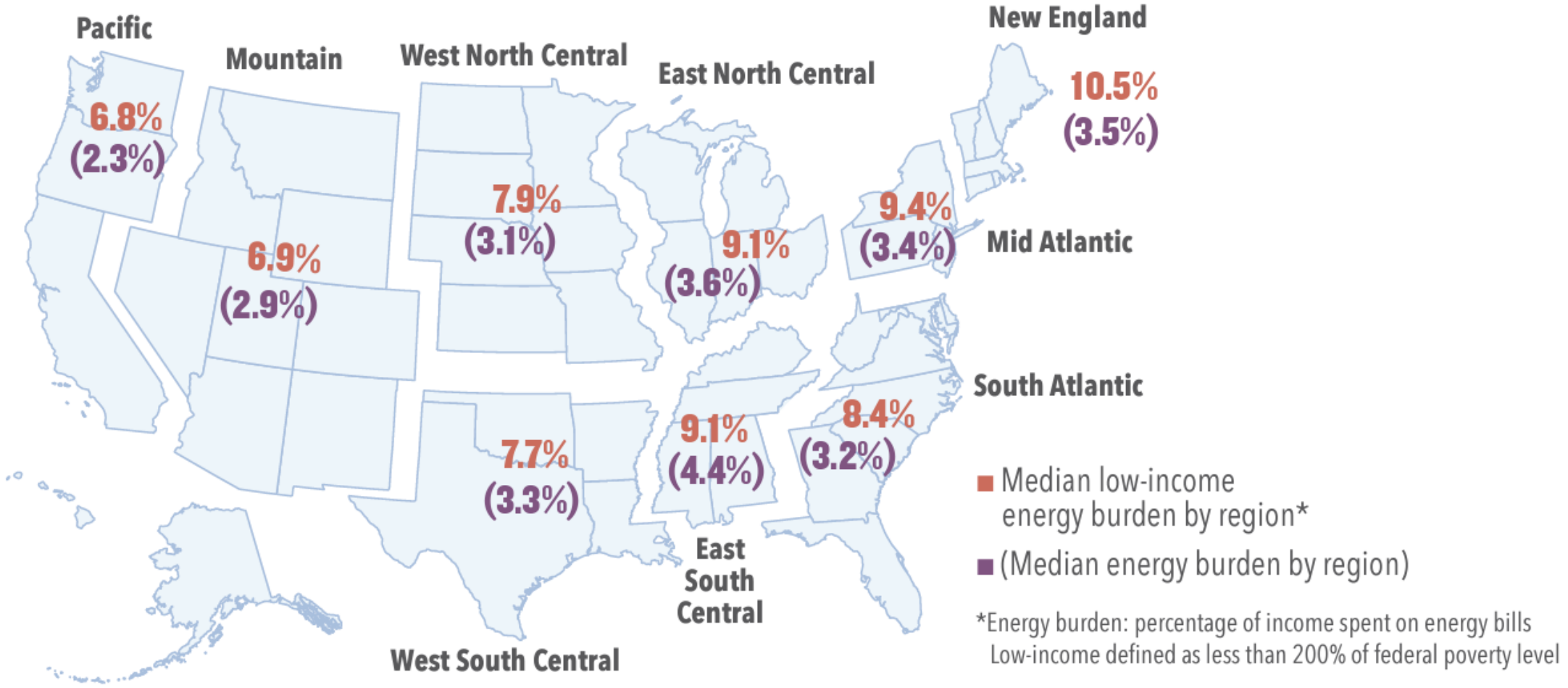
- After years of persistence, Morongo Tribe negotiated joint ownership of lines

-In 2021, Morongo Tribe officially became 1st tribal transmission owner

Entrance to Morongo Reservation. Source: www.indianz.com

Common Metric: Energy Burden

(distributional/recognition justice)



Source: ACEEE

Public Goods Framework for Just Rates

Ahlmahz Negash | NTNU

Revenue Requirements: 1500

Current Rate-Making Process

In a decarbonized & high DER future, there is a challenge of:

a) More **fixed-cost** energy transition investments

b) DER cost-shifting due to **volumetric rates**

c) High "residual costs"

Volumetric rates become less just and reasonable!

Source: Jim Lazar et al, Electric utilities: pathway to a costs and pricing revolution **(2020)**

Rate Reforms in the Literature

How can we make rates less regressive?

1. Income Based Fixed Charges
2. Residential ”Climate Zones”
3. Moving Some Costs to State Budget

California AB 205

Illustrative Proposed IGFCs

Income Bracket	Criteria	PG&E IGFC ($/month)	SDG&E IGFC ($/month)	SCE IGFC ($/month)
1	CARE (< = 100% FPL)	$15	$24	$15
2	All Other CARE/FERA	$30	$34	$20
3	Non-CARE/FERA < = 650% FPL	$51	$73	$51
4	Non-CARE/FERA > 650% FPL	$92	$128	$85

Public Goods?

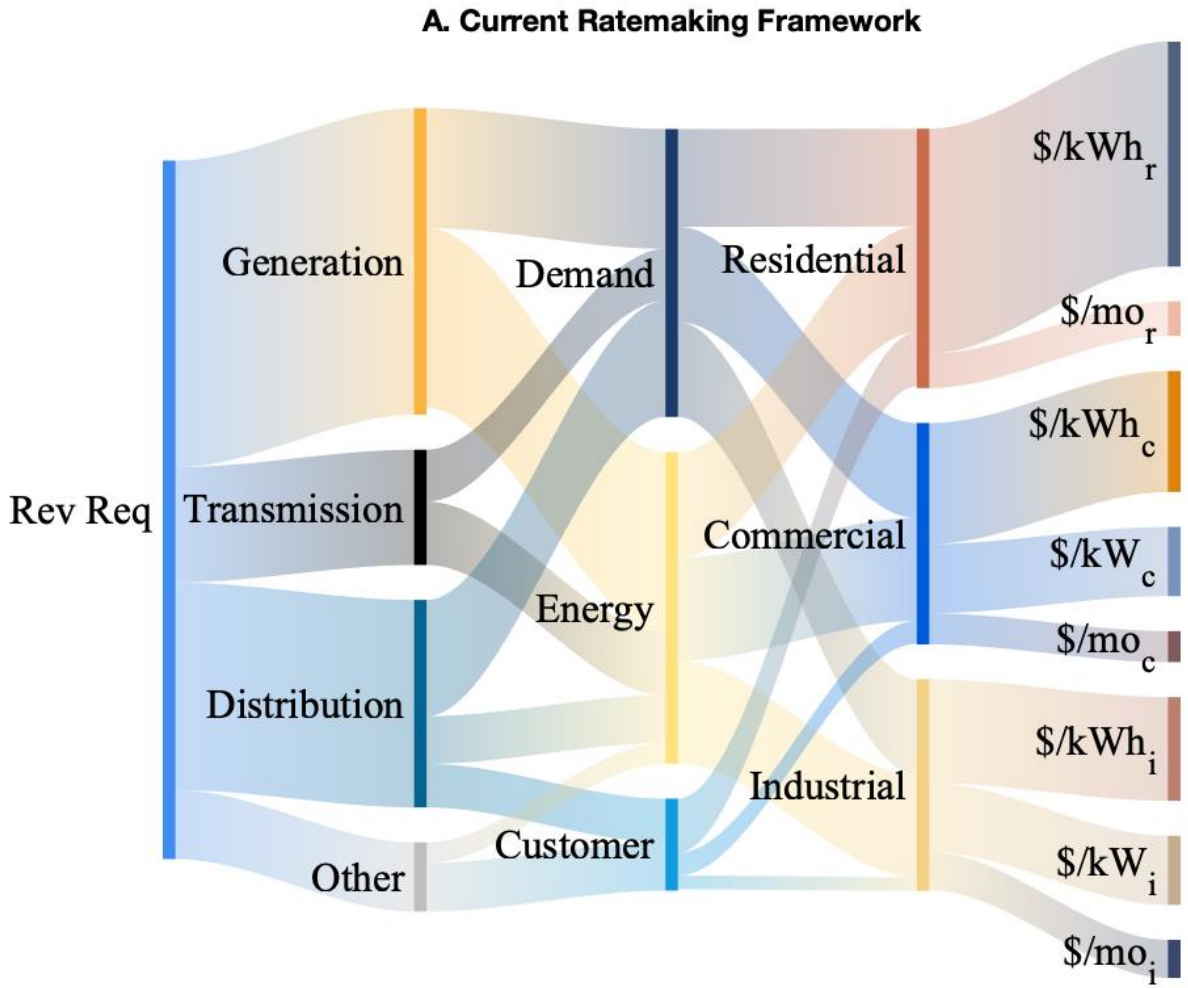
F. Noel Perry, Colleen Kredell ,Marcia E. Perry, Stephanie Leonard, “Paying for Electricity in California”: How residential rate design impacts equity and electrification., 2022

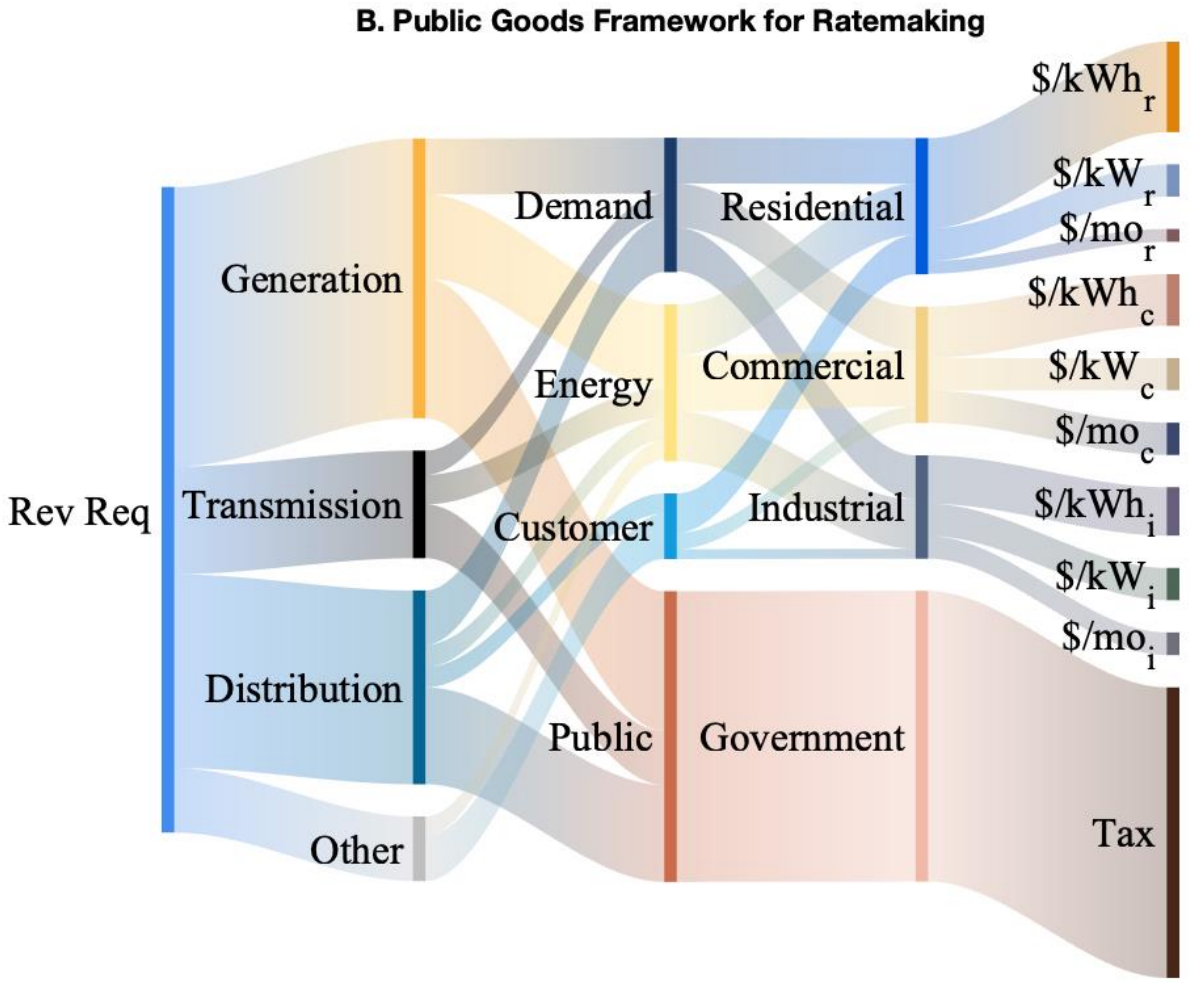
Is the grid a public good?

Perhaps certain aspects of the grid are public goods!

Non-Excludable	Non-Rivalrous	Market Failure
• Once in place, it would be costly or difficult to exclude anyone from benefiting from the good	• One person's use of the good does not diminish the amount of the good available to others	• The inability of the free market to produce the optimal amount of a good.

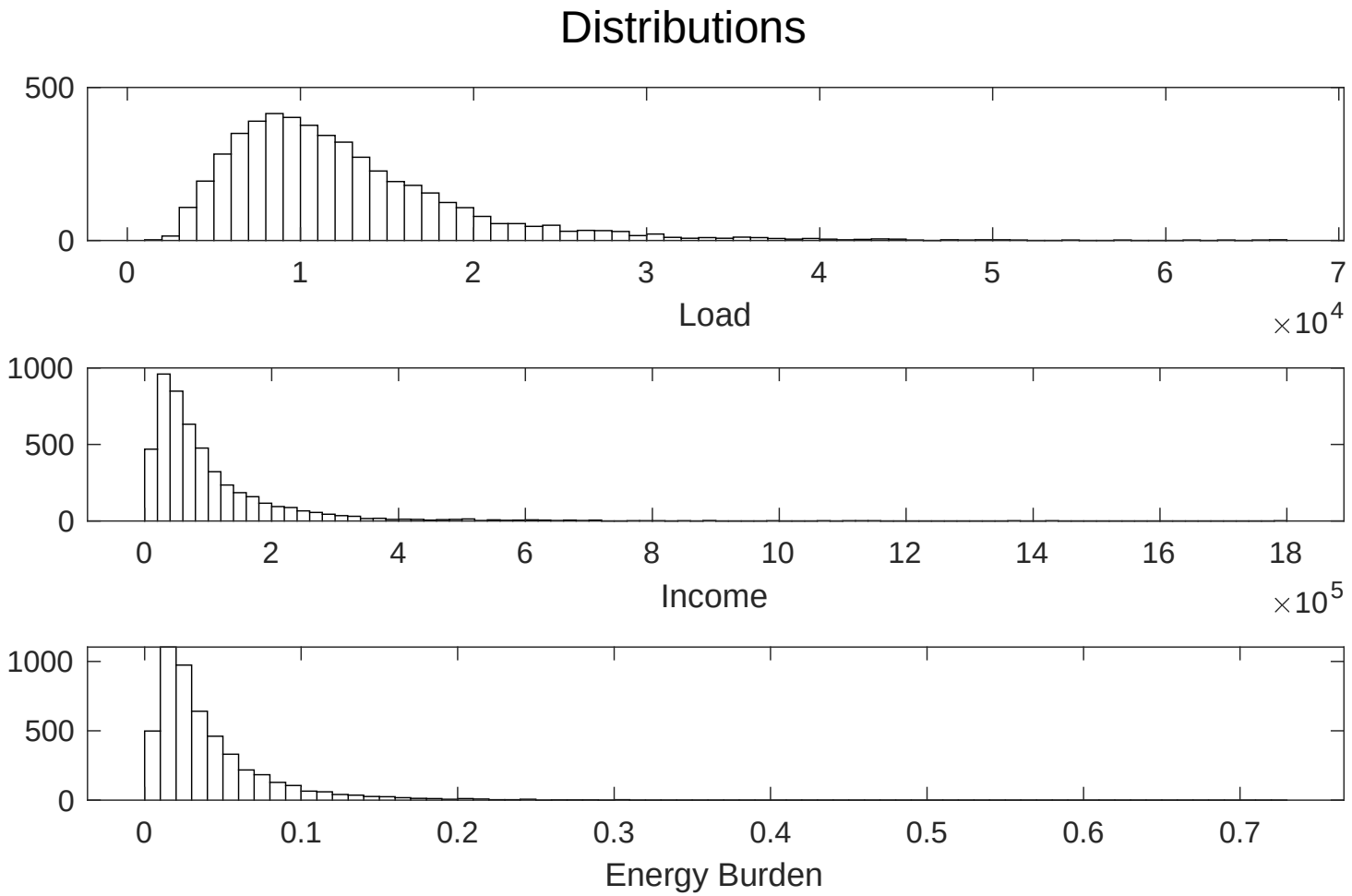
Proposed Ratemaking Framework





Case Study: US 2020

Simulated data



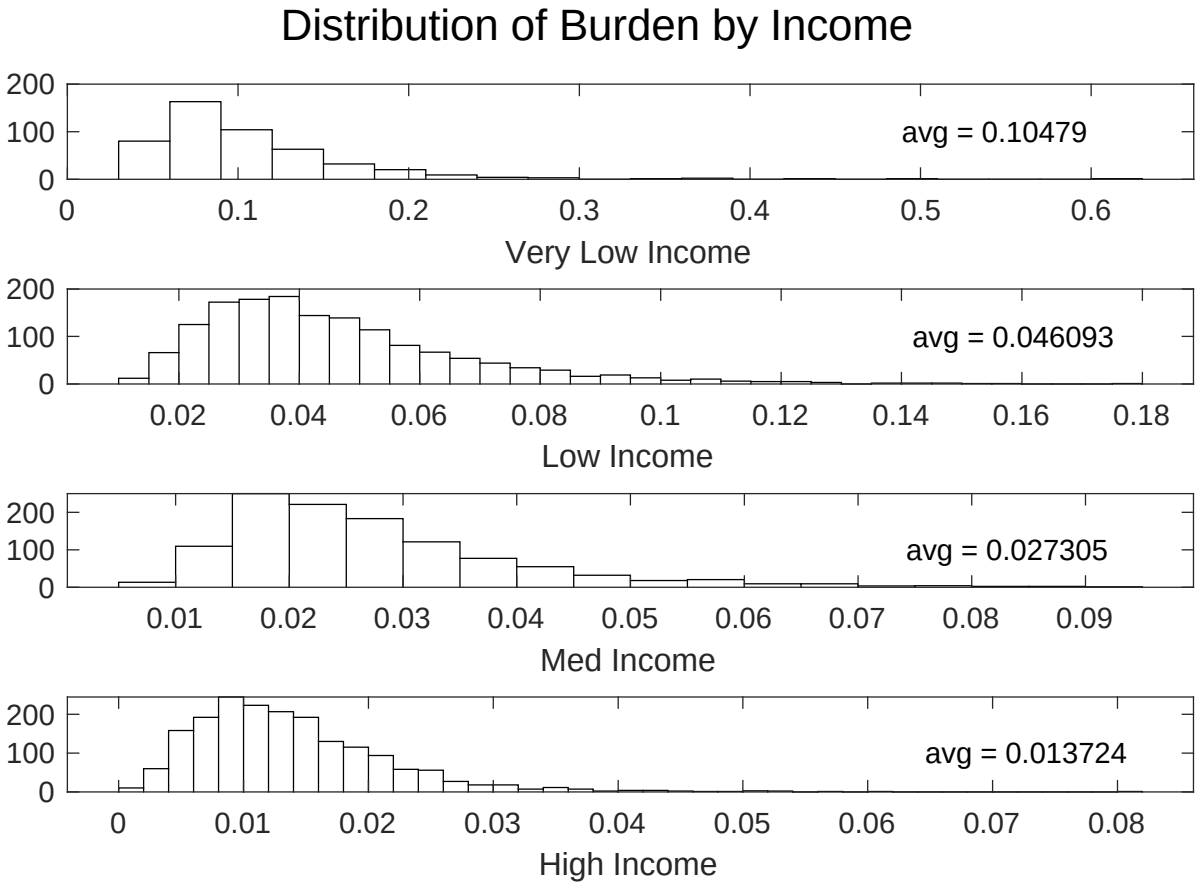
Median Annual Load:
10,800 kWh

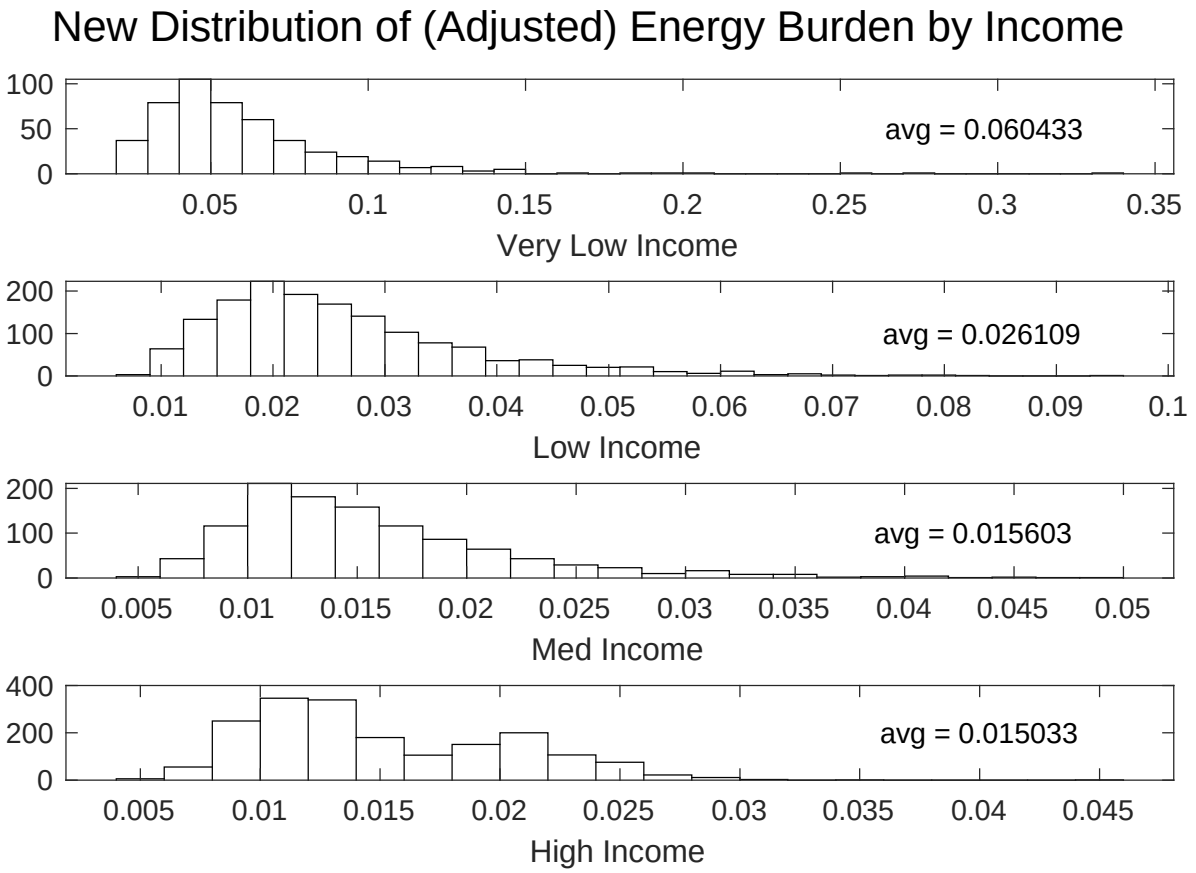
Median Annual Household Income:
$67,521

Median Energy Burden:
3%

Simulated Impact

Energy Burden by income group





Has this been attempted?

1) Ontario Electricity Rebate, 2016
    1) 11%[1] on-bill rebate for homes, small business, farms.
2) Renewable Cost Shift, 2021:
    1) Moves 85% of RE contract costs from ratepayers to the Province
    2) Instituted by conservatives to help businesses

1) Investment Tax Credit for Regionally Significant Electricity Transmission Lines (2021, USA)
    1) 30% tax credit for 22 eligible transmission projects **not** being built today
    2) Proposed by coalition of renewable energy industry entities
    3) Effort shut down by conservatives in congress

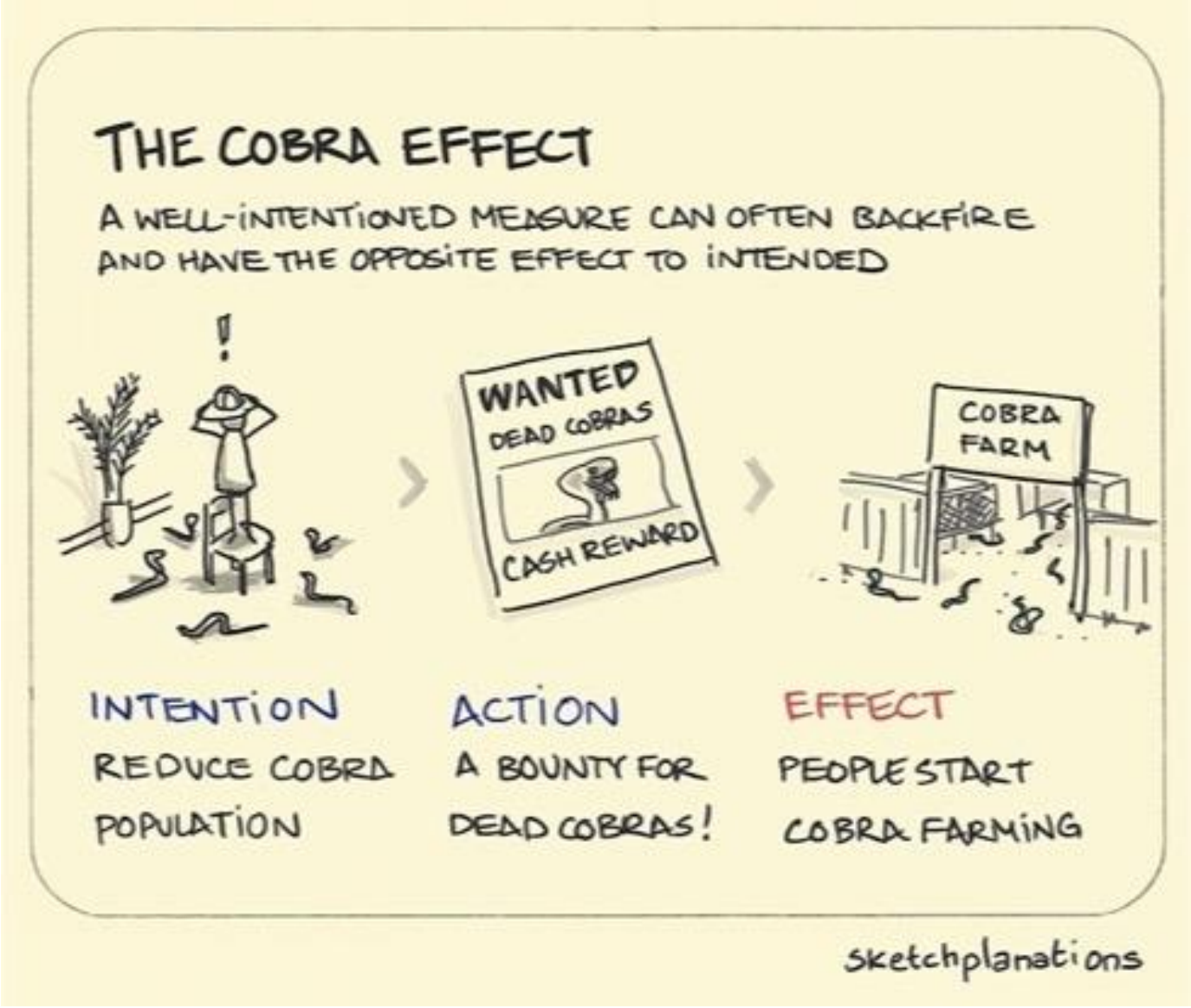
[1]**Varies from year to year**

Conclusions

- As we transition our energy system, utilities' heavy reliance on volumetric rates become increasingly unjust.
- Applying a public goods framework to utility cost recovery and rate-making can help support a transition aligned with the decarbonization, grid edge, reliability, and justice requirements of the grid.
- But….is it a good idea? What might go wrong?

Caution

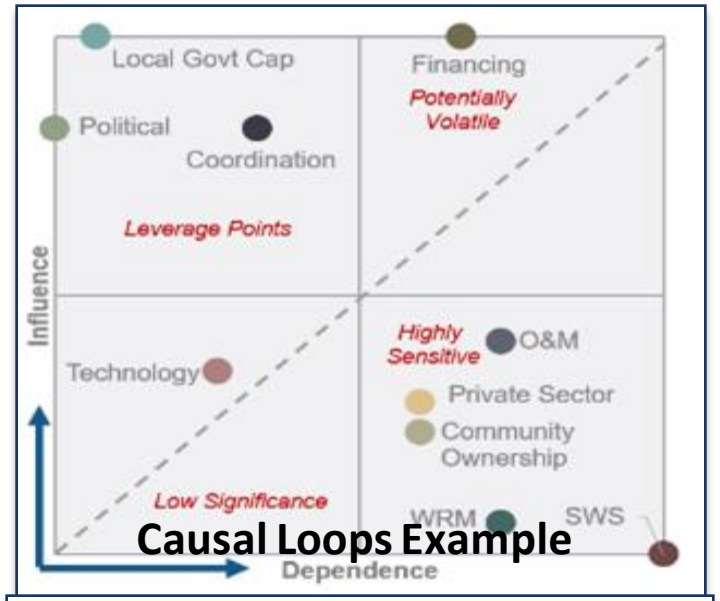
- We use policy interventions to solve societal problems.
- When we treat problems as linear, we neglect the complexity of systems.
- Considering system dynamics, helps us avoid unintended consequences. (Cobra Effect)



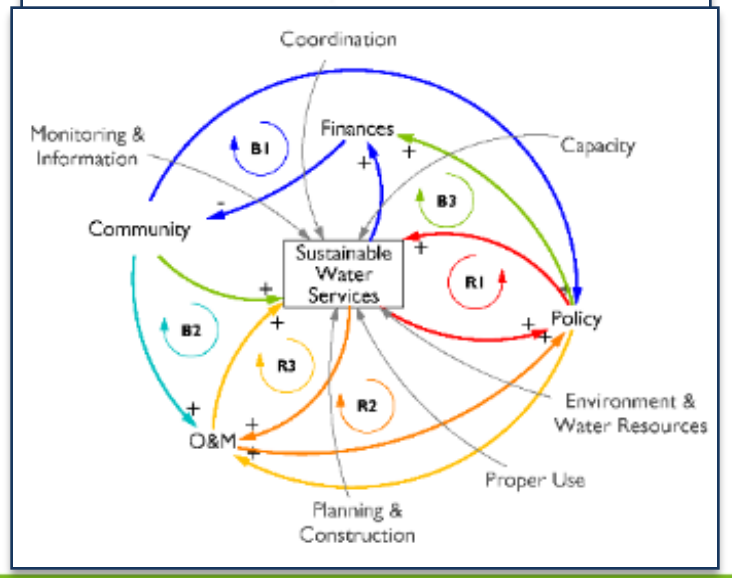
System Dynamics

- System dynamics modeling is a way to understand complex behavior of systems using various tools including:
  - Influence maps
  - Causal loop diagrams
  - Stock and flow diagrams
- Helps identify effective policy interventions

Influence Maps Example



Causal Loops Example



Thank you