

Synapse
Energy Economics, Inc.

The Cost-Effectiveness of Clean Energy Programs in Rhode Island

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Synapse Energy Economics

- Founded in 1996 by CEO Bruce Biewald
- Leader for public interest and government clients in providing rigorous analysis of the electric power and natural gas sectors
- Staff of 40+ includes experts in energy, economic, and environmental topics
- Synapse has provided technical, policy, and regulatory support to the Rhode Island Division of Public Utilities and Carriers, the state consumer advocate for regulatory affairs, since 2001

Newly Adopted and Proposed Legislation

1. The Act on Climate was adopted, setting economy-wide enforceable targets for greenhouse gas emissions reductions of:
 - 10 percent below 1990 levels by 2020;
 - 45 percent by 2030;
 - 80 percent by 2040; and
 - Net-zero by 2050.
2. Proposed Renewable Energy Standard (RES) updates, increasing the 2030 goal from 31 to 100 percent. The 2021 goal is 17.5 percent.
3. Senate Bill 472 proposed expanding the Community Remote Net Metering (CRNM) program by 60MW, from 30MW to 90MW.

Resources:

1. 2021 Act on Climate: 2021 -- S 0078 Substitute A. Available at: <http://webserver.rilin.state.ri.us/BillText/BillText21/SenateText21/S0078A.pdf>
2. Renewable Energy Standard: 2021 -- S 0629 Substitute A. Available at: <http://webserver.rilin.state.ri.us/BillText/BillText21/SenateText21/S0629.pdf>
3. Senate Bill 472: An Act Relating to Public Utilities and Carriers – Net Metering. 2021. Available at: <https://webserver.rilegislature.gov/BillText21/SenateText21/S0472.pdf>

Overview of RI Clean Energy Programs

RI Clean Energy Programs	Sub-Component	Size Category	Renewable Net Metering (RNM) Credit	Contract Term (years)
Net Metering (NM)	Standard	DG	residential rate	Indefinite
	Virtual	max 10 MW	small commercial rate	Indefinite
	Community Remote Net Metering (CRNM)	multiple subscribers	small commercial rate	Indefinite
Renewable Energy Growth (REG)	Small-Scale	1-10 kW	Fixed Price	15
		11-25 kW	Fixed Price	20
	Large-Scale	26-250 kW	Competitive bid	20
		251-999 kW	Competitive bid	20
		1,000-5,000 kW	Competitive bid	20
	Community Remote Distributed Generation (CRDG)	251-999 kW	Competitive bid	20
1,000-5,000 kW	Competitive bid	20		
Long-Term Contracts (LTC)	Large-Scale	Utility-scale	Competitive bid	15
Energy Efficiency (EE)	Electric	Residential	n/a	n/a
		Low-Income	n/a	n/a
		Commercial and Industrial	n/a	n/a
	Natural Gas	Residential	n/a	n/a
		Low-Income	n/a	n/a
		Commercial and Industrial	n/a	n/a

Key Questions

1. How much should we invest in clean energy programs to meet goals?
2. How do we ensure ratepayer costs are reasonable?
3. How do we compare clean energy programs in a holistic and fair way?

Costs and Benefits for Clean Energy Programs

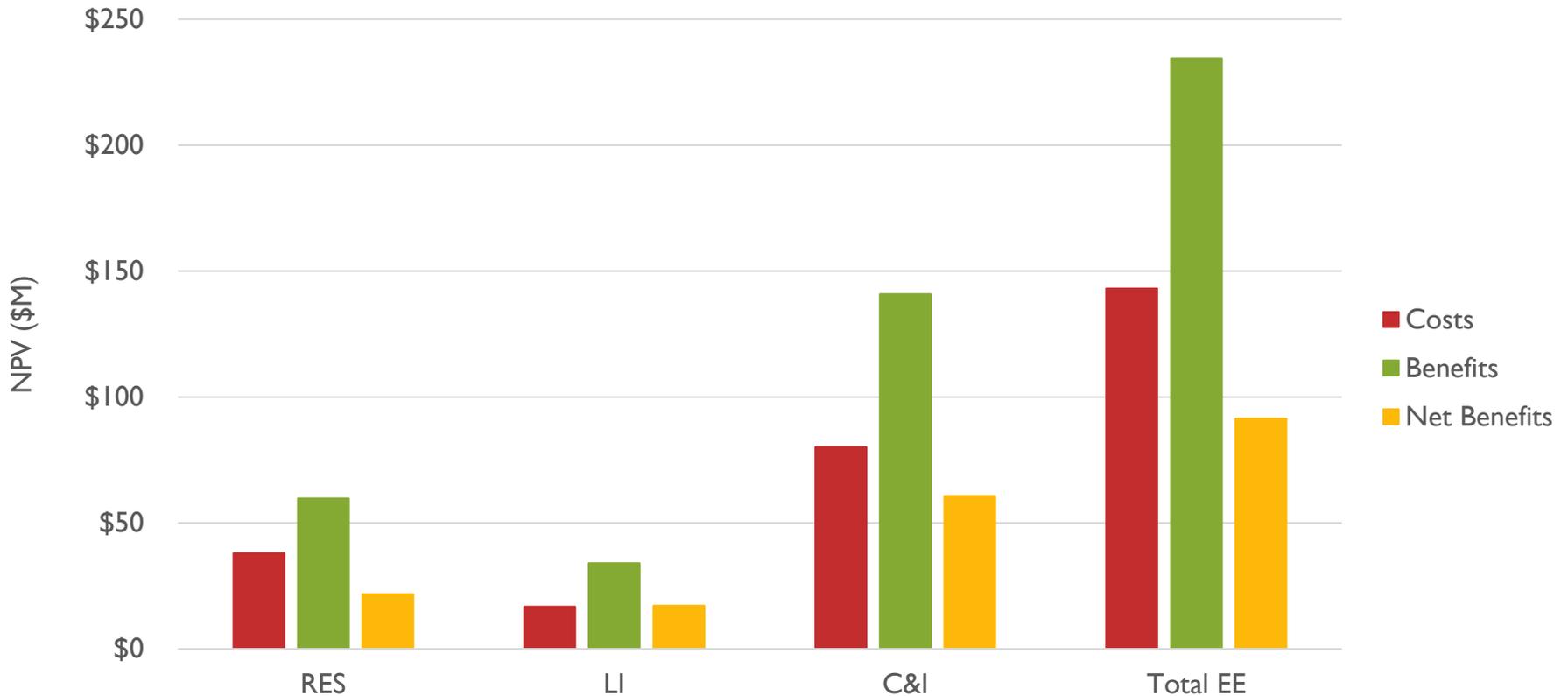
In 2017, RI adopted the Rhode Island Test to apply to all types of distributed energy resources.

Type of Impact	Impact	Electric EE	RE	
			CRNM	CRDG
Costs	Financial Incentives	✓	✓	✓
	Utility Shareholder Incentive	✓	n/a	✓
	Utility Administration	✓	✓	✓
Benefits	Avoided Energy	✓	✓	✓
	Avoided Capacity	✓	Capacity to developers	✓
	Avoided Transmission	✓	✓	✓
	Avoided Distribution	✓	n/a	n/a
	Wholesale Market Price Effects	✓	✓	✓
	Reliability	✓	✓	✓
	Fuel Savings	✓	n/a	n/a
	Water Savings	✓	n/a	n/a
	Non-Energy Impacts	✓	n/a	n/a
	Avoided Non-Embedded GHG Emissions	✓	✓	✓
	Avoided Non-Embedded SO _x , NO _x , PM	✓	✓	✓
	Reduced RPS Target	✓	n/a	n/a
	Value of Renewable Energy Credits (RECs)	No RECs	RECs to developers	✓
	Macroeconomic Benefits		Considered separately	

Example: Energy Efficiency

The proposed 2022 Annual EE Plan is cost-effective at sector and portfolio levels.

- NEIs are 6% of RES, 44% of LI, 7% of C&I, and 12% of the portfolio benefits.



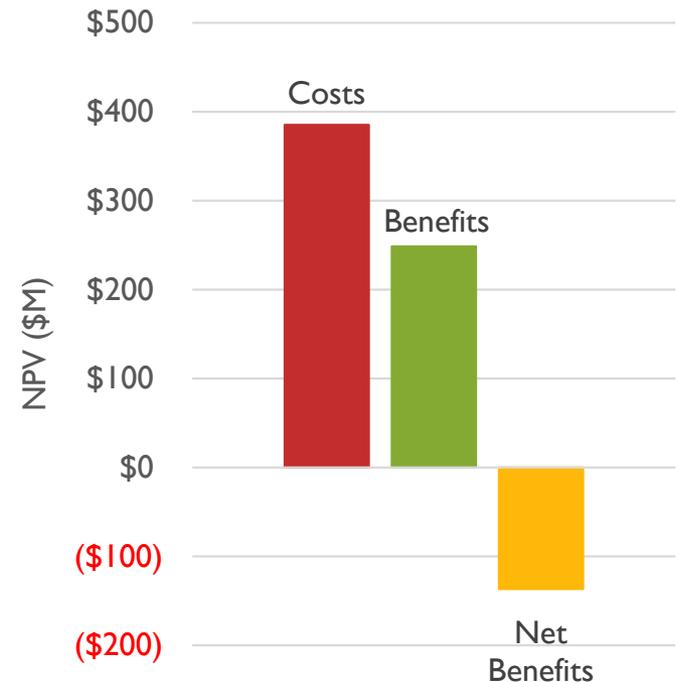
Source: State of Rhode Island Public Utilities Commission. Narragansett Electric Company d/b/a National Grid. Docket No. 5198. Annual Energy Efficiency Plan for 2022. October 1, 2021. Page 417. Available at: [http://www.ripuc.ri.gov/eventsactions/docket/5189-NGrid-Energy%20Efficiency%20Plan%202022%20\(PUC%2010-1-21\).pdf](http://www.ripuc.ri.gov/eventsactions/docket/5189-NGrid-Energy%20Efficiency%20Plan%202022%20(PUC%2010-1-21).pdf)

Example: CRNM

Description: Allows residential customers and qualified low- and moderate-income housing developments to subscribe to a community solar project from which they receive electricity bill savings.

Key Program Design Elements:

- Rights to generation capacity: Project Developers
- Rights to RECs: Project Developers
- RNM credit: Small commercial customer electric rate, changes over time, 90 percent for project developers/10 percent for subscribers
- LI participants: Very few
- Contract term: 25 years



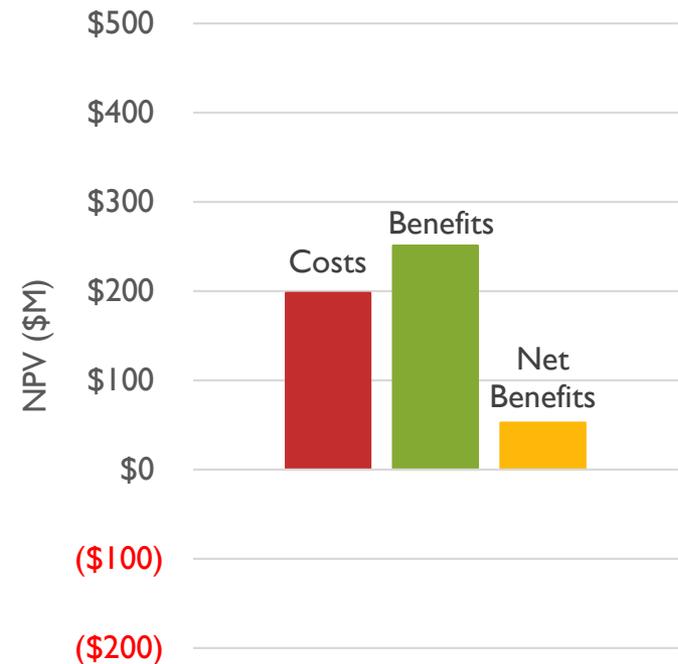
Source: House Bill 8354, Substitute A. An Act Relating to Public Utilities and Carriers – Renewable Energy Programs. 2016. Available at: <http://webserver.rilin.state.ri.us/BillText/BillText16/HouseText16/H8354A.pdf>

Example: CRDG

Description: Allows residential and low-income customers to subscribe to a community solar project from which they receive electricity bill savings.

Key Program Design Elements:

- Rights to generation capacity: National Grid
- Rights to RECs: National Grid
- RNM credit: Based on competitive bids, fixed
- LI participants: Very few
- Contract term: 20 years



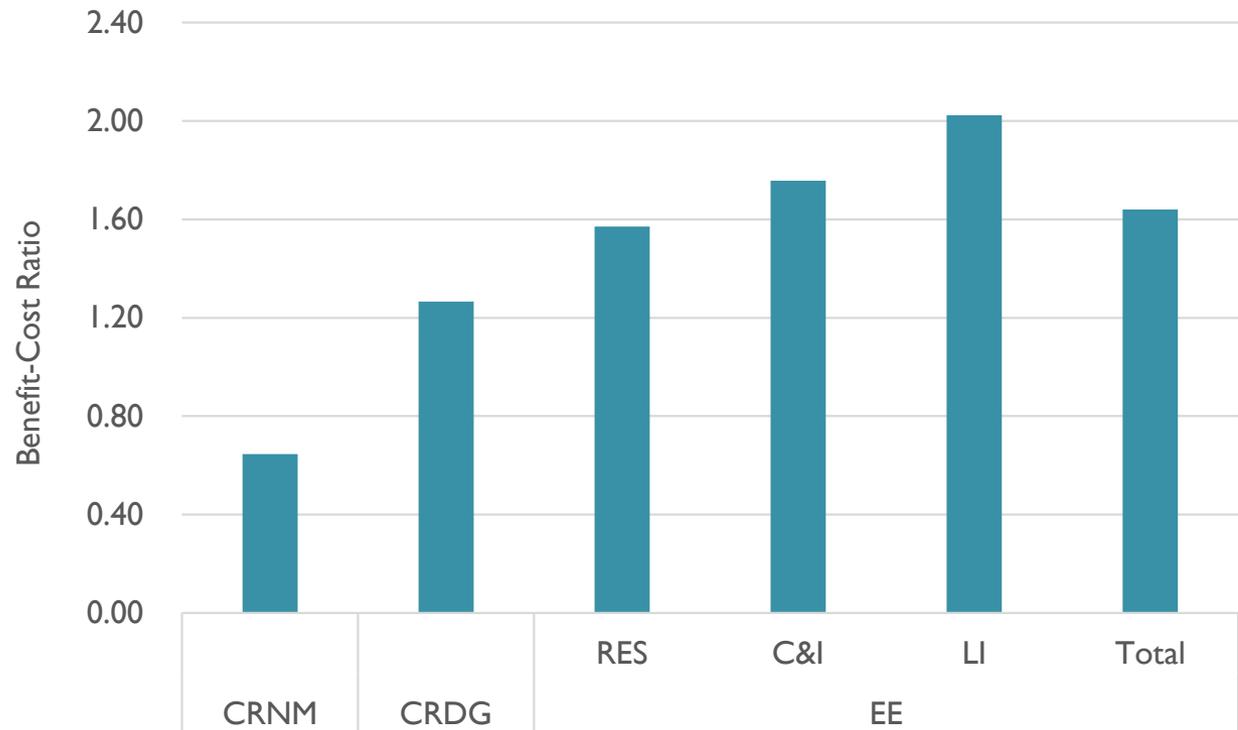
Sources:

1. CRDG: RI Gen L § 39-26.6-27 (2018). Available at: <https://law.justia.com/codes/rhode-island/2018/title-39/chapter-39-26.6/section-39-26.6-27/>
2. The Narragansett Electric Company Renewable Energy Growth Program for Residential Customers. Available at: <https://ngus.force.com/servlet/servlet.FileDownload?file=0150W00000ETZpv>

Results Summary

EE is more cost-effective than CRDG or CRNM.

- CRDG is cost-effective and CRNM is not due to the assignment of capacity and REC rights to National Grid, a lower RNM credit which is fixed over time, and a shorter contract term.



Sources:

1. Synapse Energy Economics. *Benefit-Cost Analysis of the Rhode Island Community Remote Net Metering Program*. Prepared for the Rhode Island Division of Public Utilities and Carriers. March 10, 2021. Available at: https://www.synapse-energy.com/sites/default/files/Synapse_CRNM_BCA_2021_Redacted_20-008.pdf
2. Synapse Energy Economics. *Senate Bill 472 (60MW Expansion of Community Remote Net Metering More Costly than Other Community Solar Options)*. Prepared for the Rhode Island Division of Public Utilities and Carriers. April 13, 2021. Available at: https://www.synapse-energy.com/sites/default/files/SB472_Analysis_20210414_20-008.pdf

Next Steps

1. Expand the analysis to include all renewable energy programs.
2. Project costs and benefits for EE and RE into the future and examine how the cost-effectiveness of EE and RE programs change over time.
3. Consider all findings in determining a cost-effective approach to meeting the 2021 Act on Climate goals.

Resources

National Standard Practice Manual for Benefit-Cost Analysis of Distributed Energy Resources. <https://www.nationalenergyscreeningproject.org/national-standard-practice-manual/>

Technical and Policy Support in Rhode Island. <https://www.synapse-energy.com/project/technical-and-policy-support-rhode-island>

- *Benefit-Cost Analysis of the Rhode Island Community Remote Net Metering Program.* March 2021.
- *Macroeconomic Impacts of the Rhode Island Community Remote Net Metering Program.* March 2021.
- *Senate Bill 472 (60MW Expansion of Community Remote Net Metering) More Costly than Other Community Solar Options.* April 2021.
- **Report on the Cost-Effectiveness of Rhode Island Clean Energy Programs (in process, projected end of 2021 release)**

Improving Electric Utility and Community Grid Resilience Planning.

<https://www.synapse-energy.com/project/improving-electric-utility-and-community-grid-resilience-planning>

- *Application of a Standard Approach to Benefit-Cost Analysis for Electric Grid Resilience Investments.* May 2021.