



Equitably Transforming the Connecticut Solar Market

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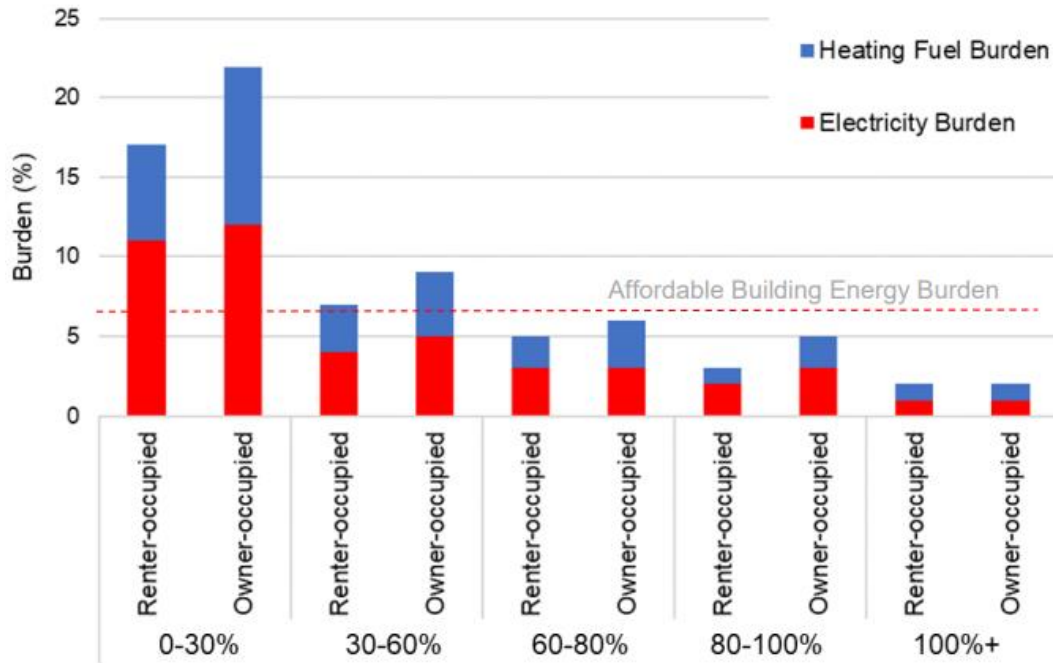
November 14, 2023

Residential Solar Investment Program

- **Section 106 of Public Act 11-80** – policy passed in **July of 2011** that creates the **Residential Solar Investment Program**, a declining incentive program (e.g., EPBB and PBI) administered by the CGB to deliver **no less than 30 MW** of new residential solar PV by the **end of 2022**, while **“fostering the sustained, orderly development of local solar industry”**
- **Public Act 15-194** – policy passed in **July of 2015** that builds on the Residential Solar Investment Program by requiring the **EDC’s** to purchase **SHRECs** through **15-year MPA** at a **price set by the CGB** to deliver **no more than 300 MW** of new residential solar PV by the **end of 2022**.
- **Public Act 19-35** – expanded RSIP by 50 MW to **350 MW by the end of 2022**
- **Supported 376.90 MW-DC** residential solar capacity prior to 12/31/2022

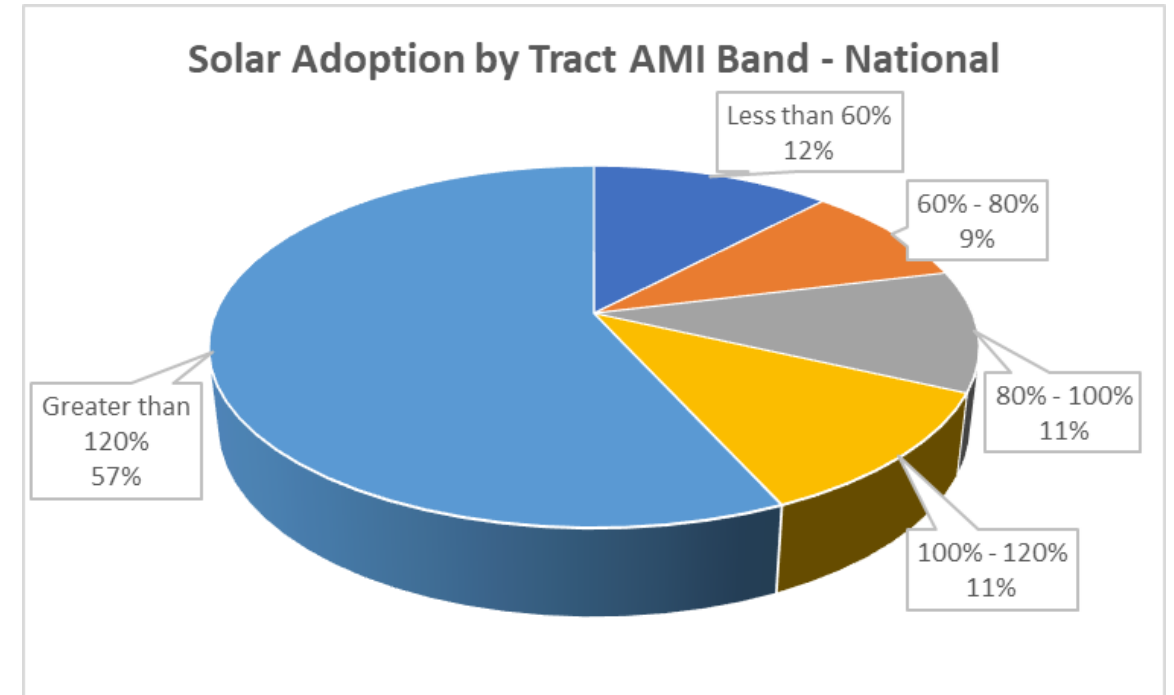
Disconnect: Energy Burden and Residential Solar

Who is Energy Burdened?



- Most severe for very low-income households
- Risk for all low-income households

Who Benefits from Residential Solar?



- Over half of residential solar in affluent areas
- 21 percent in low-income census tracts

Evaluation Objectives

Assess RSIP's Impact and Effectiveness

- Cumulative Impacts
- Trends
- Equitable* delivery

Compare RSIP with Northeast Residential Solar Programs

- Capacity
- Cost-effectiveness
- Equitable* adoption

Share Lessons Learned

- Successes and challenges
- Future role for the Connecticut Green Bank

*For this evaluation, “equitable” delivery and adoption were understood as participation levels across income and demographic groups in which participation by LMI and historically underserved groups was equal to or greater than that group’s representation in the overall market.



Residential Solar: Barriers and Interventions

Barriers

- High first costs
- Low access to credit and financing
- Lack of developer engagement
- Informational and technical obstacles

RSIP Interventions

- Program-supported loans, leases, and PPAs
- Credit enhancements to private capital
- Solar for All and Solarize initiatives
- Green Bank's trusted convener

“Solar is sold, not bought”

-Theme repeated by multiple CT residential solar stakeholders





Key RSIP Interventions

Barriers to Residential Solar Low Income Adoption



Affordable and Accessible Solar for All: Barriers, Solutions, and On-Site Adoption Potential

Jenny Heeter, Ashok Sekar, Emily Fekete, Monisha Shah, and Jeffrey J. Cook

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Technical Report
NREL/TP-6A20-80532
September 2021

1. Finance and Funding

- ❖ Inability to afford an upfront payment
- ❖ Difficulty accessing low-cost financing options for low or no credit score
- ❖ Limited LMI specific incentives, credits, or financing mechanisms to bring down cost of solar and enable bill savings from day one
- ❖ LMI households without tax appetite to benefit directly from the federal investment tax credit
- ❖ And more...

2. Community Engagement

3. Policy and Regulatory

4. Site Suitability

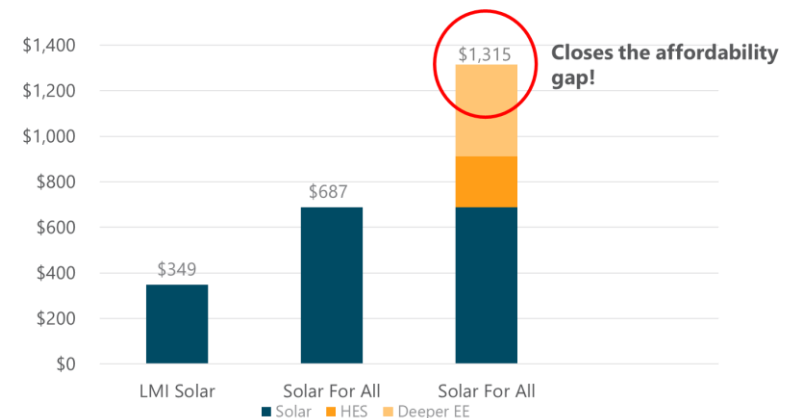
5. Resilience and Recovery

REFERENCES

[Affordable and Accessible Solar for All: Barriers, Solutions, and On-Site Adoption Potential \(nrel.gov\)](https://www.nrel.gov/publications/affordable-and-accessible-solar-for-all-barriers-solutions-and-on-site-adoption-potential)

Solar for All

Market Segment	Residential Single Family LMI (Co-Investment)
Product Summary	Solar lease + energy efficiency package (fixed 20 years) to reduce energy burden with alternative underwrite/no credit score using community-based marketing approach
Support Needed	<ul style="list-style-type: none"> ▪ Good solar economics including tiered LMI incentive ▪ Municipal, community and nonprofit introductions ▪ Subordinated debt capital – if available, but not required
CT Results	4,546 leases for \$128.1 MM investment, 30.3 MW solar PV, HES, and 66% weatherization – eliminates energy burden

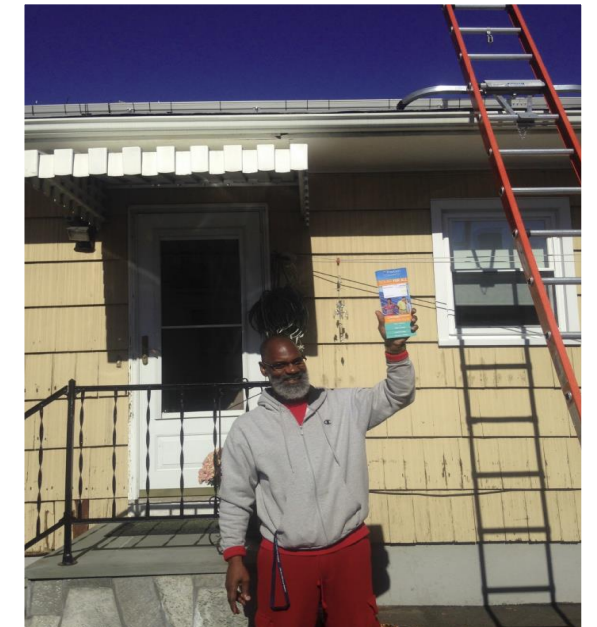
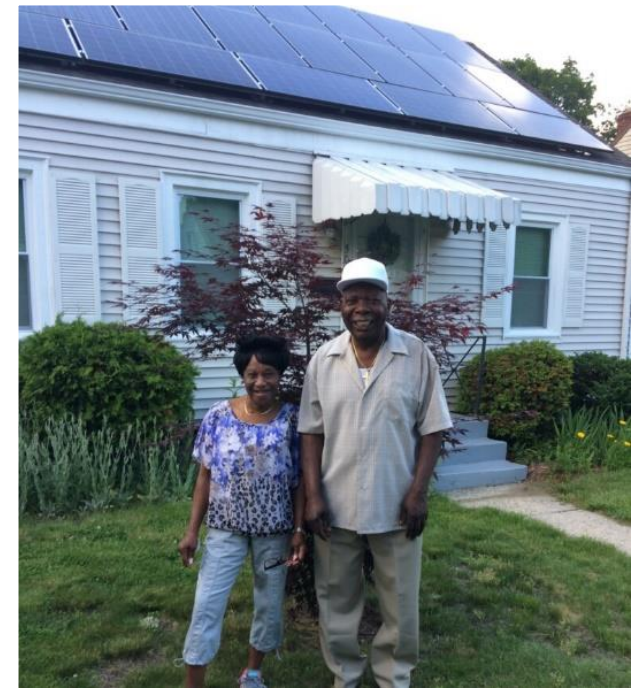


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Ingredients for Success

- **Partnerships** are needed to leverage resources and provide comprehensive solutions
- A **Community based** approach that uses the best of the community to build trust and reputation serves as a key to expedite deployment and provide security
- Programs should **fill gaps** in the market and be developed with a data-driven approach
- **Targeted outreach** and focused efforts can amplify results
- **Barriers** to program participation should be **reduced** as much as possible – don't assume just because uptake is low that your product is the problem... it could be execution (see above on partnerships + targeted outreach, also look at contractors/are they serving target markets?)
- A standardized, simplified product and pricing creates **transparency and lowers cost**
- **Consumer protections** and education are a must, especially with LMI, and even more **especially with LMI seniors**
- Need to have a **long horizon**, analyze your market, **sequence strategies**, and **invest for long term**
- Establish an **advocate for LMI Customers**

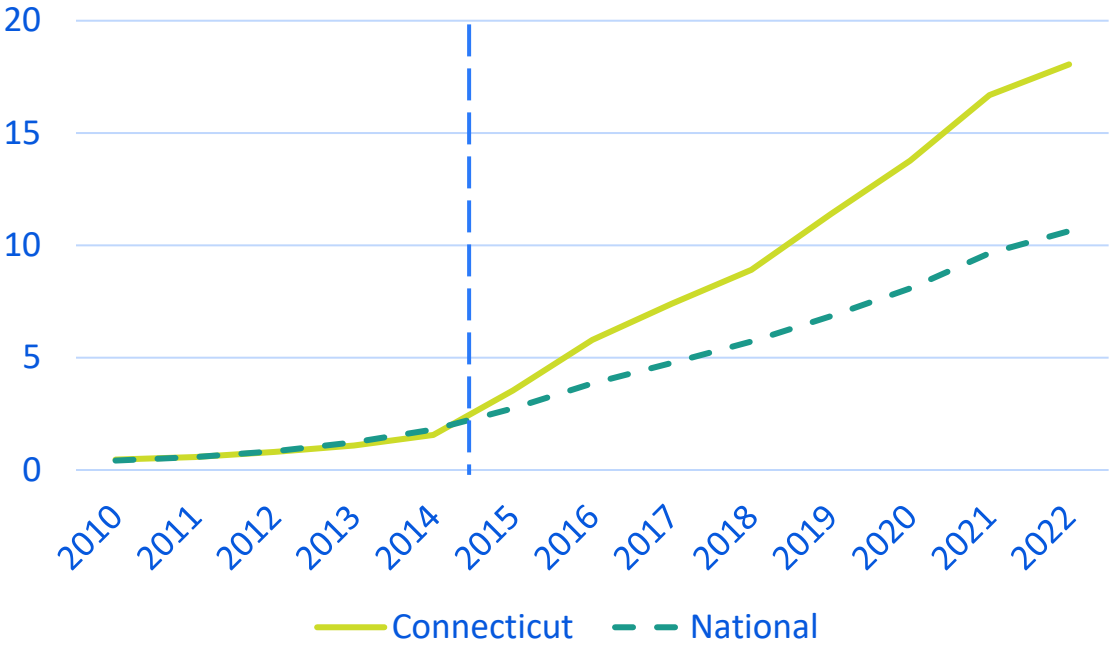




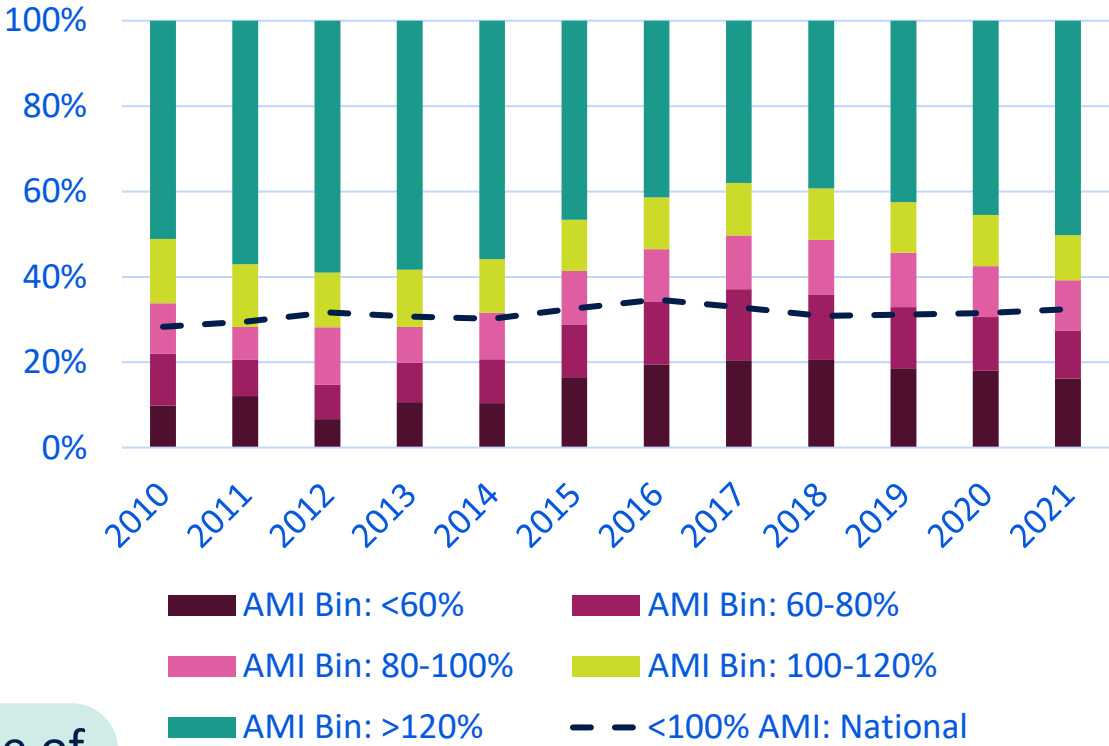
RSIP Transformed the WHOLE Market

PV adoption rate

Residential PV adoptions per 1,000 residents



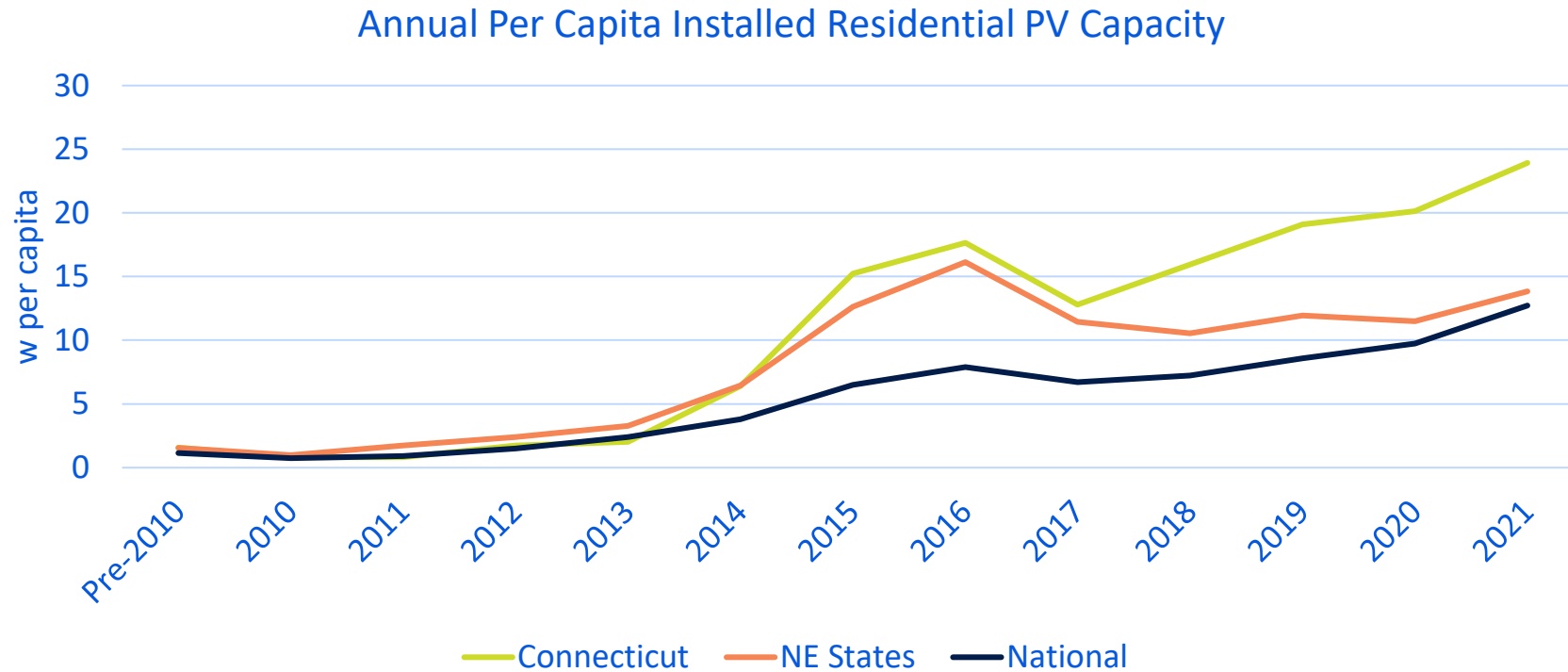
Connecticut Solar Adoption by AMI Band



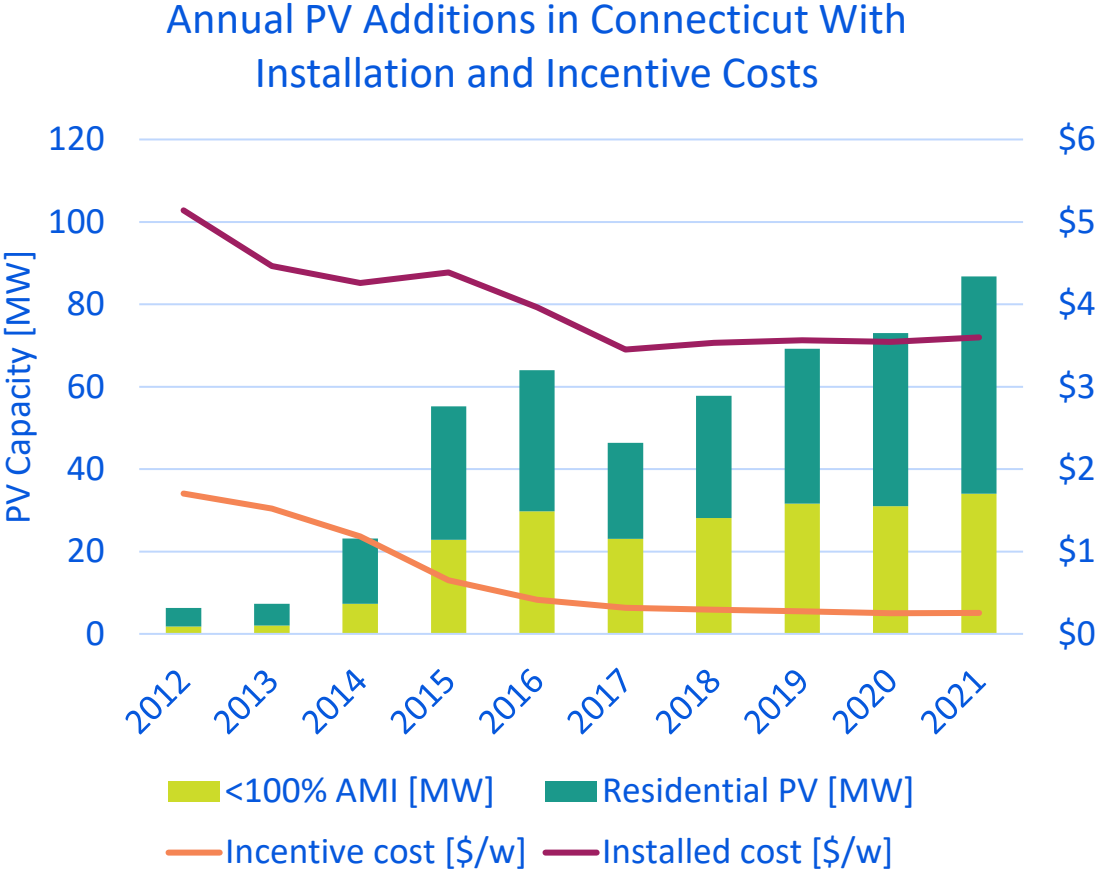
Since 2015, Connecticut has exceeded the national rate of PV adoption since 2015.

- Statewide residential market
- Household income <100% AMI

Connecticut leads national average and Northeastern states in residential PV installations

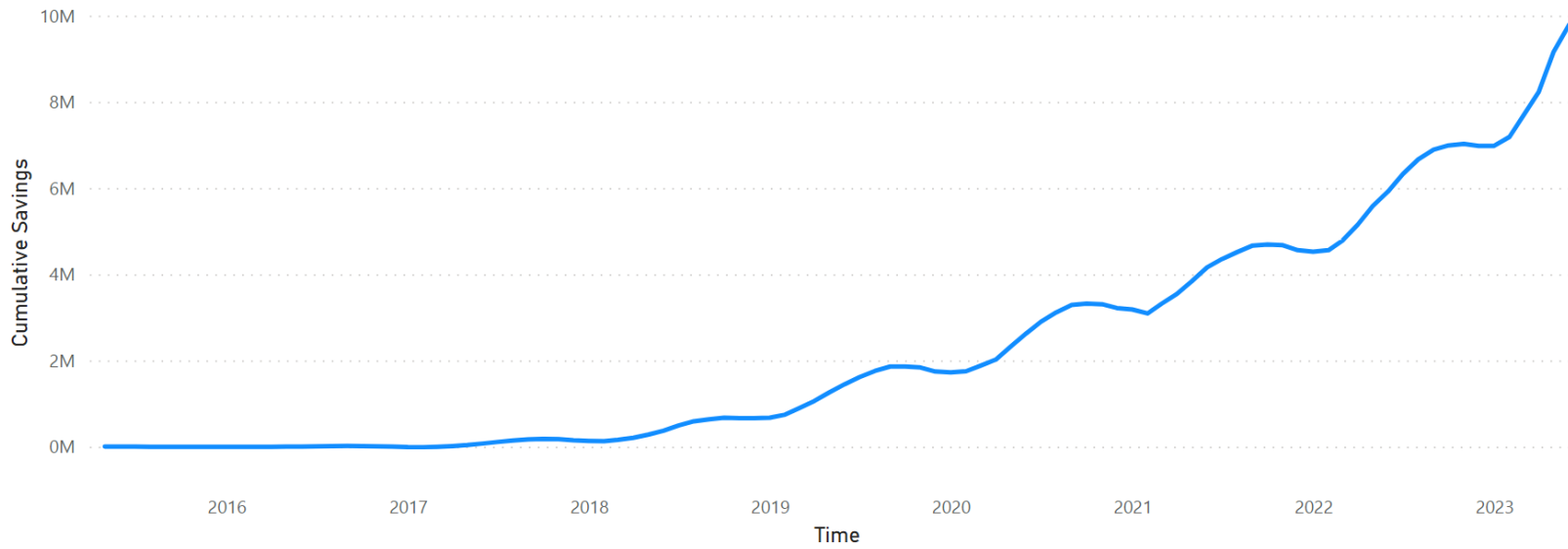
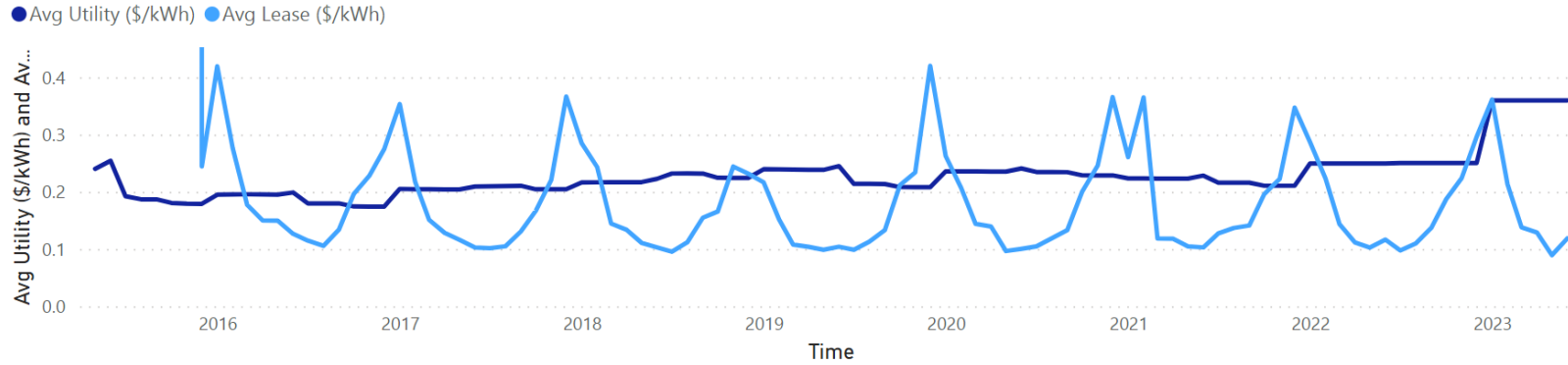


Effective, Efficient, and Equitable Solar Market Development



Connecticut efficiently scaled residential solar adoption while simultaneously decreasing incentive rates to enable a smooth transition to a post-incentive solar market.

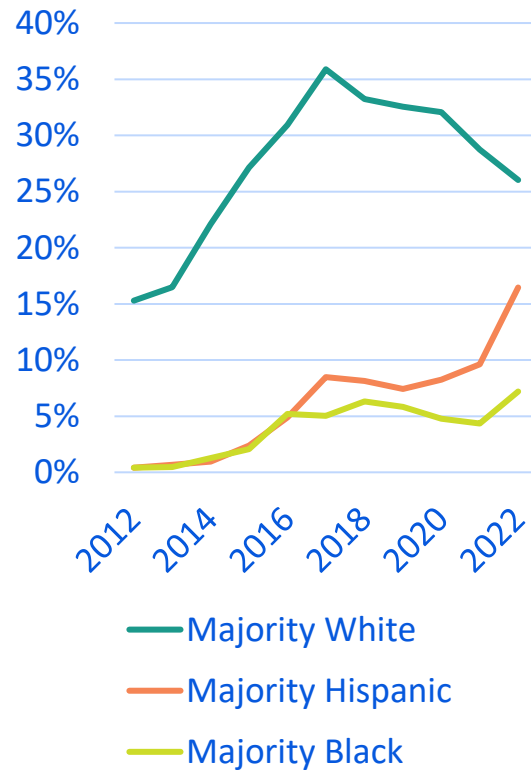
Electricity Rates vs. Equivalent Lease Rate



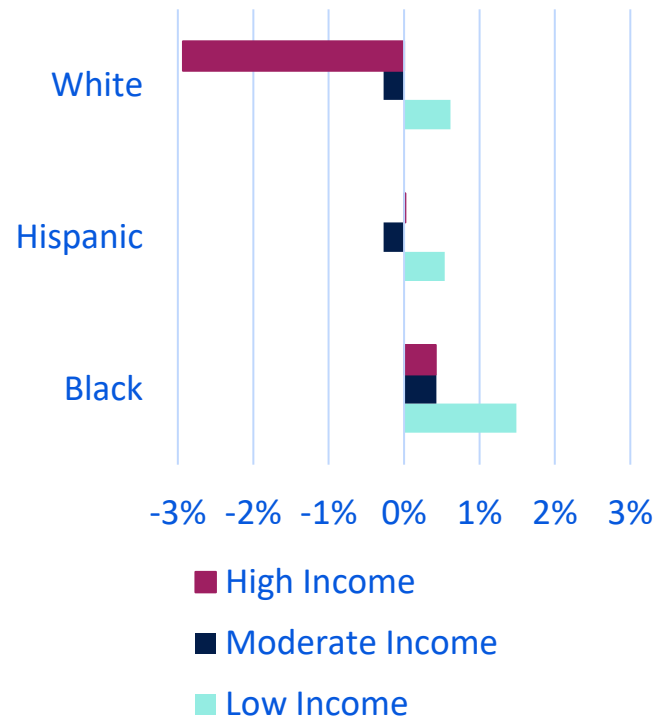
Leases are a financing mechanism to help households realize the economic benefits on a variable price basis from residential solar

Program Participation by Race

Participation by Majority Race in LMI Census Tracts



Participation Rate vs Homeownership Rate by Majority Race



- Participation in majority Black and Hispanic census tracts increased throughout the program
- Participation rates in these census tracts exceeded corresponding homeownership rates.
- Low-income participation exceeded ownership rates across race categories.

RSIP Keys to Success

- **The Green Bank was a trusted and effective convener of stakeholders with diverse interests**
- **The State made long-term commitments to residential solar development**
- **The Green Bank identified and addressed market failures**
 - **Focused on creating solutions for LMI households and underserved communities**
- **Declining incentive levels provided early stimulus and smoothed market transformation**

Questions and Discussion

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