DEPARTMENT OF ECONOMICS

Residential Solar Market and Utility Policy in New Mexico

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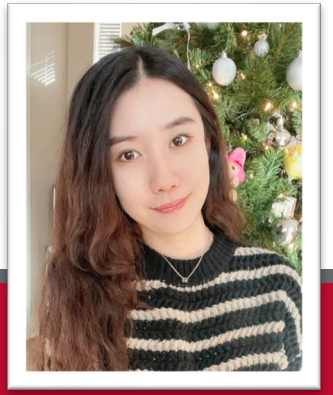
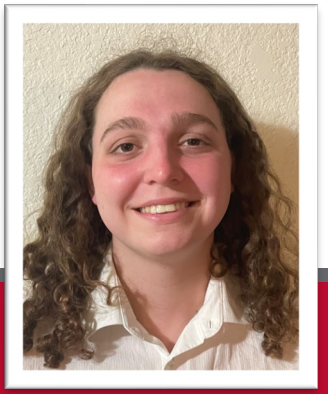
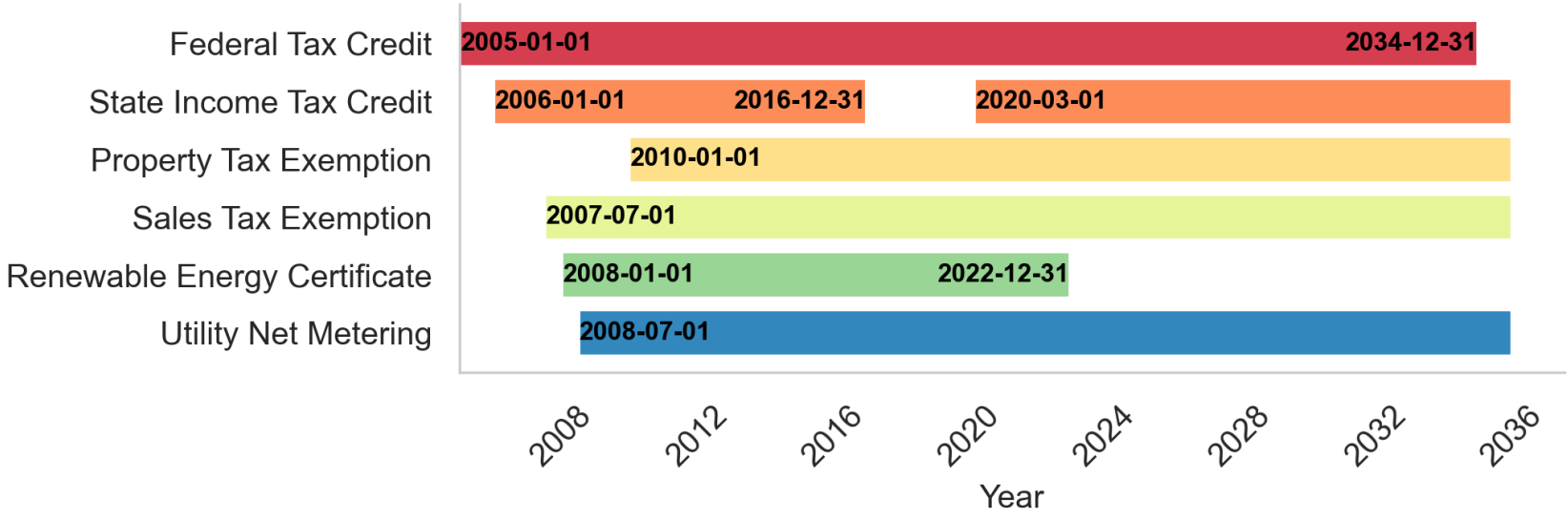




Impact of policies on solar adoption

- Solar power is central to New Mexico's renewable energy goals
- Over 6% of NM households now have rooftop solar
- Policy choices impact:
  - Affordability of solar
  - Who benefits from incentives
  - How quickly we can meet climate goals



Research Questions

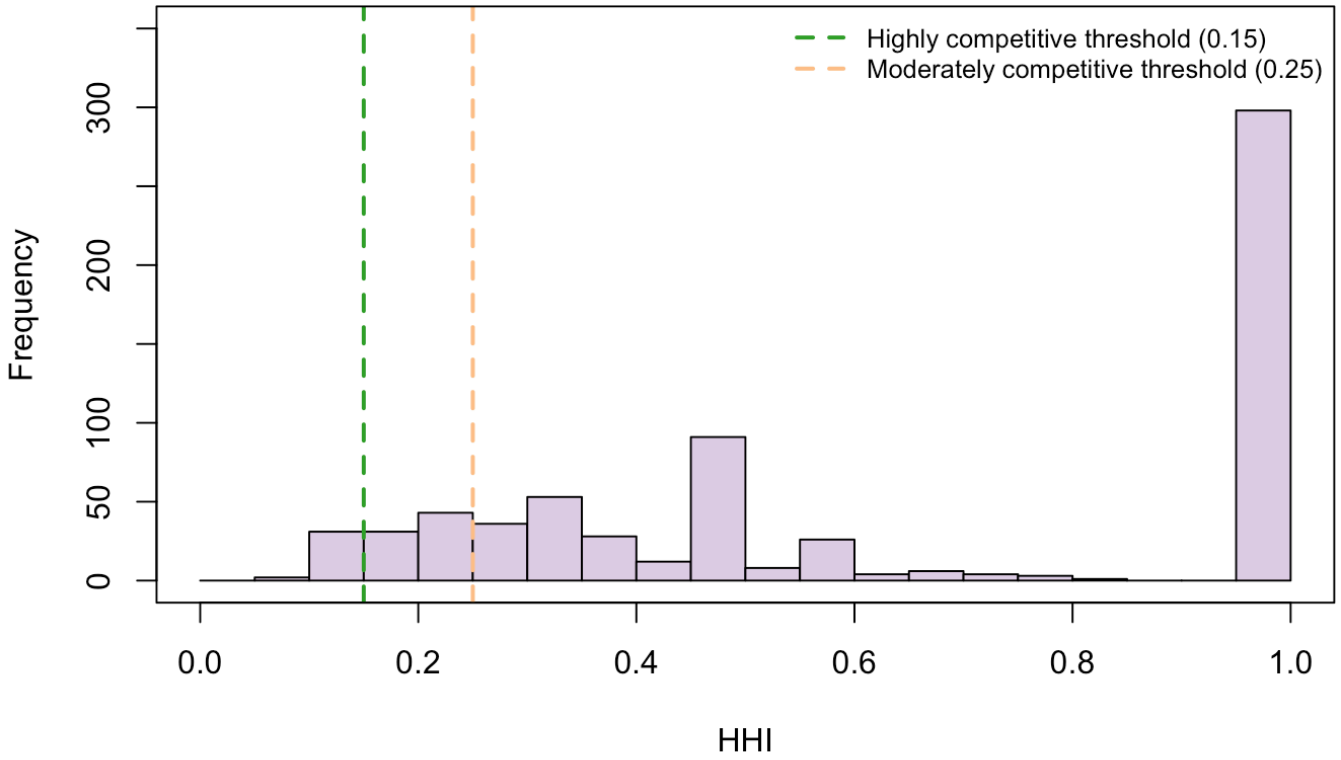
- Are there market structure differences across NM cities? Does market concentration affect solar prices?
- How do **state solar tax credit** and **net energy metering** policies influence:
  - Firm entry and competition
  - Installation prices
  - System sizes households choose to install

What is Market Concentration?

- Measured by **Herfindahl-Hirschman Index** (HHI)
  - Low HHI = many competing installers
  - High HHI = few dominant installers
- Why it matters:
  - High competition → pressure to keep prices low
  - High concentration → risk of higher prices

New Mexico's Solar Market Landscape

- Many **rural** areas have only 1–2 installers (high HHI)
- Urban markets show more competition but still some concentration
- Prices higher in concentrated urban markets; mixed results in rural areas



Policy Tools We Examined

- Solar Tax Credit:
  - Reduces upfront cost by 30% (federal) + 10% (state when active)
  - Lowers upfront prices
- Net Energy Metering:
  - Credits households for extra electricity sent to the grid
  - Structures differ (monthly true-up vs. credit rollover)
  - Affects long-term investment benefits

Key Findings: Market Concentration & Prices

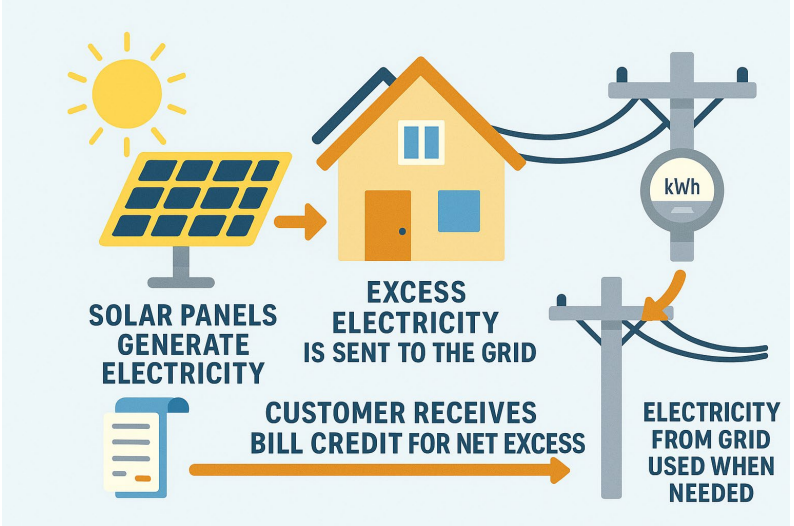
- NM: Higher HHI leads to higher prices only in highly concentrated urban markets (HHI>0.25)
- Nationally: Higher HHI → higher prices in all markets
- Non-linear effect of higher market concentration and price:
  - Market concentration increases price → market power
  - Market concentration reduces price → economy of scale
  - In competitive NM markets, slight increases in concentration sometimes lowered prices (efficiency gains)

Key Findings: Policy Effects on Competition & Prices (U.S. sample)

- Solar tax credits:
  - More installers enter the market
  - Lower market concentration → more competition → lower prices
- Net metering:
  - In already competitive markets (low HHI): fewer installers, more concentration, slightly higher prices

Key Findings: Net Metering Design Shapes System Size

- Credit Rollover (PNM)
  - Unused electricity credits carry forward indefinitely
- Monthly True-Up (EPE)
  - Excess generation paid at wholesale rate each month (lower than retail)
- Impact:
  - Rollover → bigger installations, faster capacity growth
  - True-up → gradual adoption, easier on grid
  - Policy lever: NEM structure can guide growth pace & manage grid stability



Takeaways for New Mexico

- Given the current stage of solar market development slightly concentrate markets may bring efficiency gains
- Solar tax credit drives both competition and affordability
- Net energy metering impacts not market prices but how big systems are
- Careful policy design can balance growth, equity, and grid stability

Thanks!

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