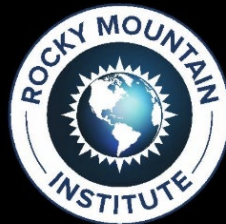




Closing the Circuit:

Stimulating Demand for Rural Electrification



Transforming global energy use to create a clean, prosperous, and secure low-carbon future.

AGENDA

- 1.The Importance of Demand Stimulation
- 2.Barriers and How to Address Them
- 3.The Path Forward
- 4.Discussion

Rocky Mountain Institute (RMI) has been transforming energy systems since 1982

- **Impartial NGO** grounded in technical and economic analysis, with a whole-systems approach to energy and focus on market-based solutions
- **Staff of 200+** scientists, engineers, and business, and policy leaders
- **Global operations**, working with governments, development partners, utilities, and the private sector – including in the U.S., China, India, sub-Saharan Africa, SE Asia and the Caribbean
- **37-year history** of transforming energy systems to increase efficiency, sustainability, and resilience (electricity, buildings, transportation, industry)
- **Sustainable Energy for Economic Development (SEED)** program in Africa, part of the global **Empowering Clean Economies (ECE)** Initiative, supports **affordable, efficient, and resilient** energy systems that incorporate emerging distributed energy resources to **provide energy access and increase economic development rapidly**



SEED receives generous support from:



Demand stimulation should play a role in electrification, but development efforts have overlooked demand-side barriers

Demand stimulation plays a necessary role in rural electrification programs



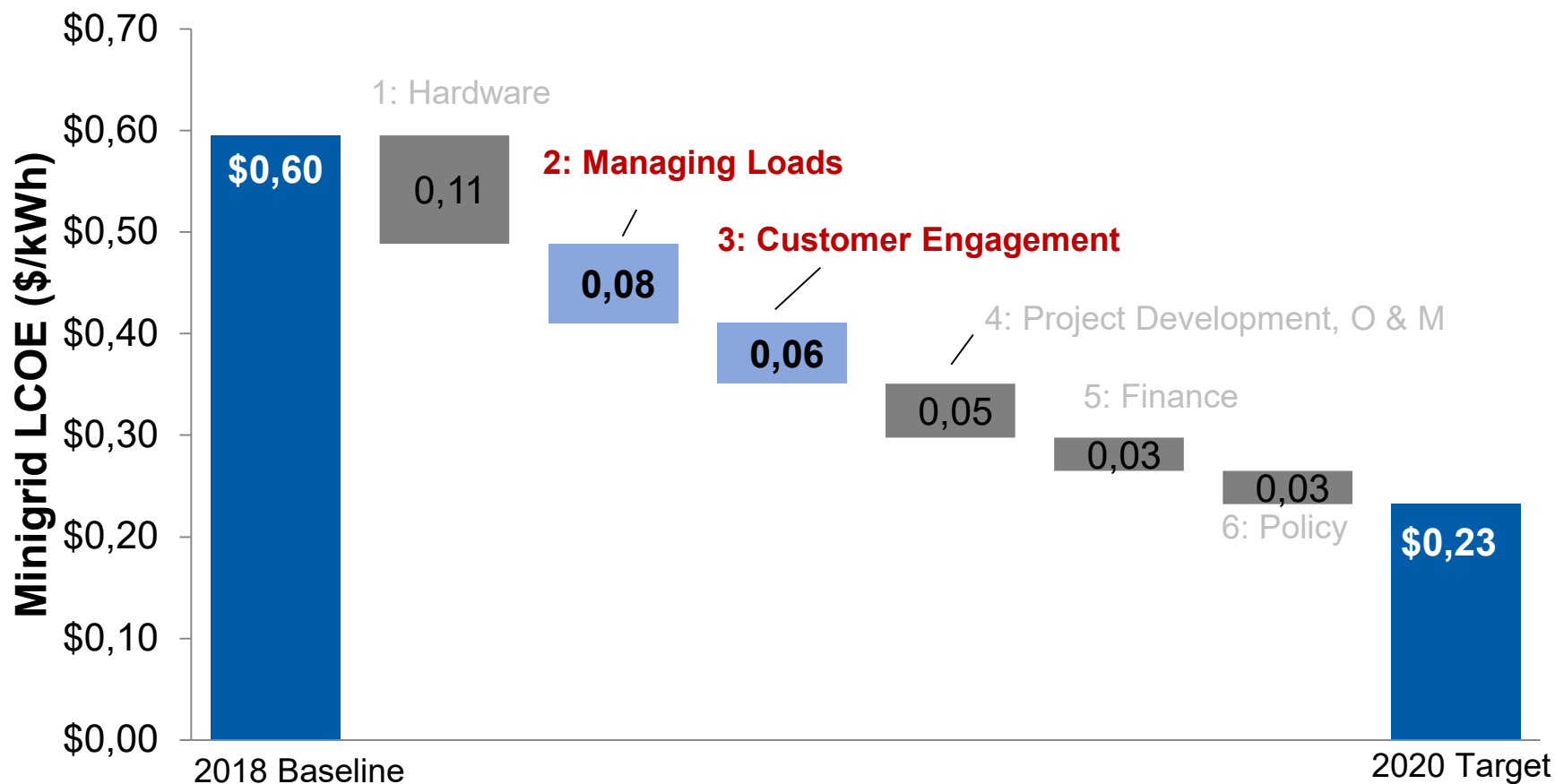
Electricity is a **system solution** that matches supply to demand, but historically electrification efforts in developing countries have disproportionately focused on supply.

Demand stimulation ensures:

- Consumers have access to equipment to use and **benefit from access to electricity**
- Improved performance and **growth** in **other sectors**, particularly **agriculture**
- Minigrids have higher **capacity utilization** and **lower costs**, reducing the **subsidy burden** of **rural electrification**

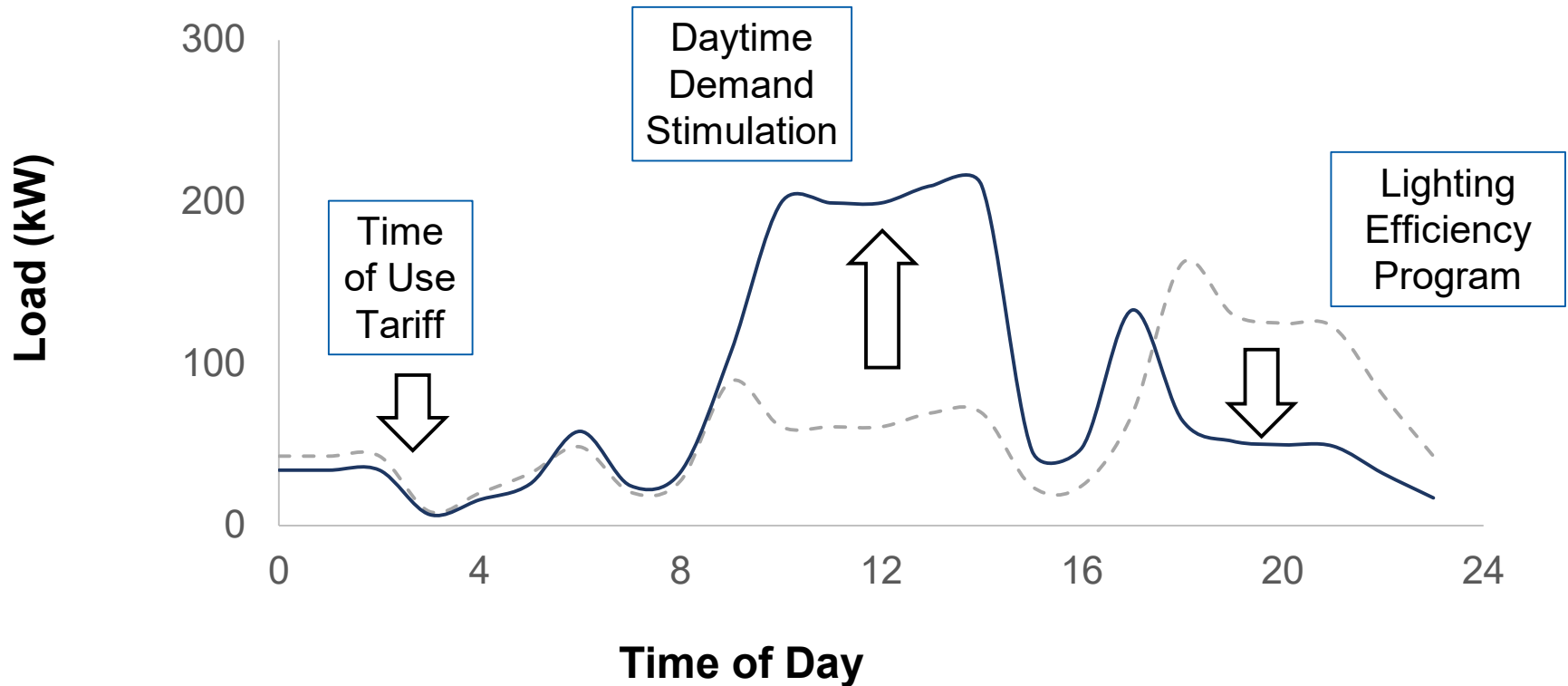
Mini-grid costs remain high, and demand stimulation will play a critical role in bringing them down

Pathway to reduce mini-grid cost by >60%



See RMI's report *Minigrids in the Money* for more detail: rmi.org/insight/minigrids-money/

Actively managing loads can improve capacity utilization and reduce cost of service



Implementation options:

- Committing demand with **customer agreements**
- Facilitating access (training, awareness, subsidies) to **energy efficient equipment** and **soft-start motors**
- Implementing **time of use tariffs** to incent daytime demand

Four major barriers and challenges limit demand potential

Equipment is unaffordable

- Efficient, high quality equipment is **expensive**
- Consumers have **limited access to finance** and **financing rates are high**

Electricity cost is high

- Systems are **oversized** with slow customer acquisition and high evening peak loads
- Low capacity utilization **increases cost of service**

Equipment is not readily available in remote locations

- Consumers do not have access to efficient **high-quality equipment** in remote locations
- **Lower income rural markets are harder to serve**: transportation, ability to pay, network constraints

Strategies and programs do not address demand considerations

- Electrification programs **do not dedicate financing** to address barriers preventing demand
- Metrics to capture program success solely **focus on supply** (connections made, MW installed)

Three key ways to address barriers and challenges

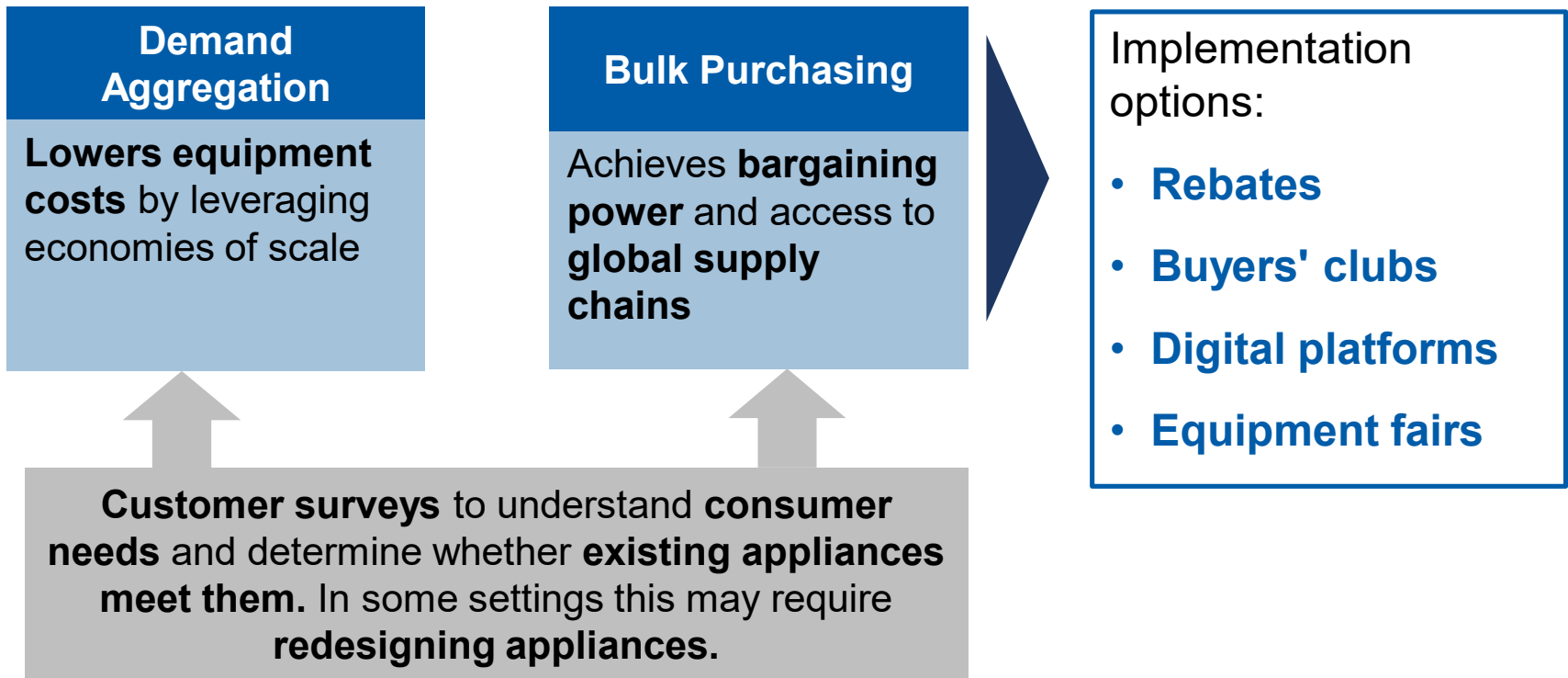
Demand Stimulation programming	Interventions	Example of activities
	1 Appliance Availability	<ul style="list-style-type: none">• Customer Surveys• Equipment Redesign• Equipment Database• Bulk Procurement
	2 Finance and Affordability	<ul style="list-style-type: none">• Concessional Finance Schemes
	3 Awareness & Education	<ul style="list-style-type: none">• Value Chain Assessment• Ed: Appliance Access• Ed: Finance Access• Enterprise Development Training

Ensure that customers can **identify, find** and **afford** the “right” equipment

1

It is important to ensure consumers can identify and find the equipment that meets their needs

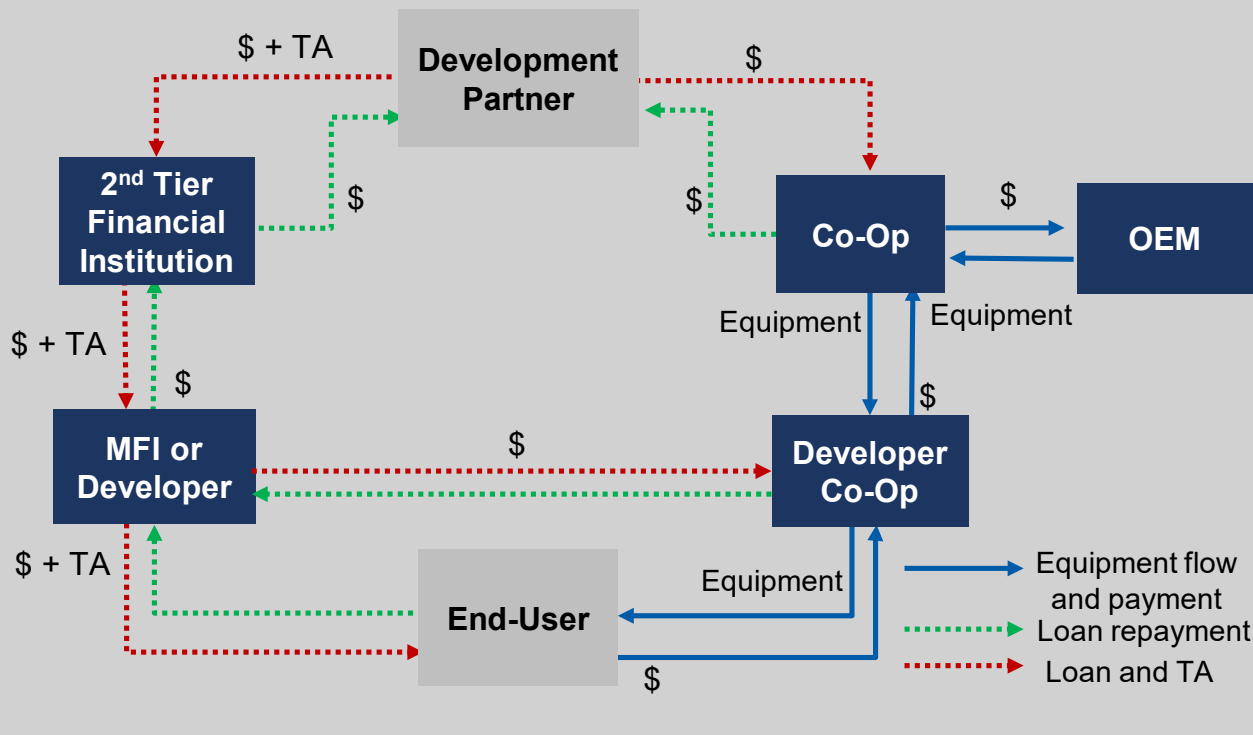
Understanding consumer needs enables providing the right appliance, while demand aggregation can reduce costs



2

Affordable financing enables consumers to surmount upfront costs of equipment purchase

Concessional finance schemes improve affordability by de-risking investment to improve loan terms



Implementation options:

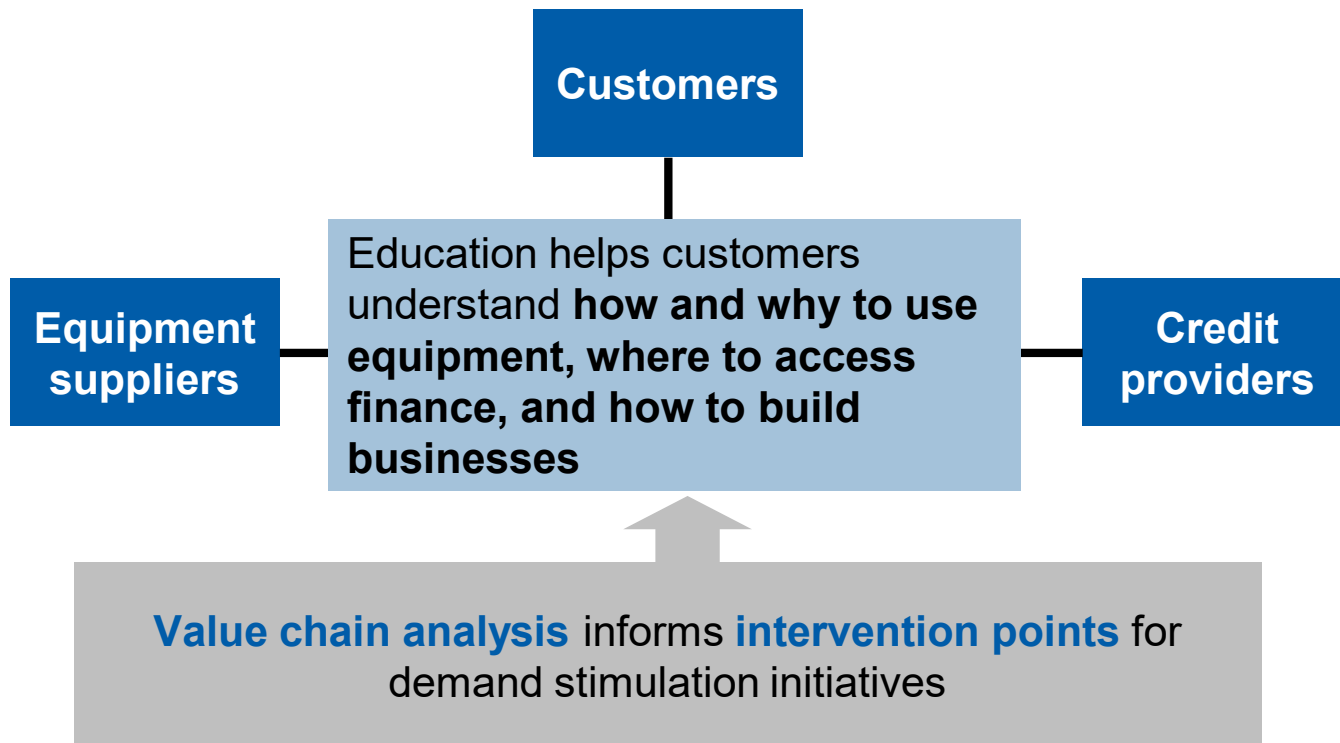
- **Risk guarantees** to de-risk equipment provider investments and improve loan terms to small enterprises
- **Concessional financing/ tailored financing terms** to provide initial rounds of appliance financing, demonstrate viability of investment, and attract appliance providers and financing

Example of a concessional finance fund to support equipment purchases

3

Awareness and education campaigns connect key stakeholders participating in demand stimulation

Awareness and education are connective tissue for demand stimulation initiatives



Implementation options:

- **Road shows** and local **community engagement** to build customer understanding of available appliance and finance options
- **Credit evaluation and business plan training** to help suppliers and users understand the business case
- **Equipment lists** to identify durable, reliable equipment

Demand stimulation intervention activities

Intervention Category		Intervention Scale
Needs Assessment	Value Chain Evaluation	National
Business Development Services (Training and Education)	Identify the Right Equipment	National and Local
	Business Case Assessment	Local
	Enterprise Development & Training	Local
Equipment Provision and Consumer Finance	Local Appliance Availability and Affordability	National and Local
	Information on 'Right' Appliances	Local
Larger Scale Demand Stimulation Projects	Larger Scale Demand Stimulation Interventions	Local
	Cross-Sector Development Partnerships	National
Electricity Service	Electricity Cost and Pricing	Local
	Tariff Structure	Local
	Service Quality	Local

Interventions across the value chain can support demand stimulation efforts:

- **Value chain analysis** to understand gaps where targeted interventions can grow local economies
- **Business development** to help developers & customers get the most from new appliances and equipment
- **Equipment provision & finance** to develop and help customers access the right appliances and equipment
- **Large scale projects** to promote productive uses and economic growth by targeting larger ventures and new markets
- **Electricity service models** create the right conditions to increase the rate of uptake

Stakeholders can unlock demand stimulation in a variety of ways

Governments

- Expand **electrification strategies** and goals to consider and dedicate funding to demand stimulation
- Create **supportive policies** for demand stimulation interventions
- Fund activities to **understand market needs** and opportunities—value chain analysis and customer surveys

Minigrid Developers

- Broad range** of activities from:
- Light-touch approaches (**electricity pricing**) to
 - Implementing **larger-scale demand stimulation interventions***

Development Finance Institutions

- Include demand stimulation **components** in **design of electrification and access programs**
- Dedicate funding to **finance equipment purchases** or de-risk investment by providers and **outreach and awareness campaigns**
- Support regional or national scale interventions—**bulk procurement, equipment databases, equipment redesign**

* Choice will depend on options allowed by the regulatory and policy framework

RMI is developing and demonstrating demand stimulation interventions and sharing lessons learned

Our work to date

Program design & Pilot in Ethiopia:

- Helping incorporate demand stimulation component in **National Energy Policy**
- Analyzing representative communities to **collect data** and determine **data-driven** energy access solutions
- With government, identify **cross-cutting national support structures** for local demand stimulation interventions (e.g. concessional finance schemes and value chain assessment)

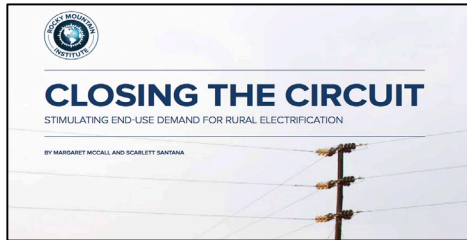
Equipment mapping and program design in Nigeria:

- Supporting Rural Electrification Agenda (REA) to **integrate demand stimulation** into mini-grid programs and identify national-level intervention options
- Identifying **equipment** to meet entrepreneur needs in markets
- Creating quantitative, **data-based evidence** on how demand stimulation supports economically-viable minigrid projects

Going forward we are working to:

- Deepen industry understanding of how demand stimulation can support productive use **value chains**
- **Convene** stakeholders to **prove** demand stimulation interventions
- **Guide capital flows** to support demand stimulation programs

Recent RMI analyses on opportunities for mini-grid viability available in report form:



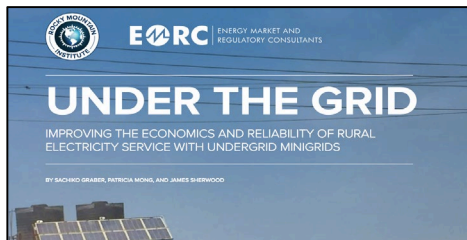
Closing the Circuit: Stimulating end-use demand for rural electrification

rmi.org/insight/closing-the-circuit/



Minigrids in the Money: Six ways to reduce minigrid costs by 60% for rural electrification

rmi.org/minigrids-money-reduce-costs/



Under the Grid: Improving the economics and reliability of rural electricity service with undergrid minigrids

rmi.org/insight/under-the-grid/



Thank You

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