



Defining an Ambitious and Affordable New ERA Plan

June 13, 2023



WHO WE ARE

RMI is an independent, non-partisan, global nonprofit organization of 600+ experts across disciplines working to accelerate the clean energy transition and improve lives.

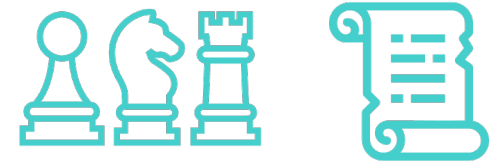
OUR MISSION: Transforming the global energy system to secure a clean, prosperous, zero-carbon future for all.



Founded and headquartered in Colorado, RMI has a long history of working with legislators, state agencies, regulators, utilities, corporates, municipalities, and other stakeholders.

Day 1

Maximizing the Financial Opportunity of the New ERA Program



Day 2

Defining an Ambitious and Affordable New ERA Plan



Today's Speakers



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The Federal government is the final source of information on use of IRA programs

- **New ERA: RUS will continue posting clarifications and guidance**
- **Tax Credits: Treasury expects to post guidance soon**

Information in the presentation is current as of June 13, 2023

Check in question

After having a night to digest the presentation yesterday, what questions are you still holding, what is not clear to you, or what have we not covered that you hope we get to today or in a future session?

Please use the Q&A box to submit.

Agenda

1 *Maximizing the financial opportunity of New ERA*

2 *Eligible investments and the Achievable Reduction Tool*

3 *Financing resource plans with New ERA*

4 *Q&A*



Objective for today: define considerations for using New ERA grants and loans alongside clean energy tax credits to finance different Eligible Award Costs

We will cover four illustrative examples that we expect many New ERA applicants will consider:

1. Owning and purchasing wind, solar, and short-duration storage
2. Strategies for dealing with stranded asset costs
3. Carbon capture and storage, and other “clean firm” resource options
4. Demand- and distribution-side investments

Before the IRA, clean energy incentives didn't really work for rural electric cooperatives and their members – now they do



Equity Challenge

Owned storage + RE is capital intensive, and highly leveraged co-ops did not have ability to raise debt without risking credit downgrades

Direct pay tax credits and New ERA provide new sources of equity that co-ops can leverage



Ownership Challenge

Co-ops did not have the ability to own clean assets while utilizing tax credits, forcing co-ops to use third-party PPAs

Direct pay tax credits allow co-ops to pass on full benefits to customers while owning assets



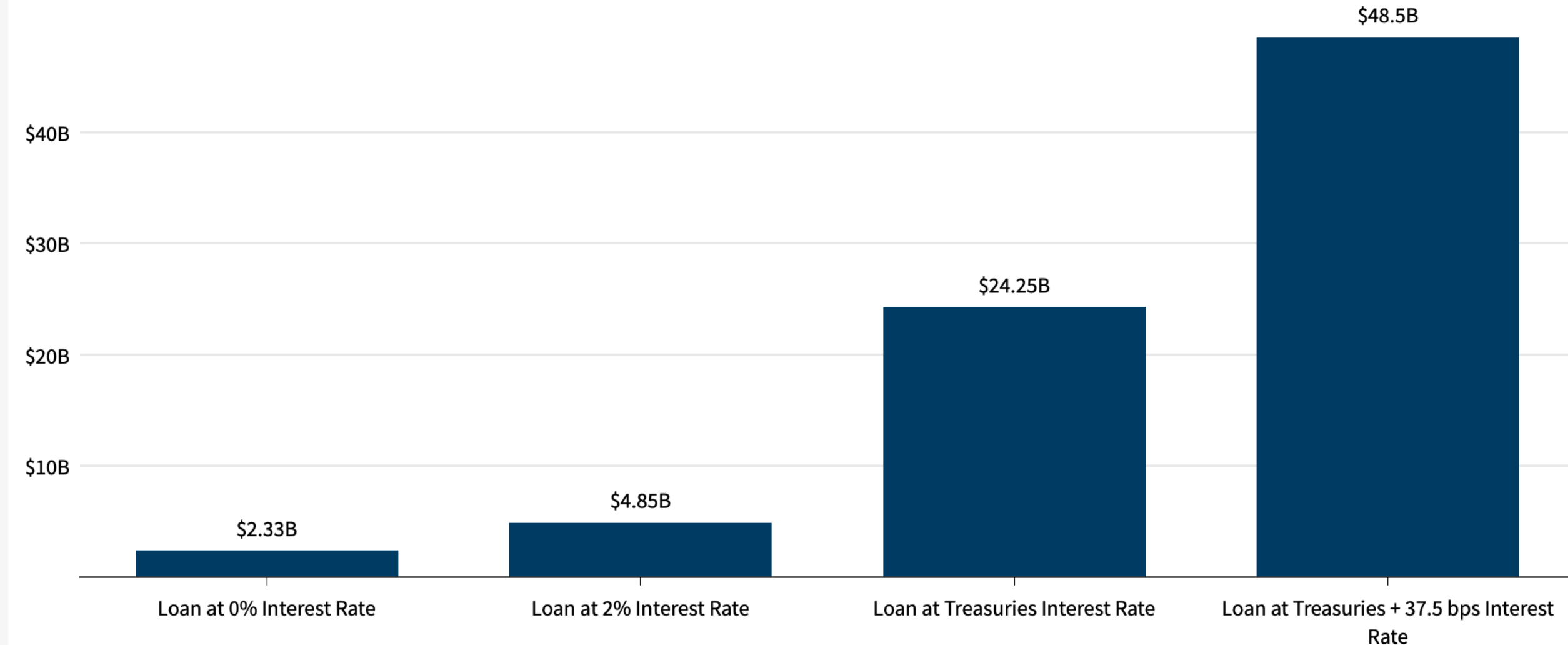
Stranded Asset Challenge

Fossil capital costs do not go away with clean deployment

New ERA can refinance stranded assets with zero-interest or low-interest debt

Maximum New ERA Financing Available By Type

How much financing could be provided with \$970 million in appropriation for grants or credit subsidies for loans.



Note: Preliminary conversations with USDA signal that they may score Loan at the Treasuries Interest Rate similar to Loans at a 2% Interest Rate, which would drastically reduce the amount of loan financing available through New ERA.

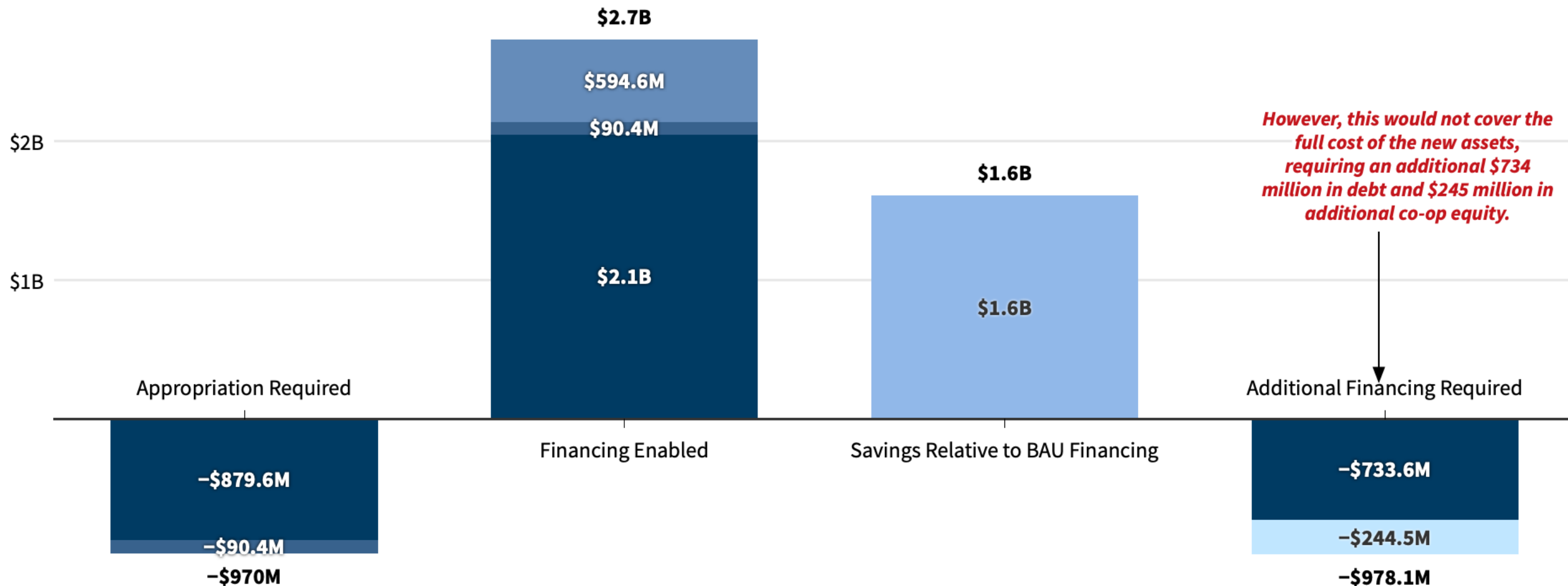
Source: RMI Analysis



0% Loan with PTC

\$970 million in New ERA appropriation while using the PTC for wind and solar would enable \$2.1 billion in loans at a 0% interest rate, along with \$90 million in grants and \$595 million from the monetization of the battery storage ITC. This would lead to a total of \$1.6 billion in savings over 30 years compared to traditional financing without New ERA.

Loans Grants ITC Monetization Savings Additional Co-Op Equity Required

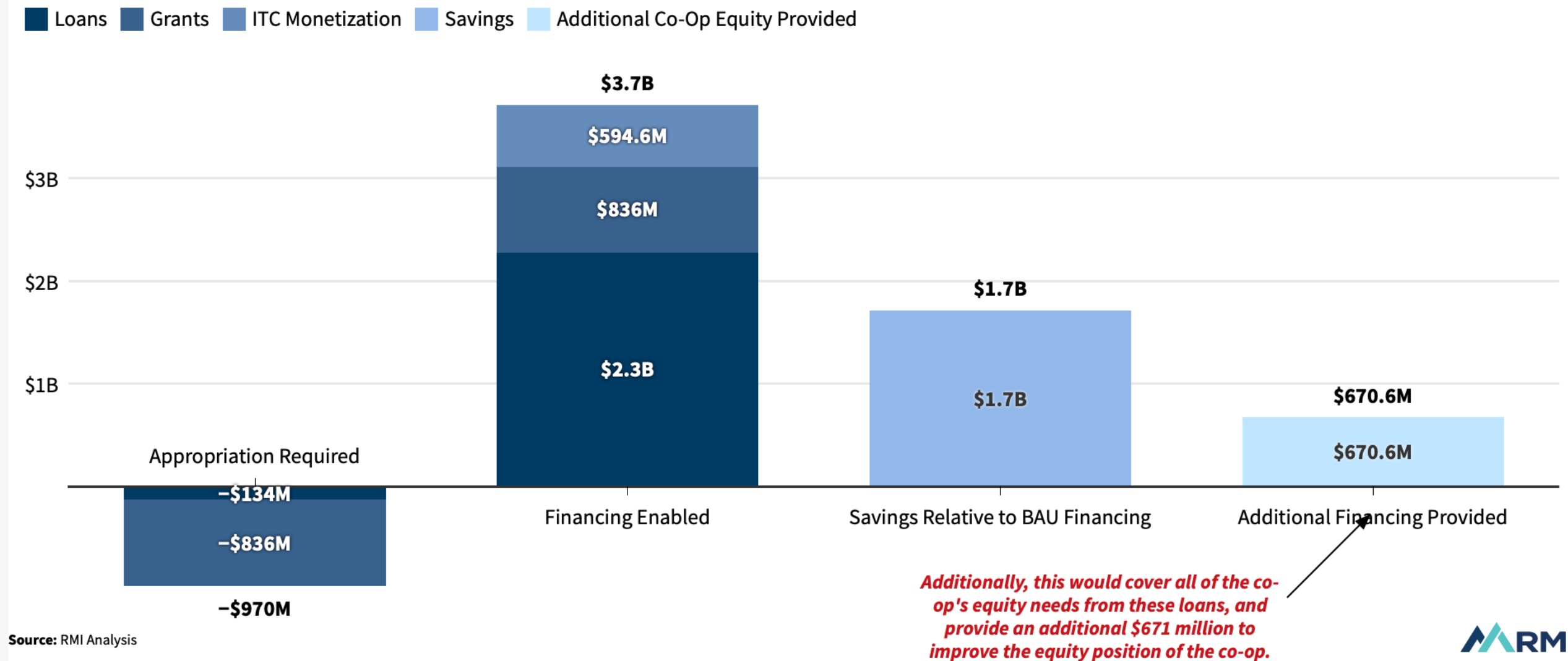


Source: RMI Analysis



Treasuries Loan with PTC

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Source: RMI Analysis



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Eligible Portfolios of Actions are broadly defined in the Federal Register Notice

Renewable Energy System

1. Purchase or construction of new system
2. Purchased power
3. Upgrades to existing system

Includes transmission improvements, new transmission, and energy storage systems

Zero-Emission System

Does not produce GHG when operated

Carbon Capture and Storage System

- Can deploy on existing assets
- Must be commercially proven and cannot increase other air pollutants

Activities to support deployment or improve energy efficiency

Modifying or refinancing loans for non-renewable stranded energy assets

Strong Achievable Reduction Tool (ART) submissions are important for competitive Letters of Intent

RUS will use ART submissions to compare and score all applicants' emission reduction estimates (biggest point category for LOI grading)

Applicants can directly quantify new renewable assets and purchased power, fossil asset phase-down, grid loss reduction, and carbon capture

RUS encourages all ambitious emission reduction proposals, noting some technology options require external analysis and supplemental notes

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New ERA applicants can address key challenges by defining a funding request that delivers the most value

Challenge 1: Many options

Invest in commercially proven technology while building equity

- Co-ops can build wind, solar, and storage while strengthening their balance sheets for future investments

Challenge 2: Short timeline

Begin outreach to developers and other key stakeholders

- Application materials and project implementation will depend on partners who can help define a strong and achievable LOI

Challenge 3: Uncertain rules

Consider many financing options before defining final plan

- Waiting for guidance on direct pay tax credits

Options, considerations, and strategies for financing New ERA Eligible Portfolio of Actions

1. **Owning or purchasing wind, solar, and short-duration storage**
2. **Dealing with stranded asset costs**
3. **Carbon capture and storage, and other “clean firm” resource options**
4. **Demand- and distribution-side investments**

For the first time, G&Ts have the ability and incentive to own wind, solar, and storage at scale to benefit members

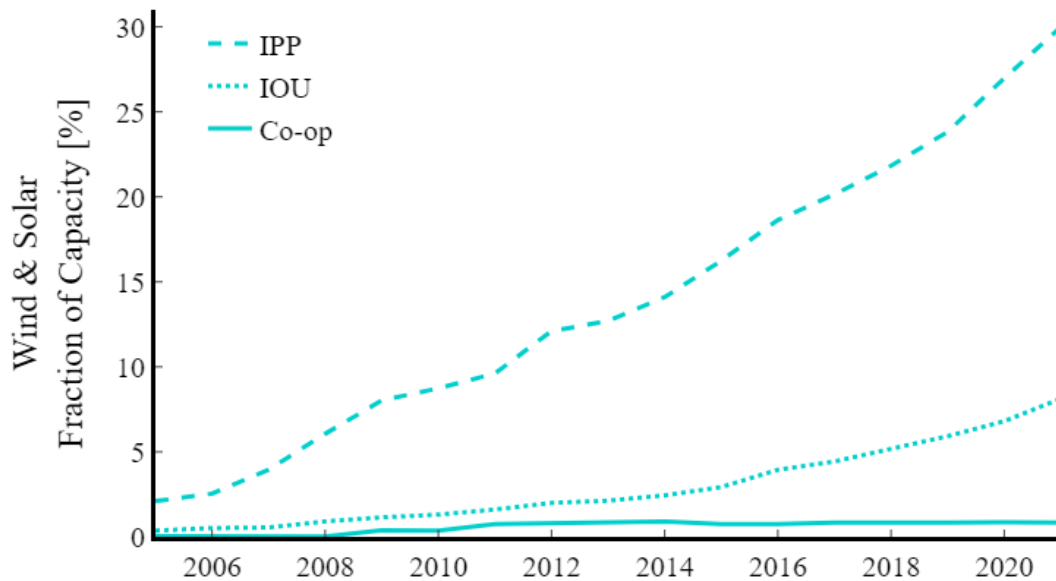
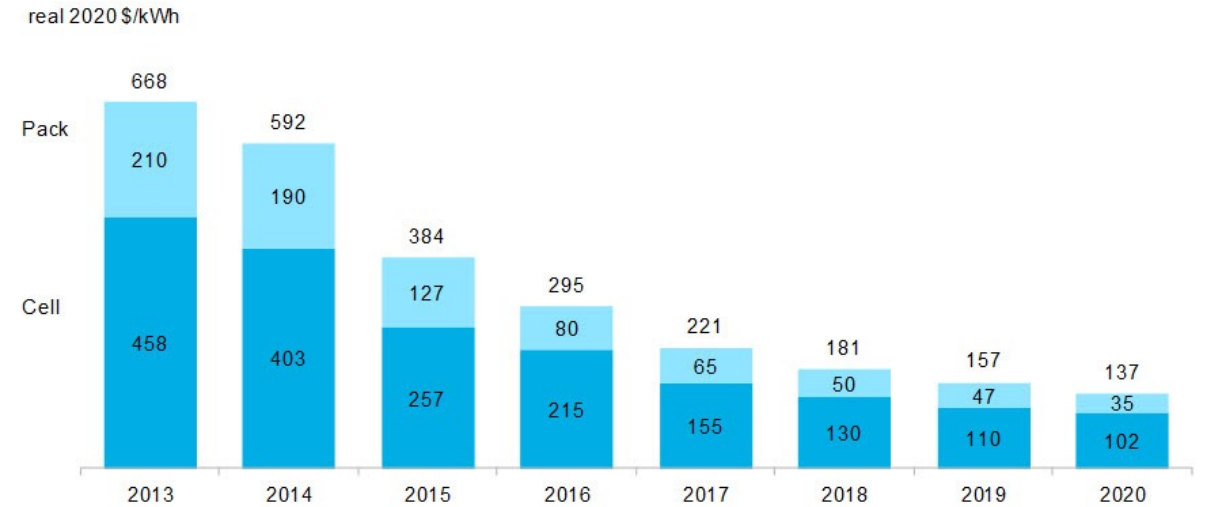
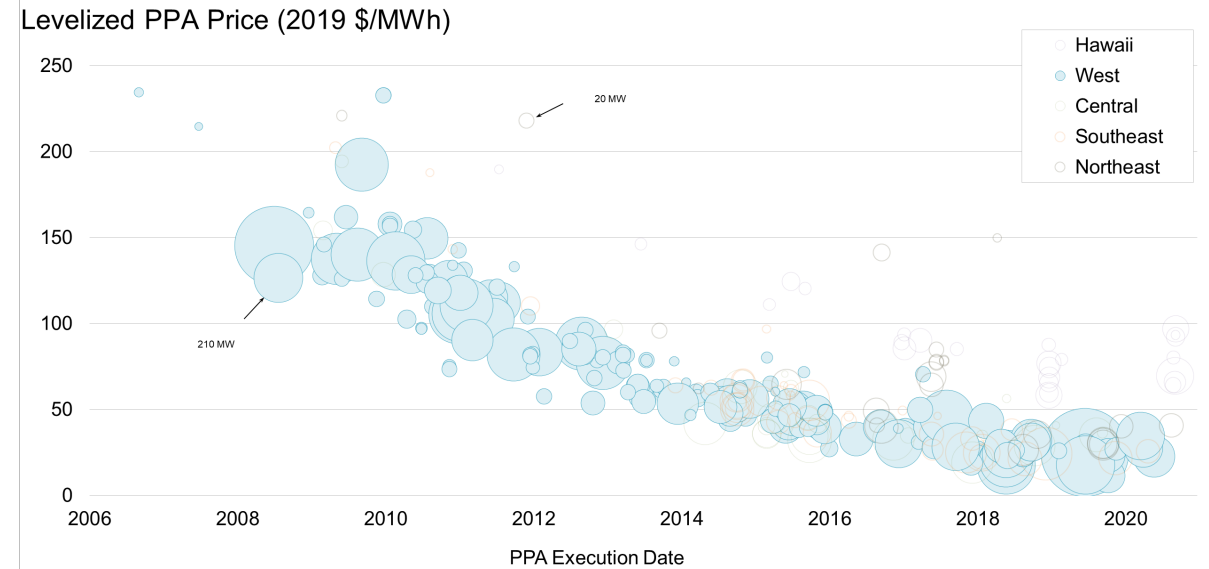


Figure 1: Volume-weighted average pack and cell price split



Source: BloombergNEF



Co-ops must consider tradeoffs between asset ownership and Power Purchase Agreements

Direct ownership benefits

- Savings/benefits can be passed straight through to members
- Direct pay Investment Tax Credit (ITC) can be used to build equity
- Take advantage of lower cost of capital
- More control over assets

PPA benefits

- Operations & Maintenance (O&M) generally covered in the cost of power
- Does not require balance sheet expansion
- May be able to take advantage of bulk procurement savings
- **Risk – may need to prepay for PPAs that extend beyond 2031**

Direct pay tax credits are a valuable incentive for co-ops

50% Direct Pay Investment Tax Credit (ITC)

30% base ITC (w/Prevailing Wages)



10% for Domestic Content



10% for Energy Communities

Production Tax Credit (PTC) starts at \$27.5/MWh (w/Prevailing Wage)

- Domestic content and energy community adders stack
- Credit is earned for 10 years (inflation adjusted)

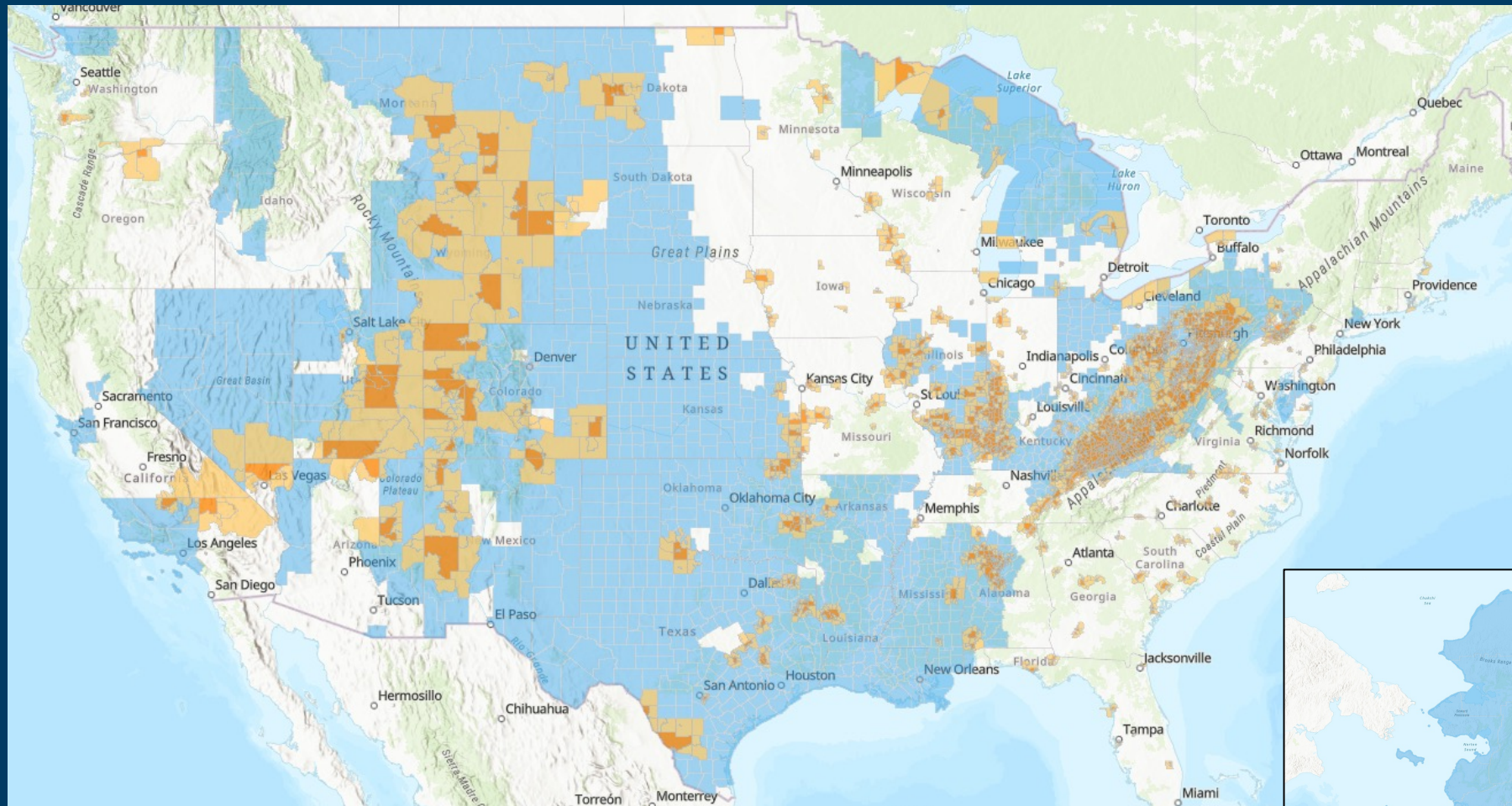
✓ **Storage ITC** allows G&Ts to address reliability challenges with variable resources

Caveat: ITCs will be realized at the end of Year 1 in a project's life, so co-ops may require bridge financing

✓ **Solar PTC optionality** provides important benefit for G&Ts with good solar resource



Caveat: co-ops must raise equity from another source to use PTCs

Many co-ops serve counties that do or may qualify for the energy community tax credit bonus




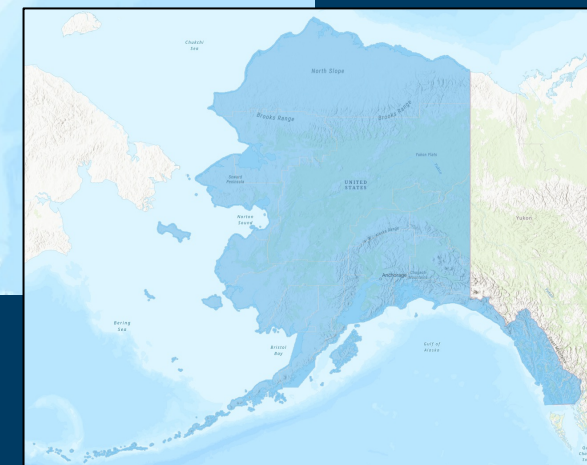
Coal Closure Energy Communities

Tract Status

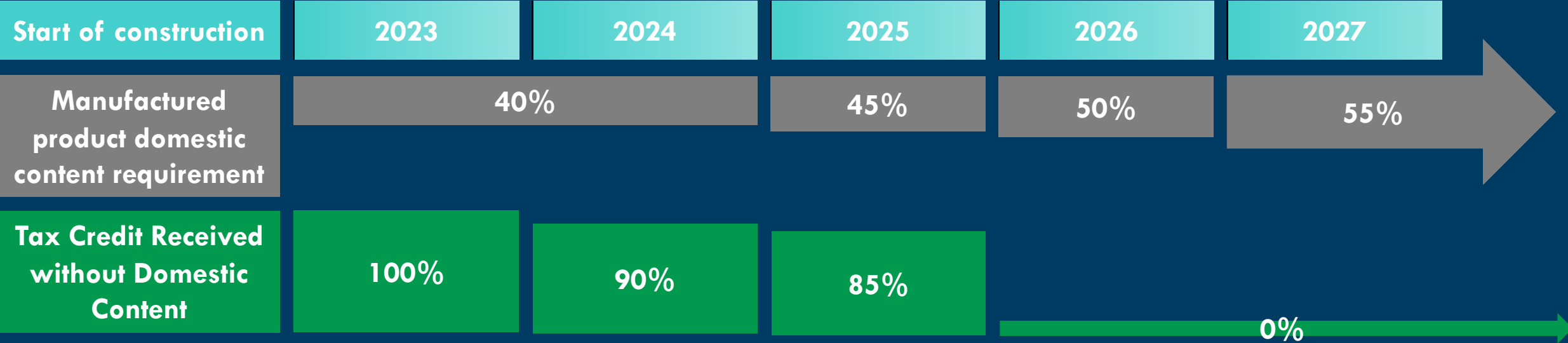
-  Census tract directly adjoining a census tract with a coal closure
-  Census tract with a coal closure

MSA/Non-MSAs that meet the Fossil Fuel Employment Threshold

-  MSAs/non-MSAs that only meet the FFE threshold (not an energy community)



Direct pay tax credits will require meeting domestic content requirements, so developers should begin project construction as soon as possible



- Start of construction triggers a 4-year safe harbor – a project that starts construction in 2023 would not need to start operations until the end of 2027
- Phaseout can be waived if domestic content material is unavailable or raises costs by more than 25%

Asset ownership comes with real risks, but the market has developed mitigation strategies

Resource	Risks	Mitigation strategies
Wind	Resource estimation error	Purchase-price adjustment in Build-transfer agreement (BTA)
	O&M and possibility of major maintenance	Warranties and Full-wrap O&M contracts
	Resource curtailment for PTC assets	Take the ITC
Solar	Panels degrade over time	Long-term O&M contract
	ITC received at end of Year 1 operations	Bridge financing
Storage	Batteries will require replacement after ~10 years	Warranties and ability to replace assets
General	Ability to meet domestic content requirements to avoid reduction in/loss of direct pay	Build-transfer agreement with developer for project that begins construction soon
	Potential tradeoff between new domestic producer and established foreign producer (cost, replacement parts)	Opportunity to attract/invest in producer located in co-op service territory
	Interconnection challenges	New ERA transmission funding

Tradeoffs can exist between applicant's risk appetite and maximizing NPV of a New ERA system award

- **Quality of wind or solar resource matters**
 - PTC and ITC values converge when wind asset is lower quality
 - Incremental NPV benefit of PTC relative to ITC for solar half was \$170 million
 - Incremental NPV benefit of PTC relative to ITC for wind half was \$350 million
- **Without the credit bonuses, the PTC is even more valuable relative to ITC**
 - ITC: 50% with bonuses vs. 30% without (ratio 1.67 : 1)
 - PTC: 120% of \$ value with bonus vs. 100% without (ratio 1.2 : 1)
- **Wait for potential domestic content and associated bonus but take on risk of a direct pay haircut and untested producer**

Strategy for developing a New ERA funding request



The Set Up

- Add portfolio of 1.2 GW of solar, 700 MW of wind, and 1 GW of storage in 2025
- Factor down fossil asset over next 2 years vs. BAU 8 years
 - 1 GW coal plant, 60% CF, \$400 million in unrecovered net plant balance



The Constraints

- Don't want to use member equity
 - Doing so would require additional rate increases
- Keep equity-to-capitalization ratio at 25%
 - Otherwise, co-op risks credit downgrade
- If taking ITC, assume Year 1 bridge financing at WACC
 - WACC assumed at 5%



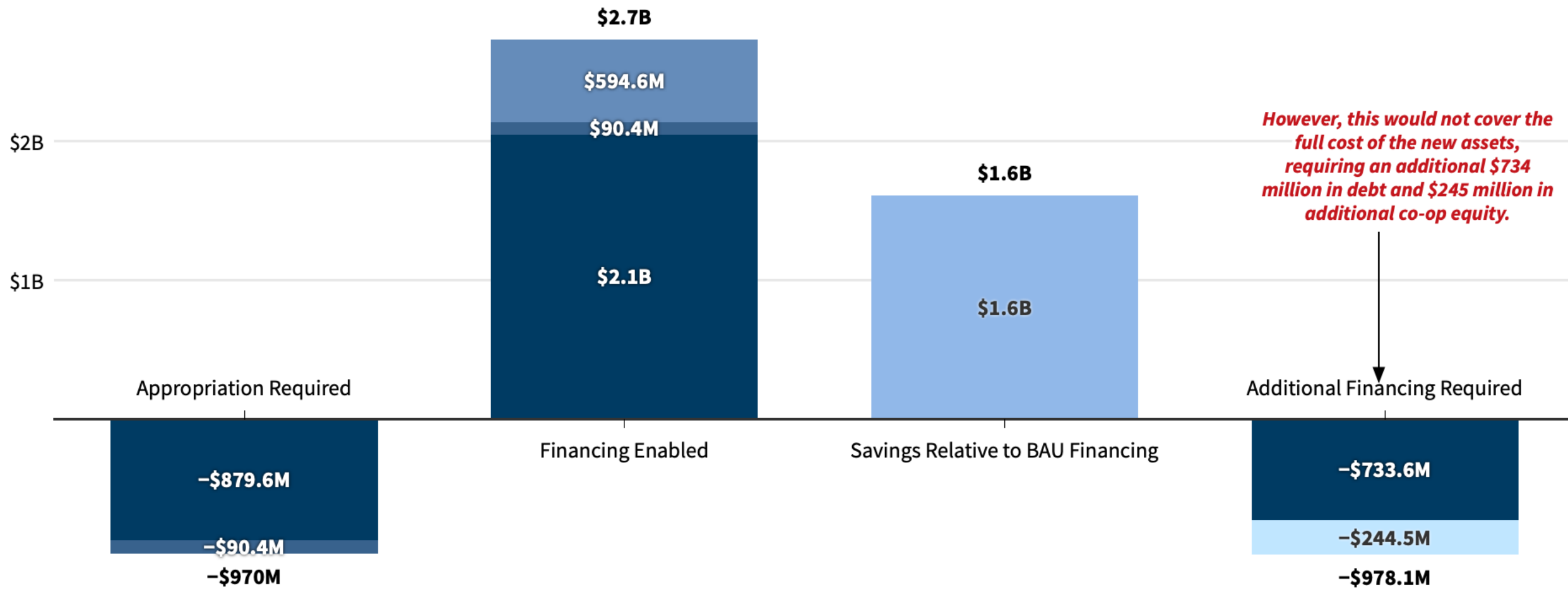
The Approach

- Assess different loans at different costs
 - 0%, 2%, Treasuries
- Take out grants with remaining appropriation after loans
- Begin by taking PTC for wind and solar assets, switch to ITC if the project requires more equity
 - PTC provides \$520 million greater savings, but ITC provides equity infusion

0% Loan with PTC

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Loans Grants ITC Monetization Savings Additional Co-Op Equity Required

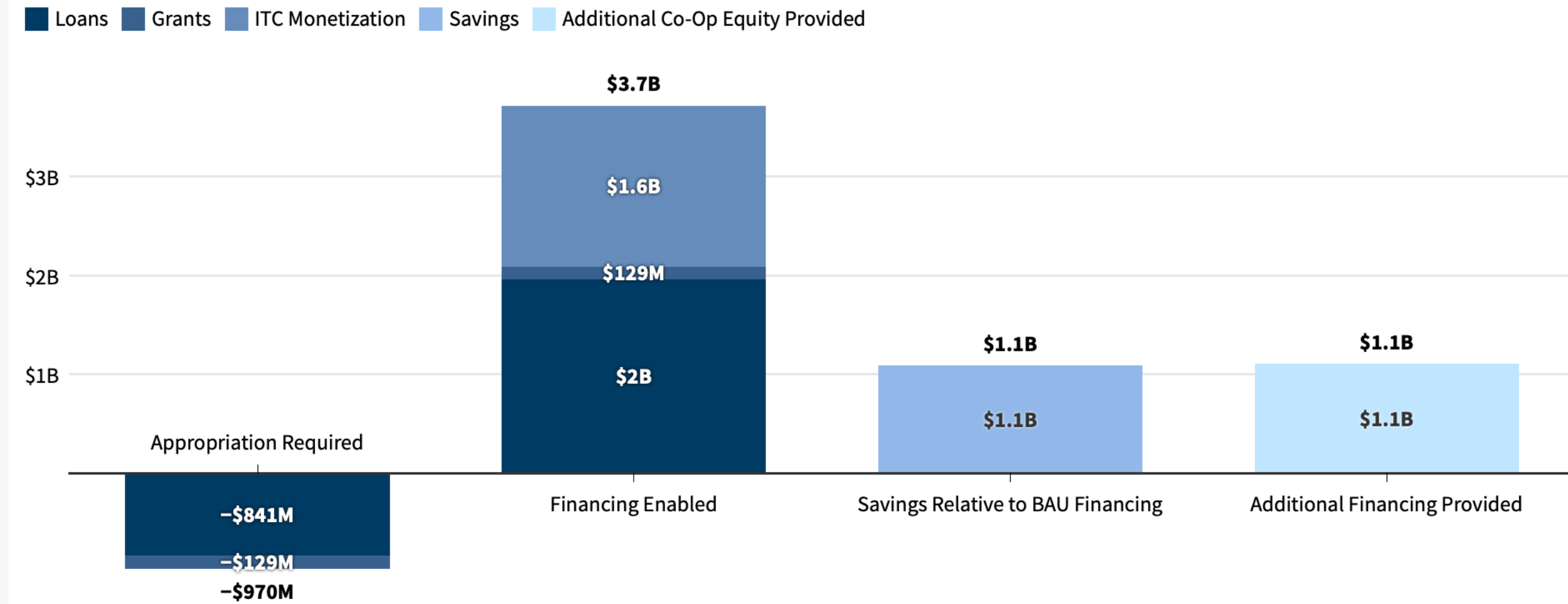


Source: RMI Analysis



0% Loan with ITC

\$970 million in New ERA appropriation while using the ITC for wind and solar would enable \$2 billion in loans at a 0% interest rate, along with \$129 million in grants and \$1.6 billion from the monetization of the solar, wind, and battery storage ITCs. This would lead to a total of \$1.1 billion in savings over 30 years compared to traditional financing without New ERA. Additionally, this would cover all of the co-op's equity needs from these loans, and provide an additional \$1.1 billion to improve the equity position of the co-op.

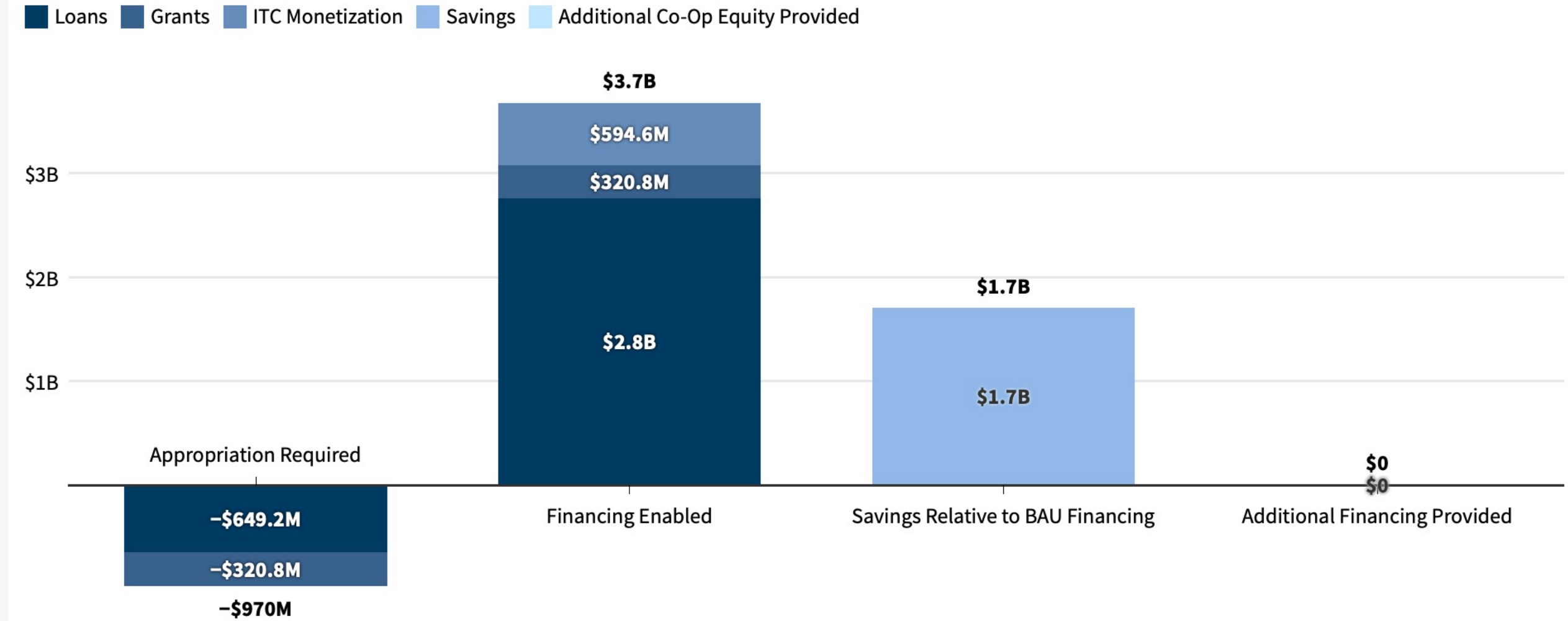


Source: RMI Analysis



2% Loan with PTC

\$970 million in New ERA appropriation while using the PTC for wind and solar would enable \$2.8 billion in loans at a 2% interest rate, along with \$320 million in grants and \$595 million from the monetization of the battery storage ITC. This would lead to a total of \$1.7 billion in savings over 30 years compared to traditional financing without New ERA. Additionally, this would cover all of the co-op's equity needs from these loans, but provide no additional co-op equity infusion.

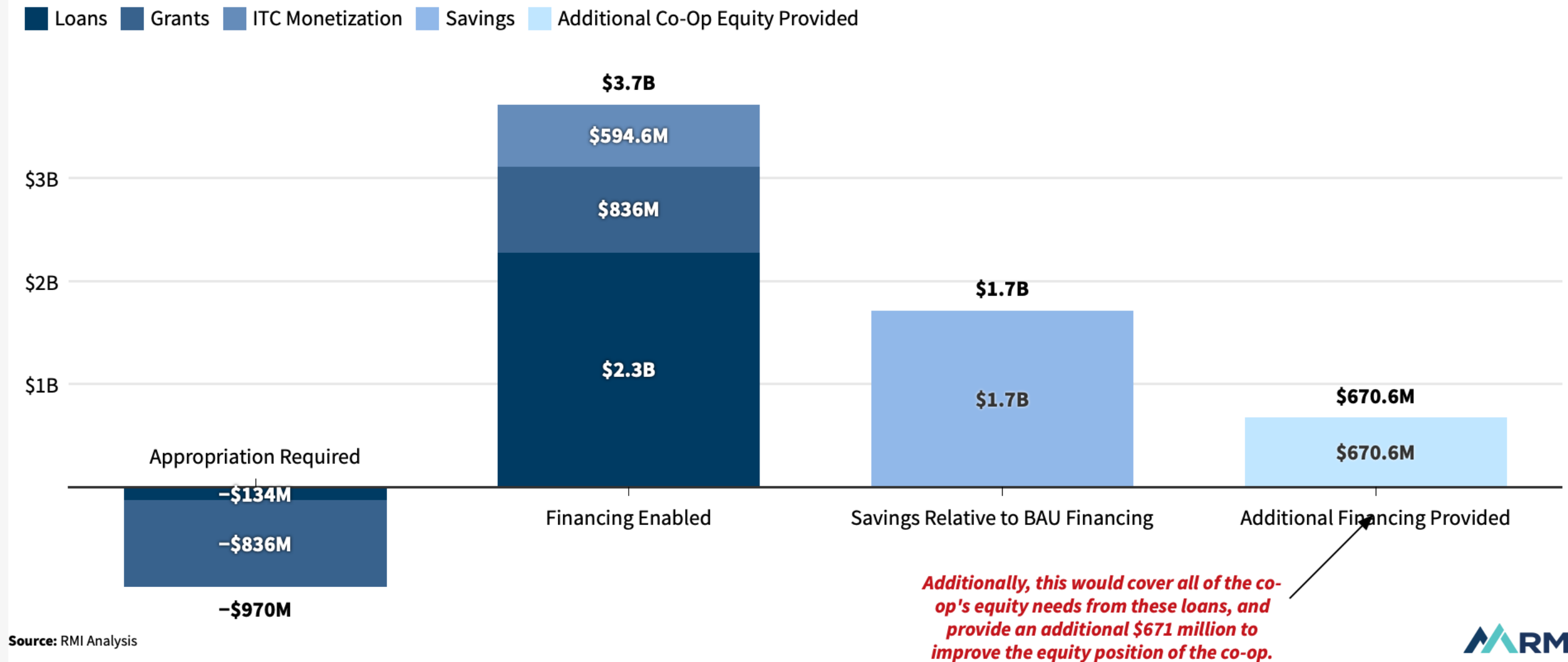


Source: RMI Analysis



Treasuries Loan with PTC

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Source: RMI Analysis



New model: third-party equity combines with New ERA grants or ITC to fully capitalize a project*

1. Developer contributes upfront equity to finance a wind or solar project along with a New ERA grant
2. G&T monetizes tax credits and pays off developer equity over time to take on full ownership of the project
 - *Structure resembles an inverted tax equity flip, with the G&T in the role of tax credit monetizer and eventual project owner*

Benefits:

- G&T can take direct pay tax credits, making the arrangement tax efficient and cost effective for members
- Arrangement aligns the incentive of developers with successful asset operation
- Model can be appealing for assets where PTC election is significantly more valuable than ITC

***Caveat:** Ability for G&T to use this structure will depend on final Treasury rules for variable ownership and direct pay tax credit

Renewable Energy and Zero Emission Systems can include transmission improvements or new transmission

Advanced conductors can improve efficiency and double line capacity

Reconductoring 25% of aging lines can free up 270 GW of capacity over next 10 years nation wide

Transmission investments require equity from New ERA grant or other source

Proactively start conversations with renewable energy developers and other key stakeholders

Co-ops have advantages when securing development contracts – next generation procurement practices will **let the market work for you**

Run a competitive bidding process with performance guarantees

All-source procurement asks bidders to deliver required services

Approach developers with an eye toward **long-term partnerships**

This is new: partners may require coaching to understand how co-ops work

Start small: partnerships will ultimately touch on operations, finances, and member engagement

Trust and verify: hire outside consultants and engineers for due diligence

Q&A

1. Owning or purchasing wind, solar, and short duration storage

Options, considerations, and strategies for financing New ERA Eligible Activities

1. Owning and purchasing wind, solar, and short-duration storage
2. Dealing with stranded asset costs
3. Carbon capture and storage, and other “clean firm” resource options
4. Demand- and distribution-side investments

Using New ERA to pay down stranded asset costs will be important to many competitive applications

Refinancing stranded asset debt can give co-ops flexibility in their operations to meaningfully reduce GHG emissions while keeping member costs low

RMI finds that maximizing the NPV of a project is the best approach to mitigate stranded asset costs

Caveat: Stranded assets can have unique financing situations including joint ownership or fuel contracts that require a customized approach

Co-ops can consider a separate DOE \$250 billion Energy Infrastructure Reinvestment program application as a complement to New ERA

Stranded fossil assets qualify

1

Retool, repower, repurpose, or replace legacy energy infrastructure

2

Enable operating energy infrastructure to avoid, reduce, utilize or sequester air pollutants or GHGs

Market-ready technology

- Refinancing at Treasuries + 37.5bp, capital must be reinvested nearby

Can note EIR interest in New ERA application

- RUS to consider applicant's ability to use other Federal program funds
- Applicants must navigate government rules on use of multiple financing programs

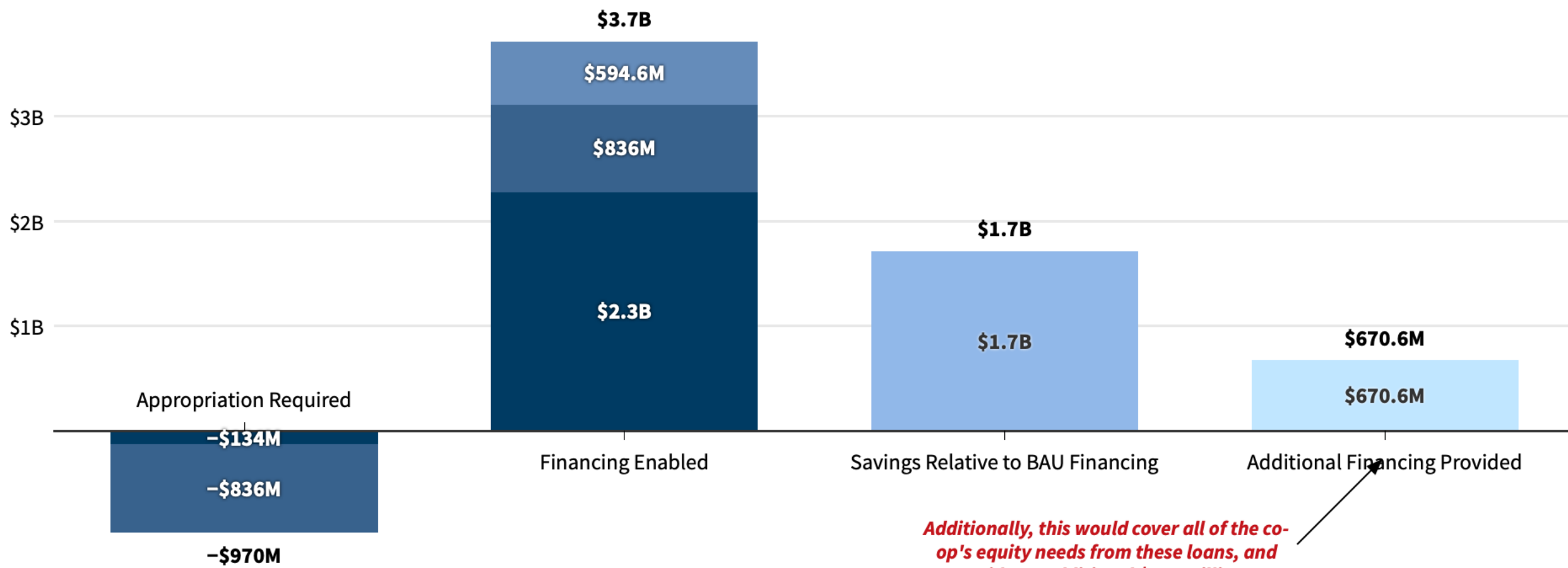
Additional requirements

- Financial benefits must go to customers
- Community Benefits Plan

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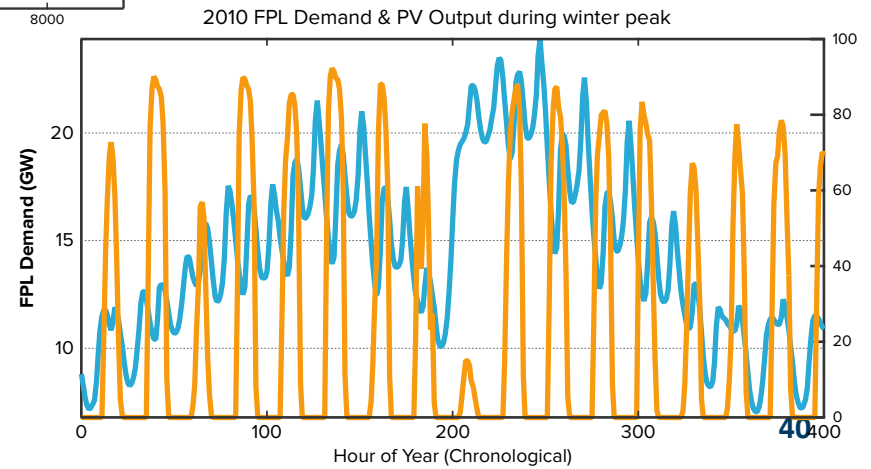
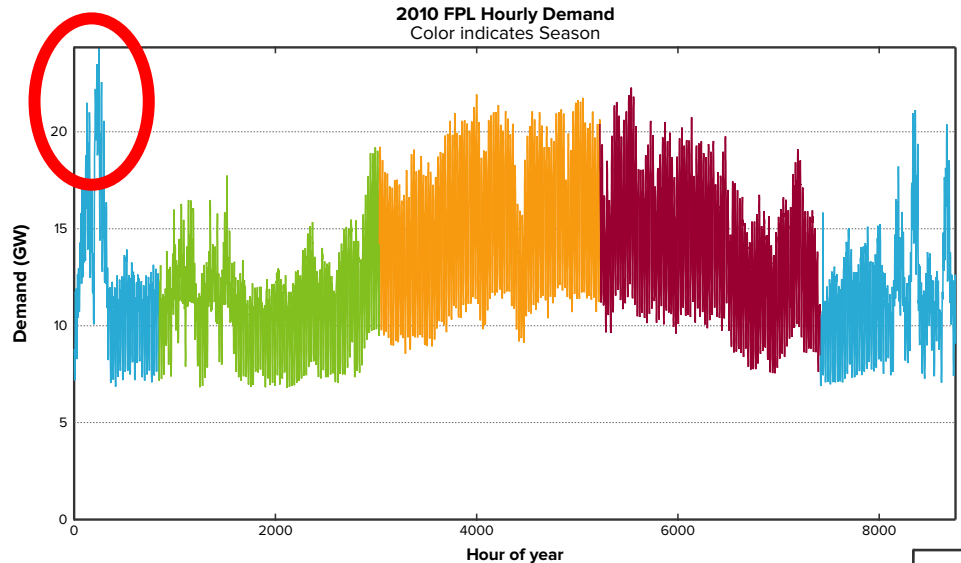
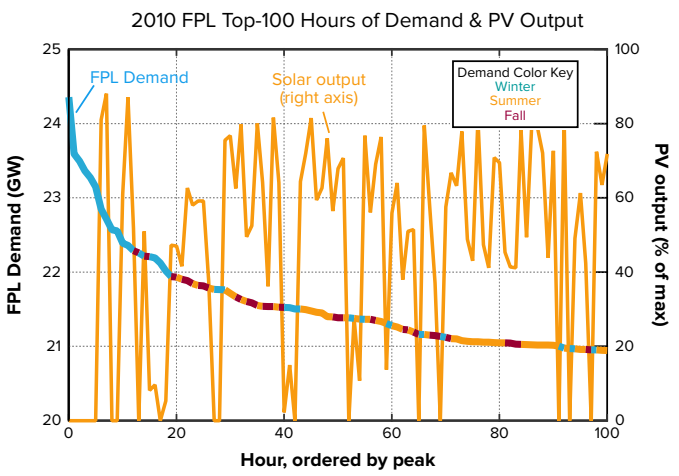
Source: RMI Analysis



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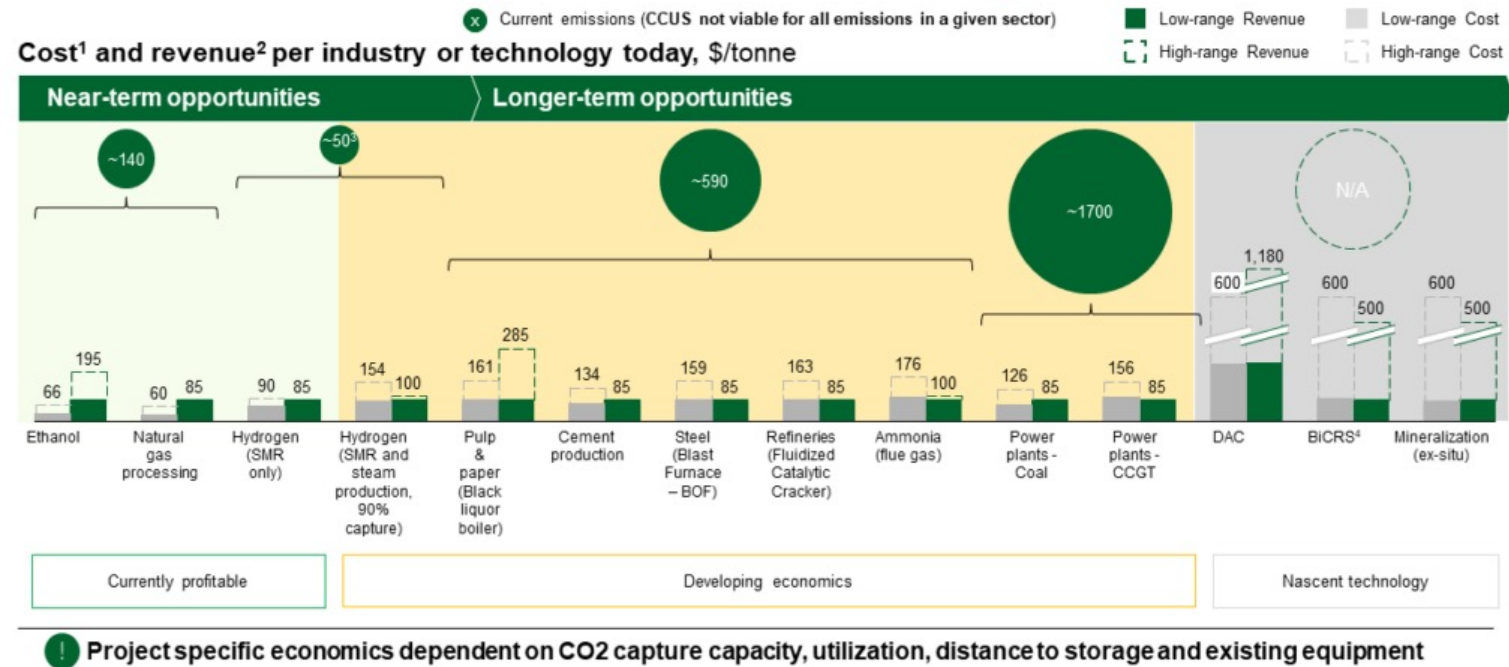
Emerging clean technologies – including CCS, long duration storage, SMR, green H2 – are required to support grid flexibility and resilience



New ERA and the direct pay 45Q tax credit provide a powerful incentive for CCS, but achieving emissions reductions by 2031 may be challenging

- New ERA applicants must consider whether a CCS project strengthens its ART submission
- CCS may be an important long-term strategy for co-ops, including support for energy communities and workers

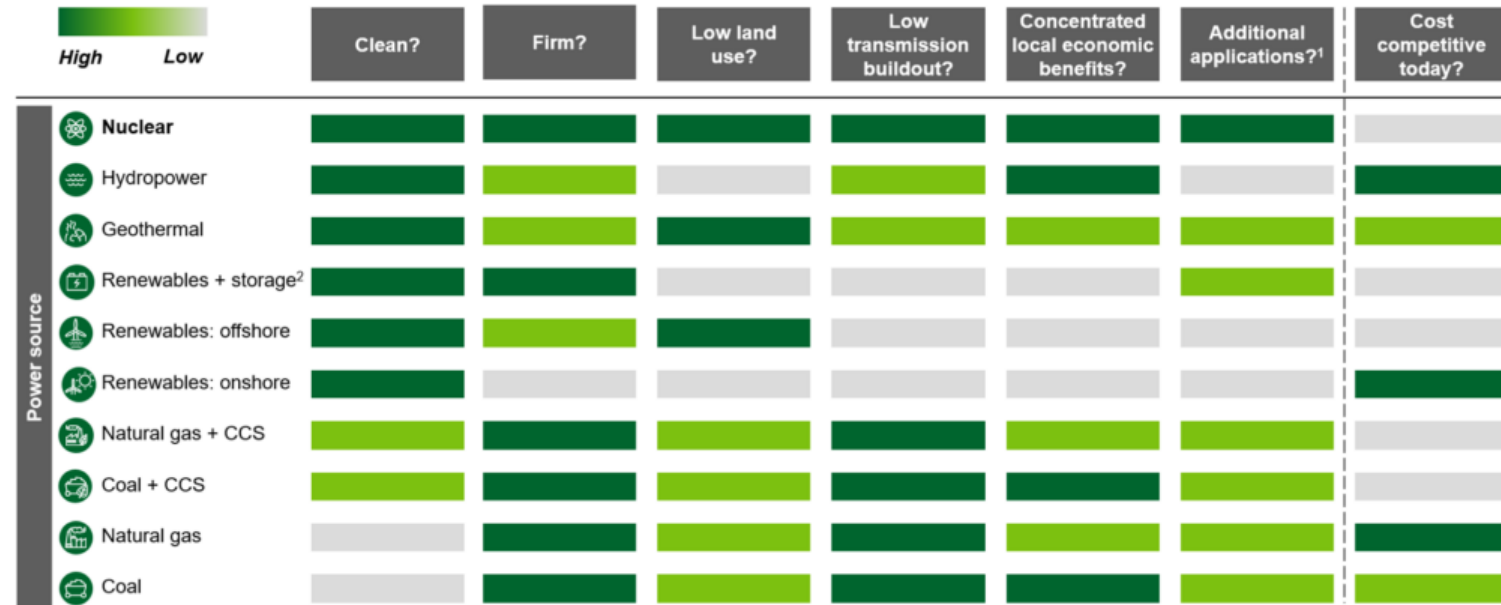
Higher purity sources are currently profitable but do not include sufficient emissions to achieve net zero goals



Source: U.S. DOE Liffort Report on Carbon Management

Many clean firm resources have appealing characteristics, and some are emerging in the market

- ITC applied to near term assets can support longer term investments
- Iron-air battery manufacturing plant announced in Spring 2023
- DOE loan guarantee for clean H2 storage facility in Summer 2022



1. Additional applications include clean hydrogen generation, industrial process heat, desalination of water, district heating, off-grid power, and craft propulsion and power
 2. Renewables + storage includes renewables coupled with long duration energy storage or renewables coupled with hydrogen storage

Source: U.S. DOE Liftoff Report on Advanced Nuclear

Options, considerations, and strategies for financing New ERA Eligible Activities

1. Owning and purchasing wind, solar, and short-duration storage
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- 4. Demand- and distribution-side investments**

Both New Era and ITC could drive distribution co-op investment on the demand side that could reduce emissions, lower bills, and add grid assets.

Distributed Solar and Storage

- Deployment has been limited in lower- and middle-income and rural communities.
- ITC and PTC change the financials dramatically.
- This could include both residential and commercial customers.

Inclusive Utility Investment

- A streamlined financing model where a utility provides up-front investment for EE/electrification projects and recovers costs through charges directly on electricity bills. Also known as tariffed on-bill financing.
- Solves the up-front investment challenge that LMI communities face.

Virtual Power Plants

- Grid-integrated aggregations of distributed energy resources can cut down on the need to run expensive peaker plants and generally rely upon existing transmission, avoiding expensive upgrades.

Distribution cooperatives could be uniquely positioned to help members take advantage of demand side IRA incentives

The Problem

Many cooperative members lack significant tax liability, meaning that they cannot directly take advantage of the ITC

Cooperative members cannot directly receive New ERA funds or direct pay

Cooperative members may struggle to provide the down payment needed to finance a solar system

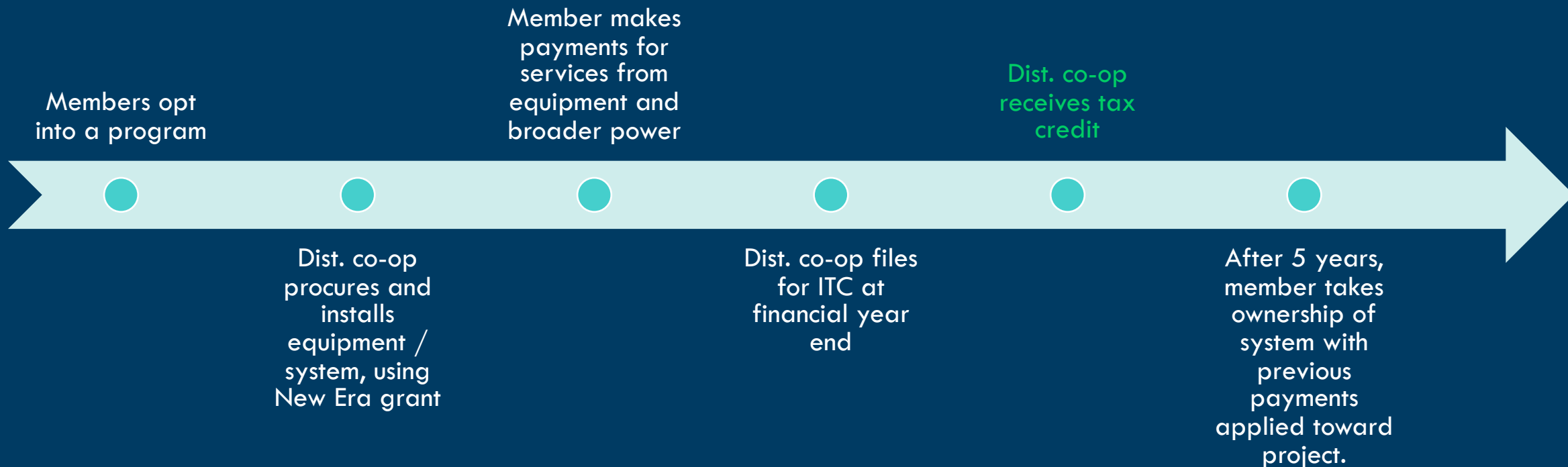
Cooperative members often lack experience with solar projects and will be unable to take advantage of bulk savings individually

The Opportunity

Distribution cooperatives can:

1. Make investments on the demand side in equipment
2. Take advantage of available incentives
3. Transfer ownership of the equipment to the end user when permissible

If permissible within the guidance, a model combining inclusive utility investment with a tax equity-like flip could broaden technology access

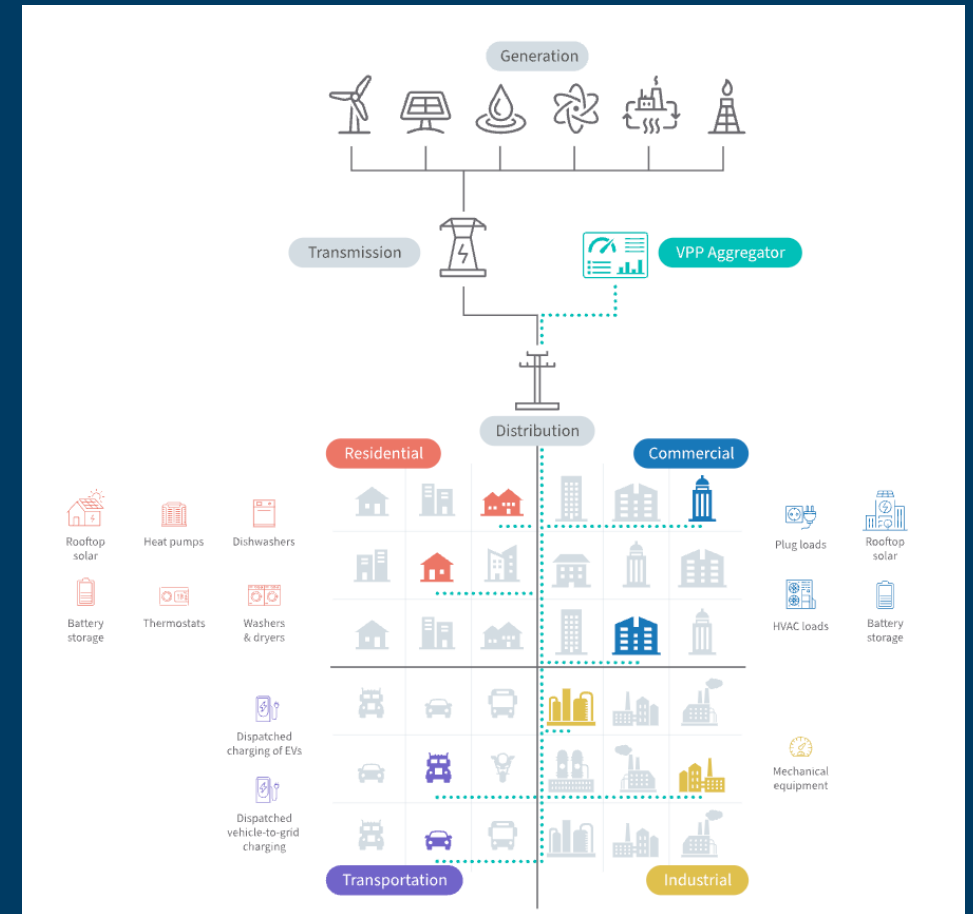


Caveats/Guardrails:

- Ability for distribution coop to use this structure will depend on final Treasury rules for variable ownership and direct pay tax credit
- To get the full ITC benefit, distribution cooperative must own the asset for 5 years.

VPPs present a multitude of benefits to utilities and customers. The RMI team working on Virtual Power Plants will host a meeting in early July with cooperative leaders focused on VPP investments using New Era

- **Reliability:** By 2030, VPPs could reduce peak demand in the United States by 60 gigawatts (GW).
- **Affordability:** VPPs can help reduce annual power sector expenditures by \$17 billion in 2030.
- **Decarbonization:** VPPs decrease dispatch of highly polluting power plants, driving build-out of lower-carbon power supply, and accelerating electrification.
- **Electrification:** VPPs provide revenue streams to incentivize electrification and help avoid grid bottlenecks,
- **Health and equity:** VPPs decrease reliance on natural gas-fired “peaker” plants, which disproportionately impact the health of low-income communities.
- **Consumer empowerment:** VPPs empower consumers to play a more active role in shaping the way energy is used.



Some technology options will require more work in ART to demonstrate their benefits

Explicitly-quantified projects in ART

For demand-side, energy-efficiency, and powerlines projects

Additions of Zero Emission Generation and Purchases	
Proposed New Renewable Project(s) Average Annual Generation (MWh)	
Proposed New Nuclear Project Annual Generation (MWh)	-
Proposed New Renewables Power Purchases (MWh)	
Proposed New Nuclear Generation Power Purchases (MWh)	-
Phase Down of Non-Zero Emission (Fossil) Generation Assets (Stranded Assets and Green Fuel Switching or Cofiring)	
Proposed Phase Down of Coal Asset Generation (MWh)	
Proposed Phase Down of Natural Gas Asset Generation (MWh)	
Proposed Phase Down of Oil/Diesel Generation (MWh)	
Carbon Capture and Sequestration	
Anticipated Annual Tons of CO2e Captured/Sequestered	-
Reduction of System Grid Losses	
Anticipated Annual <u>Reduction</u> of System Grid Losses (MWh)	

1. Perform power system modeling to get input for ART's "System Grid Loss Reduction" cell
2. Advocate for project benefits in Notes section

Agenda

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- 3 Financing resource plans with New ERA*

4 Q&A



Next Steps

1

Slides, recordings, and additional resources will be emailed to attendees following the trainings and posted publicly soon after.

2

RMI is funded to provide one-on-one support to New ERA applicants – please reach out if you would like to discuss financing strategies in more detail

3

Please use the last 2 minutes of this session to fill out a brief survey, so we can understand how RMI can best support you going forward

Feedback Survey: Co-op Bootcamp



Thank you for attending

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