

Lessons from the Solar Market:

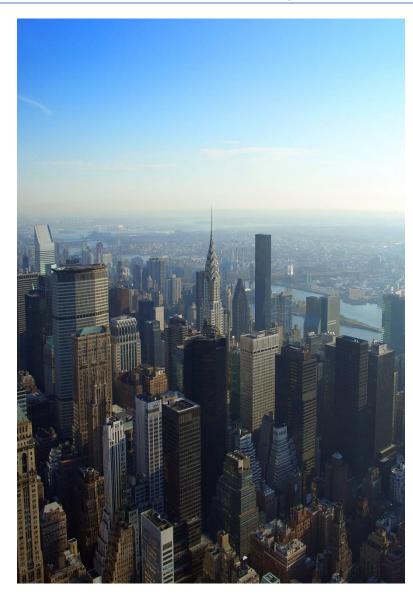
What does it take to create scalable, investable markets for energy efficiency?

Maria Fields, Joule Assets
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Joule Assets: Market View



- Private real assets fund targeting \$100 million in Energy Efficiency(EE)/Demand Management(DM) project finance
- Capital source aligned with project performance and cash flows, not credit
- Focused on small and medium commercial buildings (<100,000 sq.ft.) - 97.5% of U.S Commercial Buildings (EIA 2012)
- Technology issues are largely solved. Remaining market barriers hold back access to value and scale – including opaque/fragmented market structures and lack of sophisticated financing models



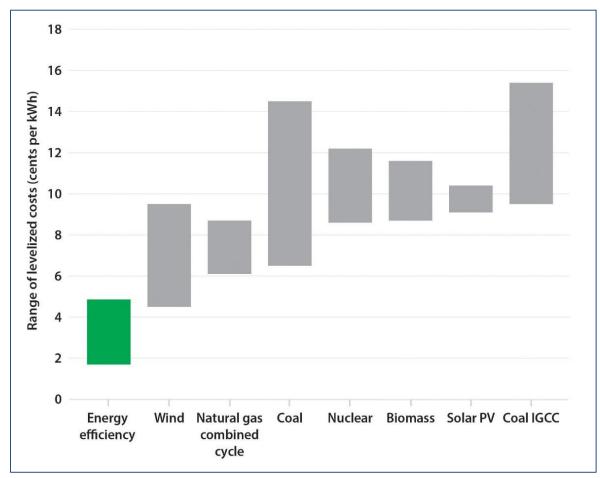
Joule's strategy is designed to remove market complexity and unlock value

EE - A new kind of energy infrastructure?



- Economic/environmental benefits largely unrealized despite significant efforts
- EE remains the low hanging fruit with proven, cost effective savings
- \$ 7 B/year in ratepayer funded EE programs

Levelized Cost of Energy – source: ACEEE



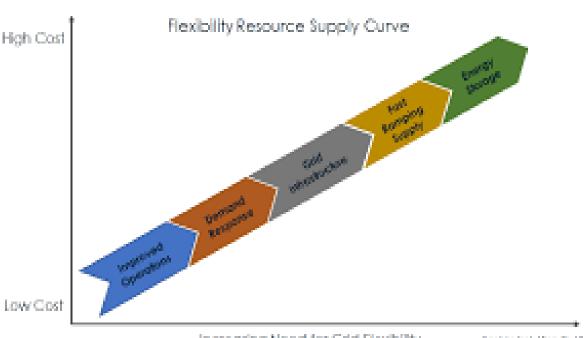
Are we paying for EE the wrong way?

Current technology provides additional benefits



- Estimated \$400B investment required to modernize grid by 2030
- T&D expenses represent an increasing share of retail electricity rates
- Increasing drive to offset traditional infrastructure upgrades with demand flexibility

Increased Need for Grid Flexibility – source: NREL



Increasing Need for Grid Flexibility

Coopins adapted from Plack Deschales et al. "The light of Energy Storage with Removable Alle Notice Commission, Talkin, 2010.

Measurement and Control delivers additional value

Current system contributes to market barriers



Common threads:

- Incentives based on predicted savings
- Ex-post evaluation of program performance

Deployment at Scale

E, M&V: \$200 mill/year

Current:

- Technical sale requires education of non-expert customers
- Even with attractive programs in place, states/utilities have difficulty meeting EE mandates/goals

Pay for performance policies

Access to private funding sources

Current:

- Incentives use predictive, deemed models
- No financial accountability
- Quality control, M&V focused on ex post evaluation
- Private sector remains focused on programs not markets

Current:

- Projects lack standardization
- Capital sources remain on the sidelines
- Financing is available on loan/lease model

Including P4P financing creates an aligned transaction JOULE

Possible: Common threads: Sale converts from technology Deployment at Single information source purchase to service Scale Transparent, real time data • Financing offered in bundle of project aligns counterparties on benefits... with guarantees goals, outcomes, rewards Insurance assures customer that installation will perform Shorter sales cycles **Private Capital** Source Pay for Access to private performance funding sources

Possible:

 Procurement of EE as a resource under standardized models

policies

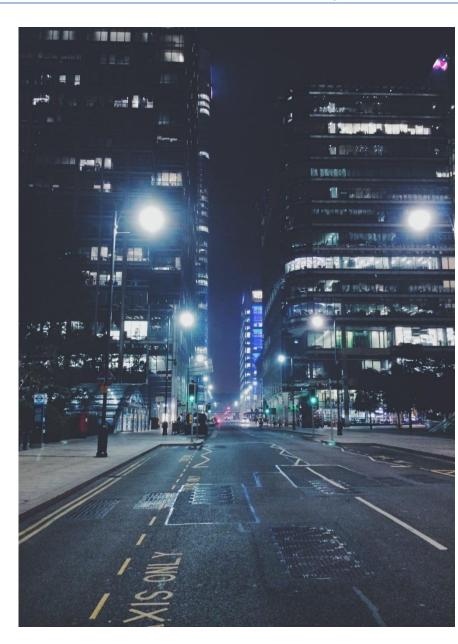
Possible:

- Investment dollars can flow to projects, with repayment based on measured savings
- Underwriting based on project performance
- Aggregations of performance data enable actuarial approach, access to capital markets

Joule Assets – Role of Fund Manager



- Technology agnostic
 - ✓ Integrates current and future technology to maximize site benefits
- Delivers maximum value
 - ✓ Whole building M&V brings additional value and a role for utilities
 - Accessing dynamic markets and environmental attributes brings optionality to investment (DR, DM, CPP?)
 - ✓ Sites are enabled and future proof
- Active Risk Management
 - ✓ Persistence of savings matters
 - ✓ HSB insurance brings investment grade counterparty to transaction
- Access to secondary capital markets
 - ✓ De-risks investment
 - ✓ Lowers cost of capital





Thank you!

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