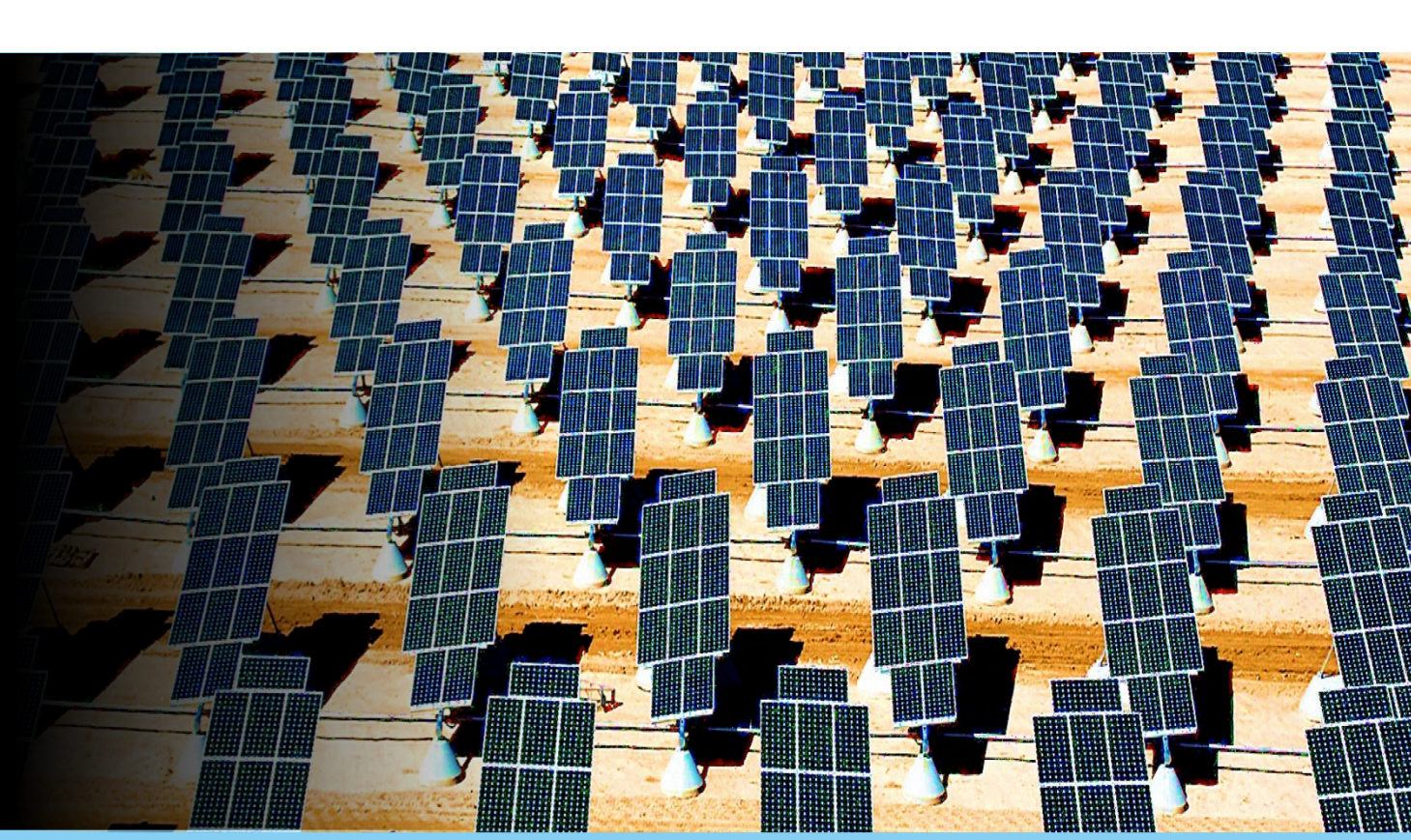


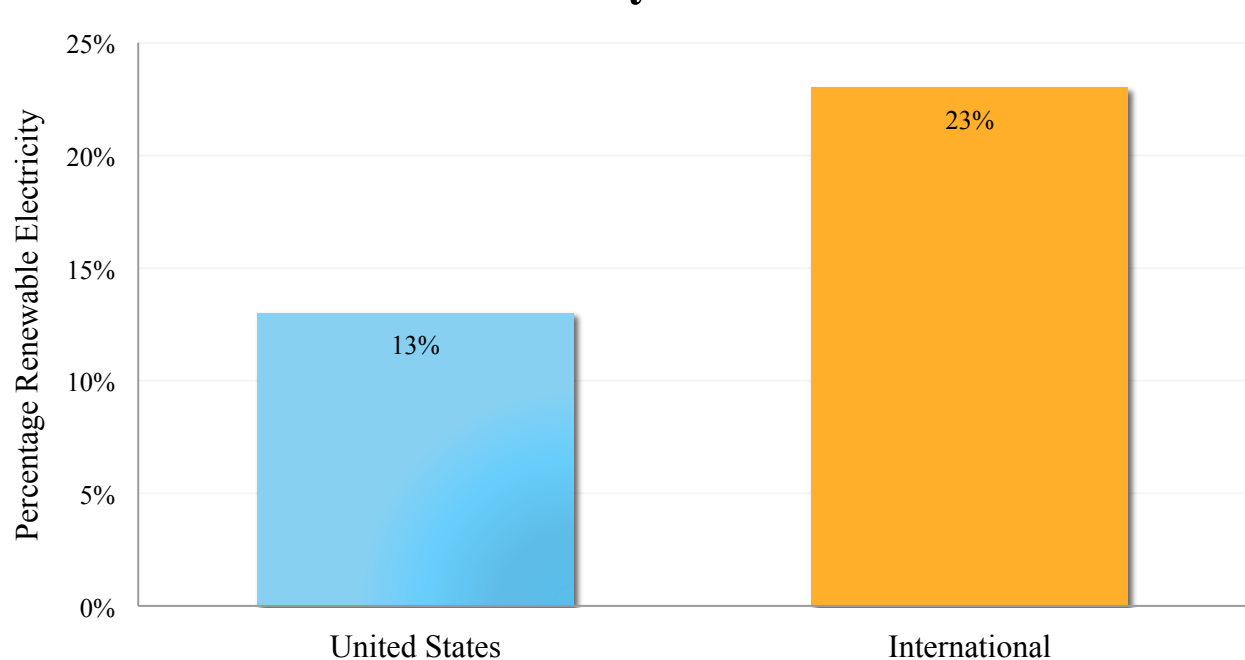
Rethinking Energy: A Comparative Analysis of U.S. Energy Policy on Renewable Development



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The Problem

Renewable Electricity Generated in 2012



Research Questions

- Why is the U.S. behind?
- Which policy best instigates renewable generation?
- What influence does each policy have on different forms of renewable energy production?
- Is the U.S. government pursuing the correct energy policies?

Overview

- Explain why numerous U.S. federal energy policies have not stimulated robust renewable development
- Evaluate the feed-in-tariff, grant, and tax credit policies
- Determine the varying influences of each state level policy on total renewable, non-hydro renewable, wind, and solar electricity generation
- Find that the FIT policy best stimulates all forms of renewable energy production
- Discover that the tax credit is moderately more effectual than the grant policy, though both stimulate less renewable energy generation than the FIT
- Show that the U.S. is pursuing erroneous federal renewable energy policy

Background

Feed-in-tariff

- **Positive**
- Extremely effective
- Best stimulates solar

- **Negative**
- Expensive when improperly regulated
- Difficult to initiate projects

Grant

- **Positive**
- Effective
- Best incentivizes solar

- **Negative**
- Free ridership
- Investment over performance
- Promotes overseas renewable manufacturing

Tax Credit

- **Positive**
- Moderately effective
- Best instigates wind

- **Negative**
- Certain organizations cannot utilize policy

Variables & Controls

Independent Variables

- Feed-in-tariff policy
- Grant policy
- Tax credit policy

Dependent Variables

- Total renewable electricity
- Total renewable electricity excluding hydropower
- Wind electricity
- Solar electricity

Controls

- State renewable energy potential
- Liberal political preferences
- Income per capita

Methodology

Three approaches are used to determine the effect of each policy on renewable generation:

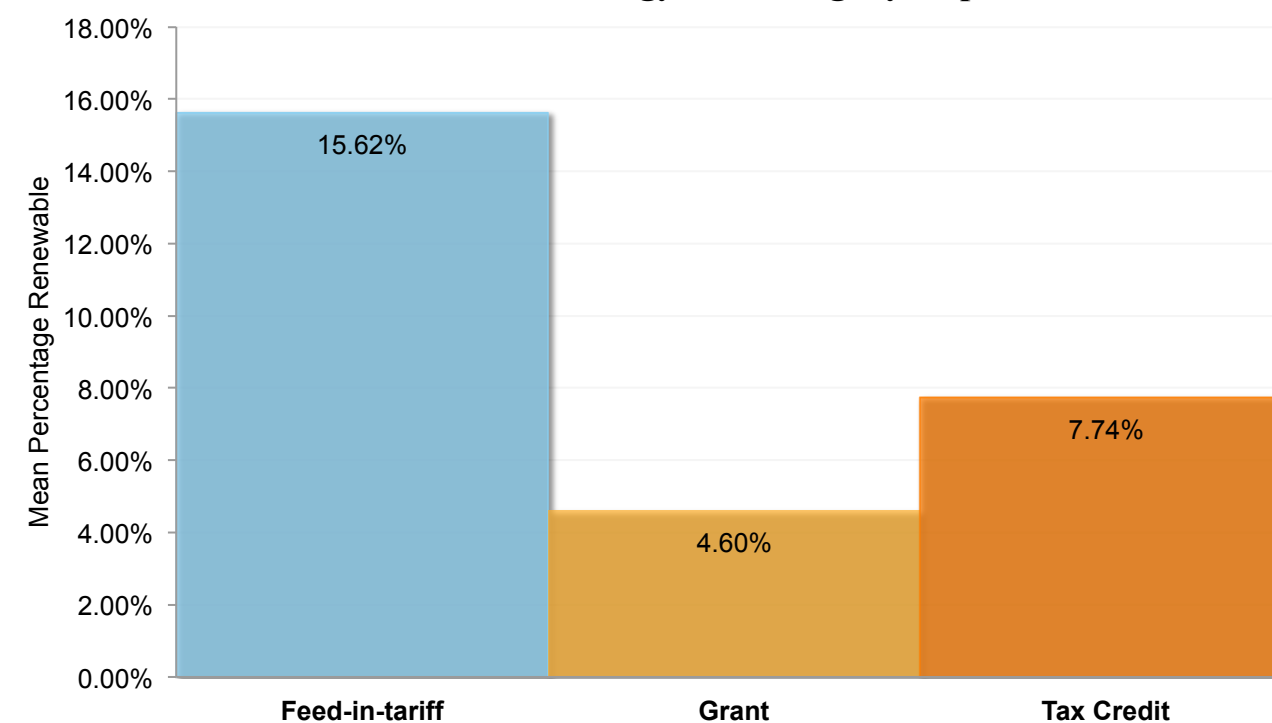
- Identifying the use of each policy in the ten highest and lowest renewable electricity generating states
- Comparing total state generation for different renewable energies in states with and without each policy
- Comparing the growth in renewable energy production in states with and without each policy

Two methods are employed to eliminate confounders:

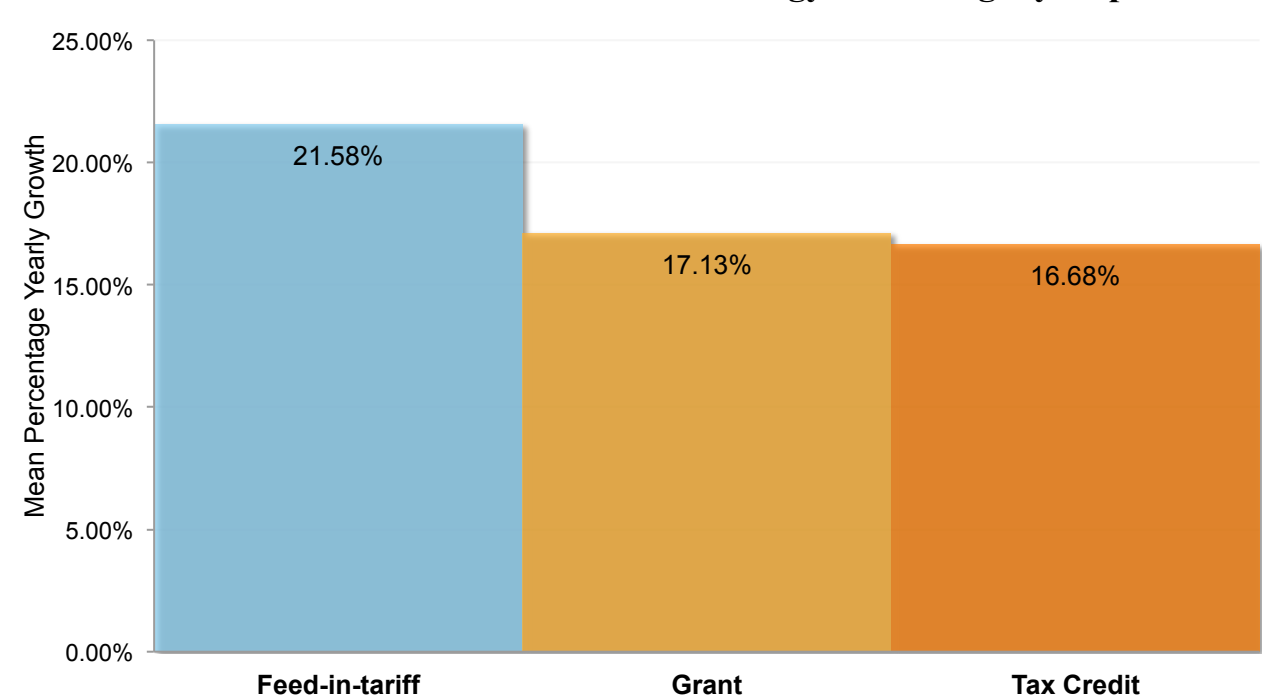
- Contrasting the foremost renewable energy producing states with highest states for each control
- Multivariate regression

Results

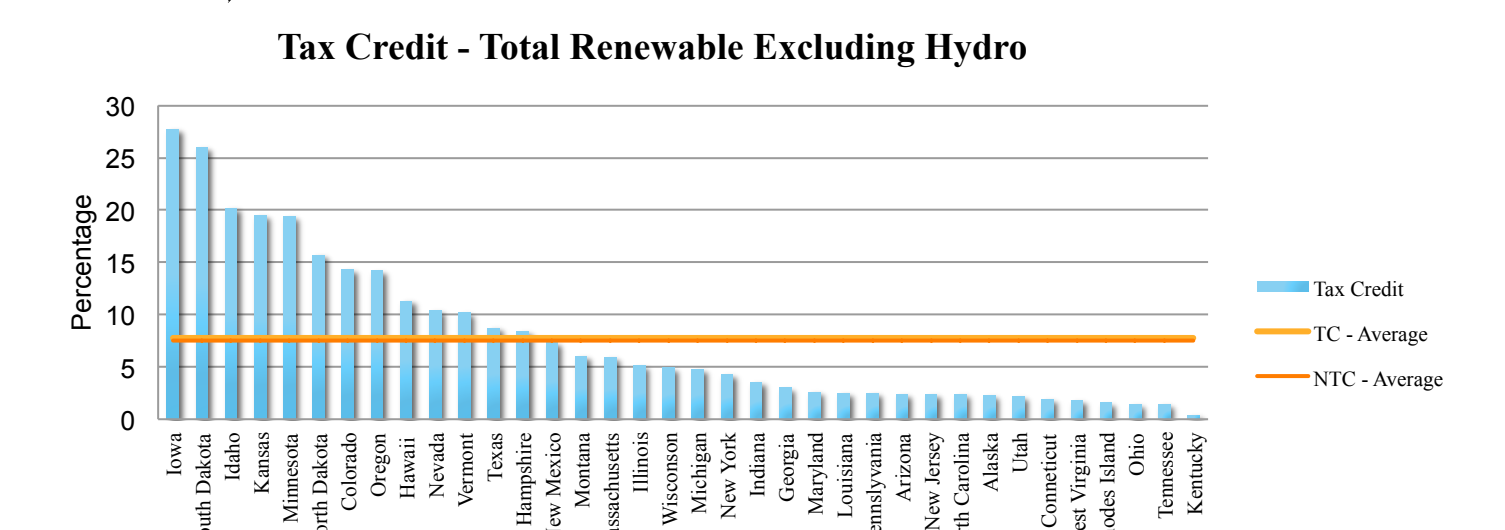
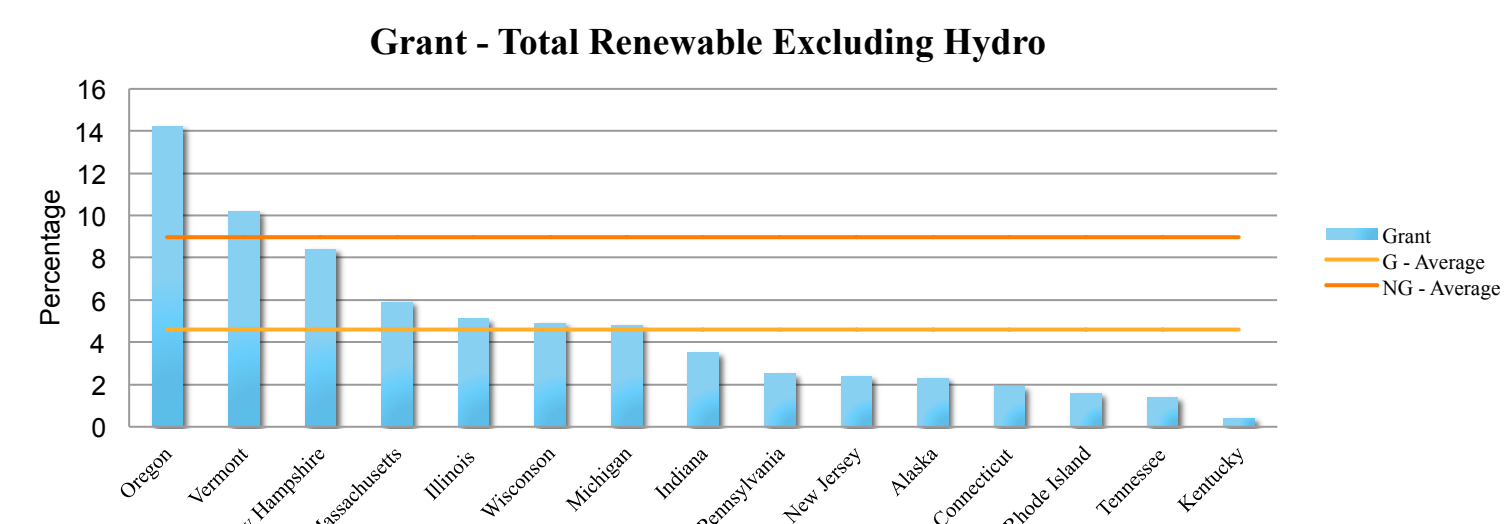
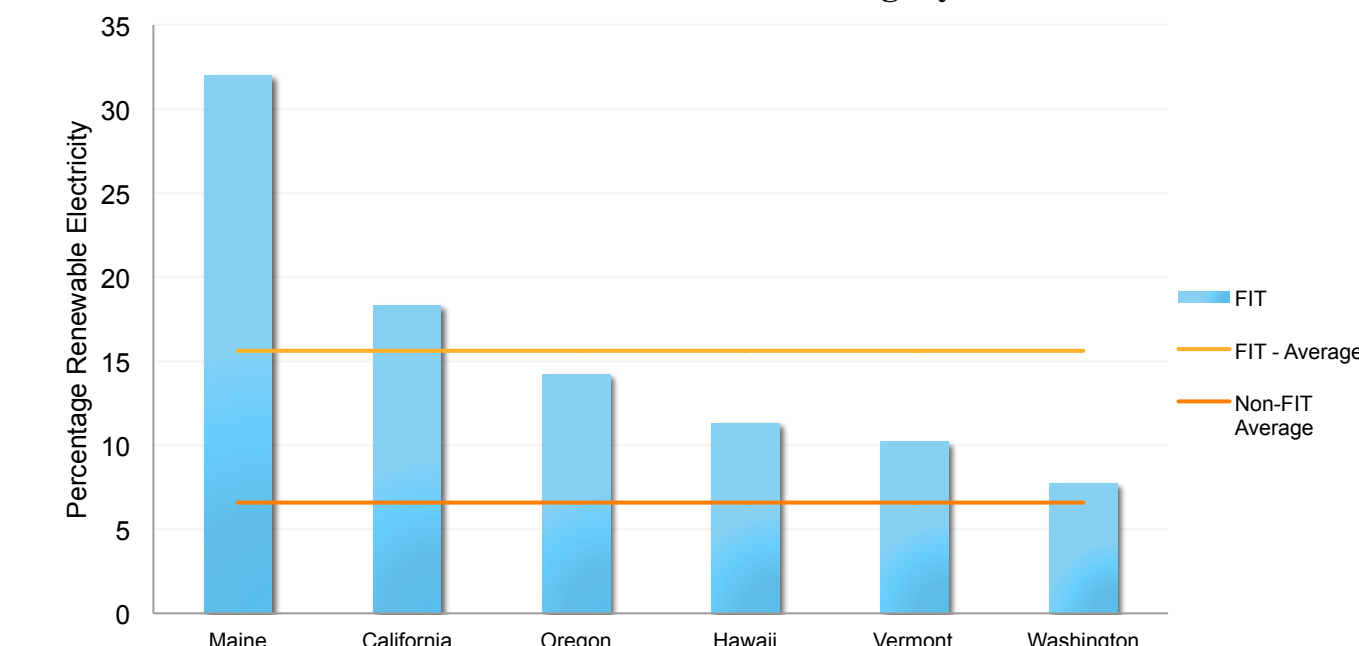
Total - Renewable Energy Excluding Hydropower



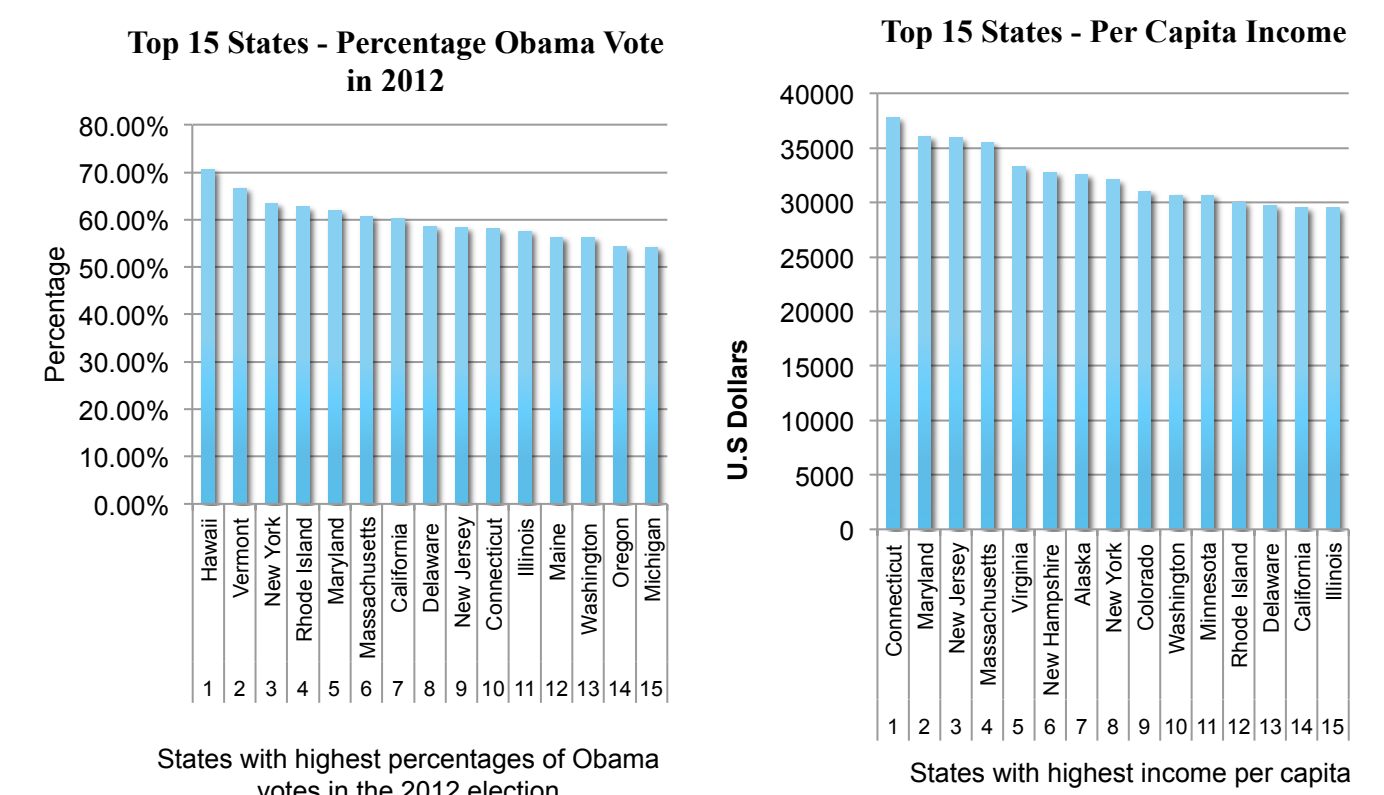
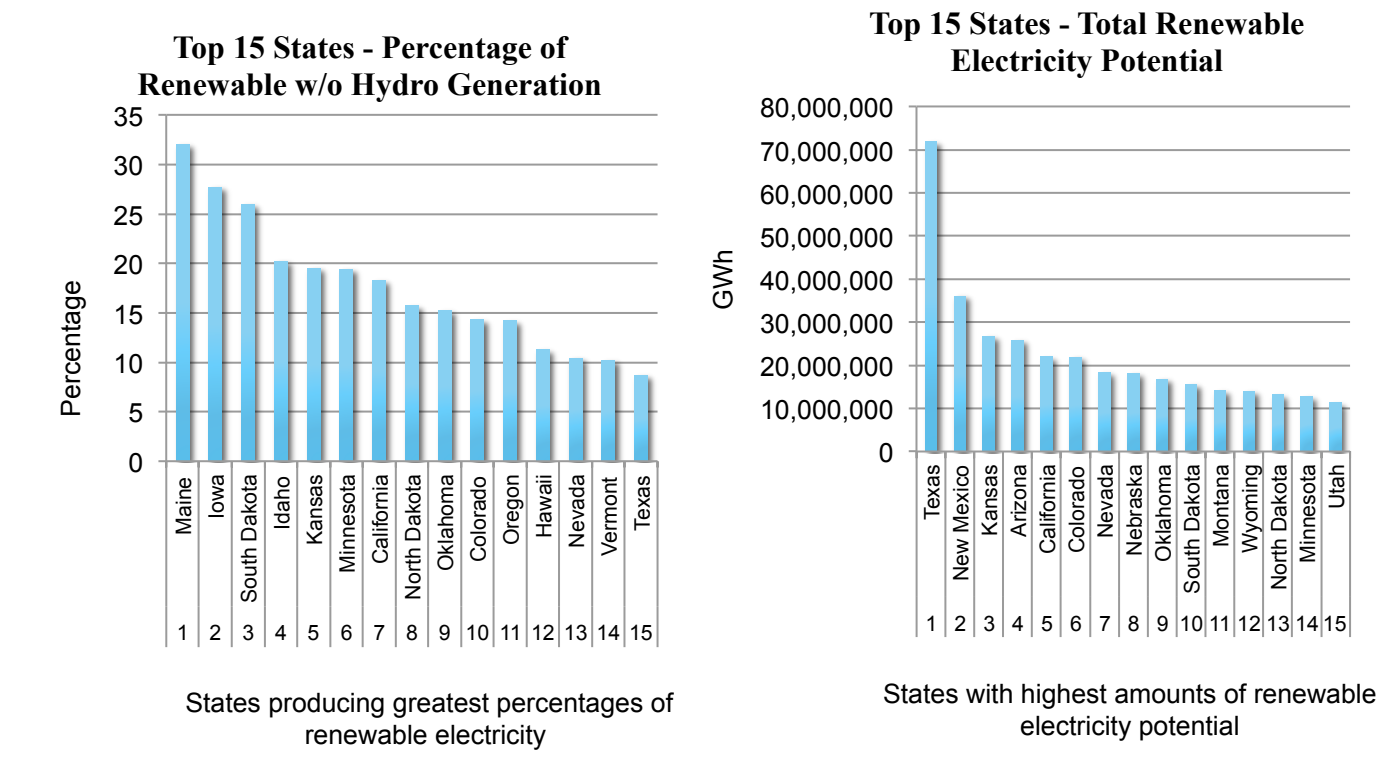
Growth 2012 to 2013 - Renewable Energy Excluding Hydropower



FIT - Total Renewable Excluding Hydro



Controls



Conclusion

Feed-in-tariff

- Best incentivizes overall renewable electricity, both total and annual growth
- Most effective in stimulating wind and solar, both total and annual growth

Grant

- Ineffective in stimulating total renewable electricity development
- Positive impact on recent solar and wind growth, but ranks lower than FIT and tax

Tax Credit

- Slightly effectual in instigating total renewable energy development
- Moderate impact on positive solar and wind production, both total and annual growth

Implications & Next Steps

- The United States is ratifying the wrong renewable energy policies
- Congress must introduce a federal FIT
- Analyze policies on a dollar spent to KWh generated basis
- Add additional control of states' fossil fuel potential