



STRATA
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The Unintended Consequences of Federal & State Electricity Policy

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What is Strata?

Our Mission: "Help people make informed decisions about issues that impact the freedom to live their lives."

We accomplish this in 2 ways:

1. Academic research on energy and the environment
2. Mentoring students on writing and professional skills

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Unintended Consequences: Green vs. Green

- Regulations intended to apply to large dams discourage small hydropower
- Logan City planned to install a turbine within an existing pipeline in 2009
- Due to onerous one-size-fits-all regulations, the project ended up costing \$3 million dollars (double the city's estimated cost) and taking 4 years
- The project will not break even for 50 years





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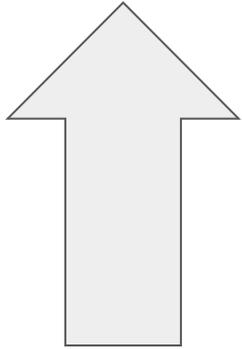
Roadmap

- Why is it so hard to predict what the consequences of policies will be?
- What are the biggest unintended consequences of federal and state energy policy?
- Who benefits?
- Who bears the costs?

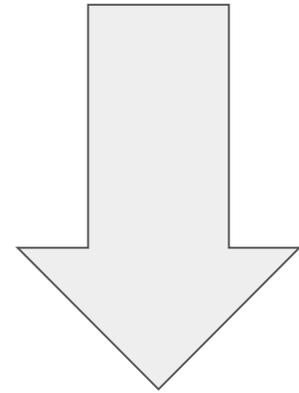
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Electricity Policy in the U.S. Today



Renewable Energy



Conventional Energy

Why do policies have unintended consequences?

- Policies that boost renewables or discourage conventional sources are enacted for environmental goals
- We can better understand why unintended consequences result by critically examining the policymaking process
- The policymaking process is messy



The Knowledge Problem

Matter

- Policymakers have good intentions
- Energy policy is complicated
- It's hard to know what all of the effects of a policy will be

Incentives

- People with different values and interests lobby to have their interests represented
- Policymakers might want to be perceived as "green" to get votes
- Energy producers want subsidies because they profit directly
- Contradictory policies and laws result

Trade-offs and unintended consequences

Negative economic consequences

- Jobs
- Electricity rates

Reduced reliability



2 Types of Federal Policies:

Subsidies

Regulations



Subsidies create hidden costs

On the surface, reduce costs
transfer costs



BUT

Electricity
Producers
benefit



In reality,

Taxpayers
foot the bill

Subsidies Discourage Innovation

- The Production Tax Credit provides \$23 per megawatt-hour for producers of wind, biomass, and geothermal
- Once granted, producers receive the PTC for 10 years
- If you are guaranteed a subsidy for 10 years, you have less incentive to improve your technology
- There are better ways to encourage renewables without



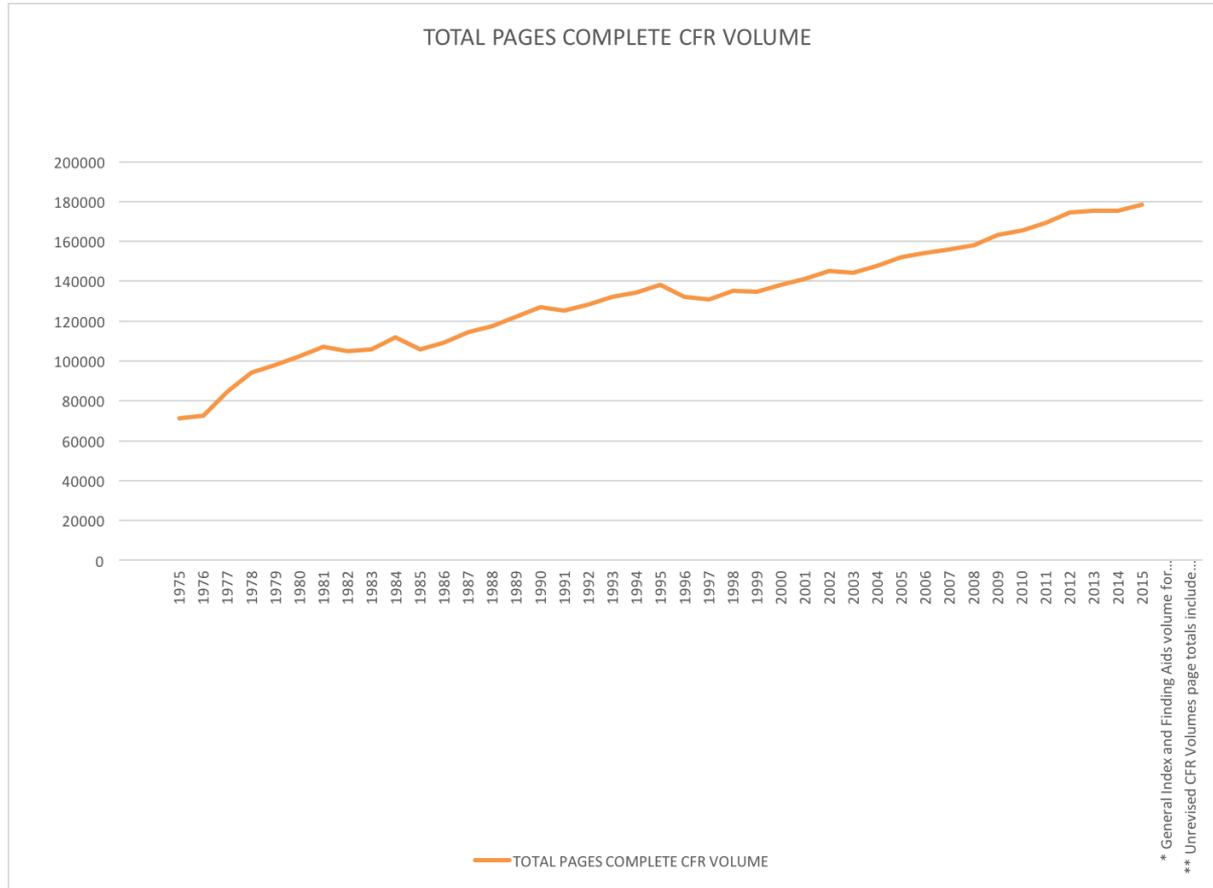
Subsidies vs. Electricity Generation by Source

Electricity Source	% Federal Support	% Total Generation
Coal	6	39
Natural Gas	4	28
Nuclear	10	19.4
Solar	27	0.4
Wind	37	4.1
Other (includes renewable and nonrenewable sources)	16	8.5
Total	100	99.4

Regulations have both benefits and costs

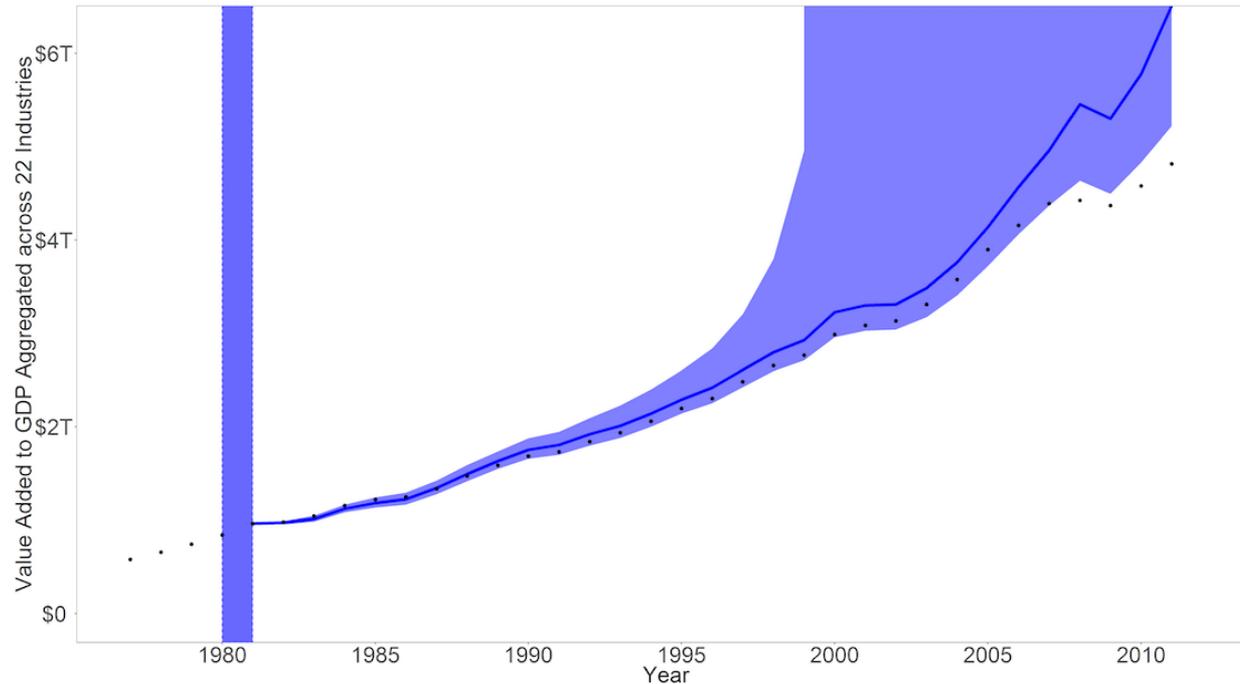
- Regulations have benefits in the form of increased safety, health outcomes, a cleaner environment, etc.
- Regulations also have costs because they require companies and individuals to act differently than they otherwise would.

Regulations have accumulated over time



Regulations slow economic growth

Figure 1. Factual (Dots) and Counterfactual (Blue Line) Value Added to GDP, with 90 Percent Confidence Interval



- Economic growth has been slowed by 0.8 percent per year since 1980
- Loss of \$13,000 per capita

The Clean Power Plan



On September 27th the US Court of Appeals for the DC Circuit heard arguments against the CPP
24 states joined the lawsuit against the CPP
The fate of the rule is still undetermined

The Knowledge Problem in Action

Cost estimates vary wildly:

EPA estimates \$26 to \$45 billion in net benefits

NERA Consulting estimates \$366 to \$479 billion in costs to consumers



State energy policies have trade-offs and unintended consequences

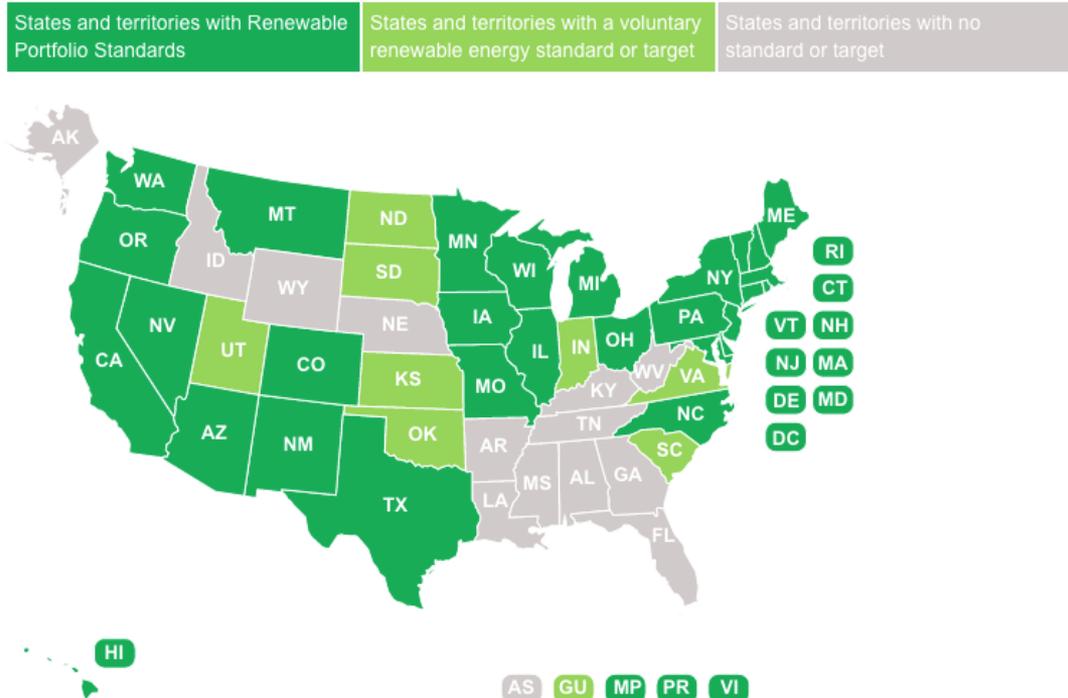
Renewable Portfolio Standards

Net Metering



Renewable Portfolio Standards (RPS)

- Mandates that a minimum percentage of a state's electricity come from renewables
- 29 states + D.C. have RPS
- Mandating renewables raises costs because renewables are often more expensive than conventional sources



RPS have negative impacts on families



- Similar findings in: Pennsylvania, Michigan, Ohio, North Carolina
- Strata is planning to complete studies on all states with RPS

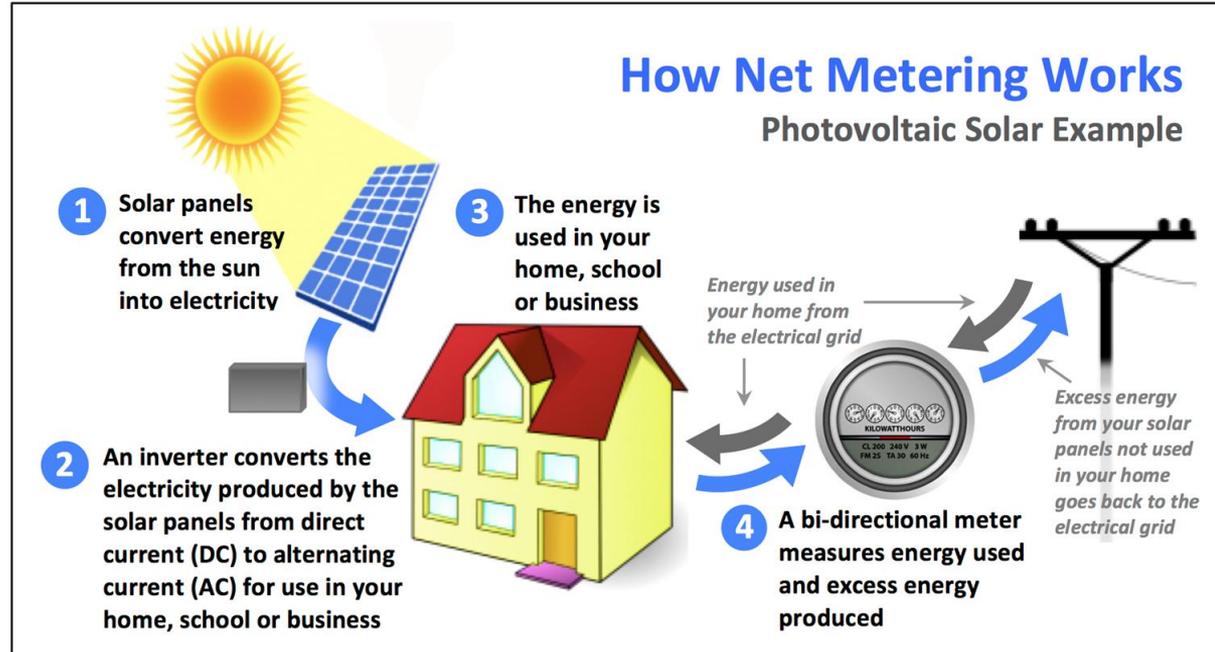
RPS hurt low-income people the most

- Recent study by professor at University of Wyoming
- 2016 net costs for 12 states studied: \$5.762 billion
- Electricity rate increases in all 12 states studied



Net Metering

- State policies that allow rooftop solar customers to sell their excess electricity back to the grid, often at retail rates
- 44 states have enacted net metering



Net metering hurts low-income Americans

- Those who own solar panels tend to be wealthier
- Net metering customers don't pay to use the grid
- Non-solar neighbors are subsidizing their use of the grid
- Low-income people pay for wealthier people to have solar panels

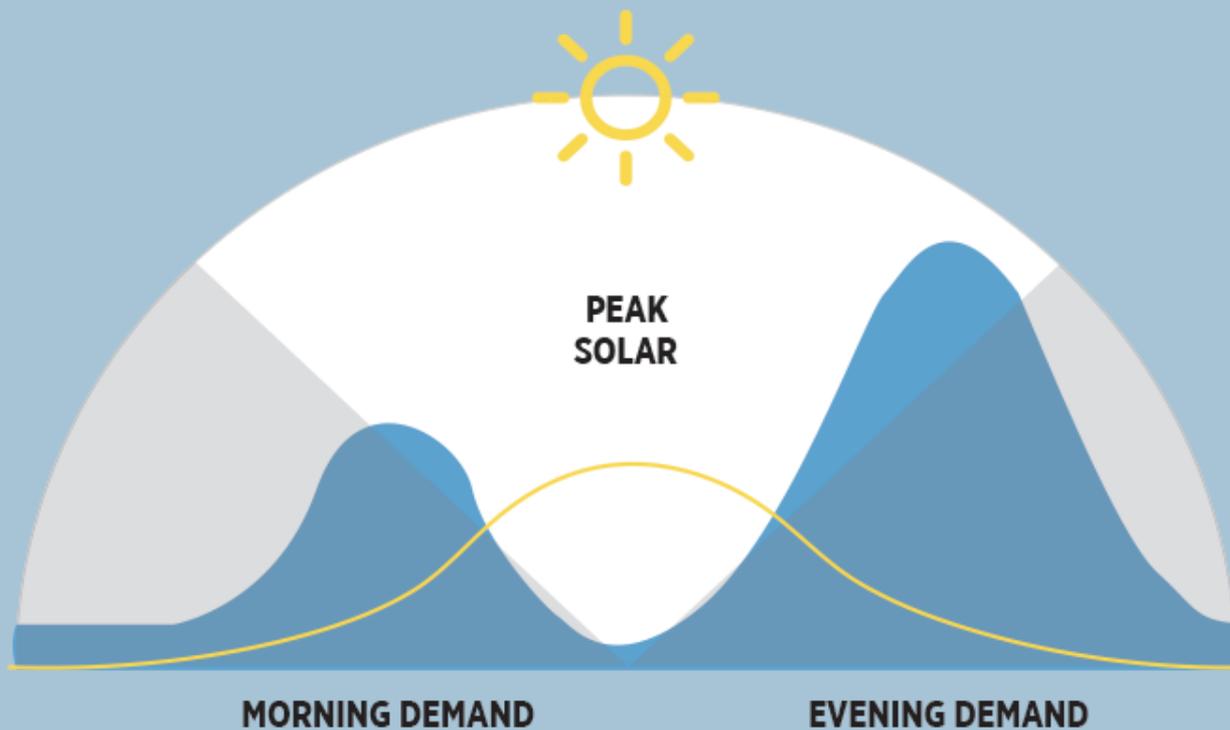


Federal & state energy policy reduce reliability

- Not all sources of electricity are created equal
- Energy produced from wind and solar can't be used on demand
- The most heavily subsidized forms of electricity are also the least reliable



GOVERNMENT POLICIES ENCOURAGE MORE SOLAR POWER, BUT SOLAR CANNOT MEET PEAK ELECTRICITY DEMAND.



Overall Effects of Federal & State Energy Policy

Create Winners And Losers



I will do anything that is basically covered by the law to reduce Berkshire's tax rate. For example, on wind energy, we get a tax credit if we build a lot of wind farms. That's the only reason to build them. They don't make sense without the tax credit.

— Warren Buffett —

AZ QUOTES



Lessons for Policymakers

- The knowledge problem and the political problem create unintended consequences for energy policies
- Those unintended consequences include higher costs and reduced reliability
- American taxpayers and electricity consumers bear the burden

Check us out at strata.org...

- Reliability of Renewable Energy
- The Unseen Costs of Electricity Policy
- Renewable Portfolio Standards - state-based reports

Additional research:

- Public land management

State level water markets



How good intentions backfire

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