대한민국국회
NATIONAL ASSEMBLY

Financing Energy Transformation

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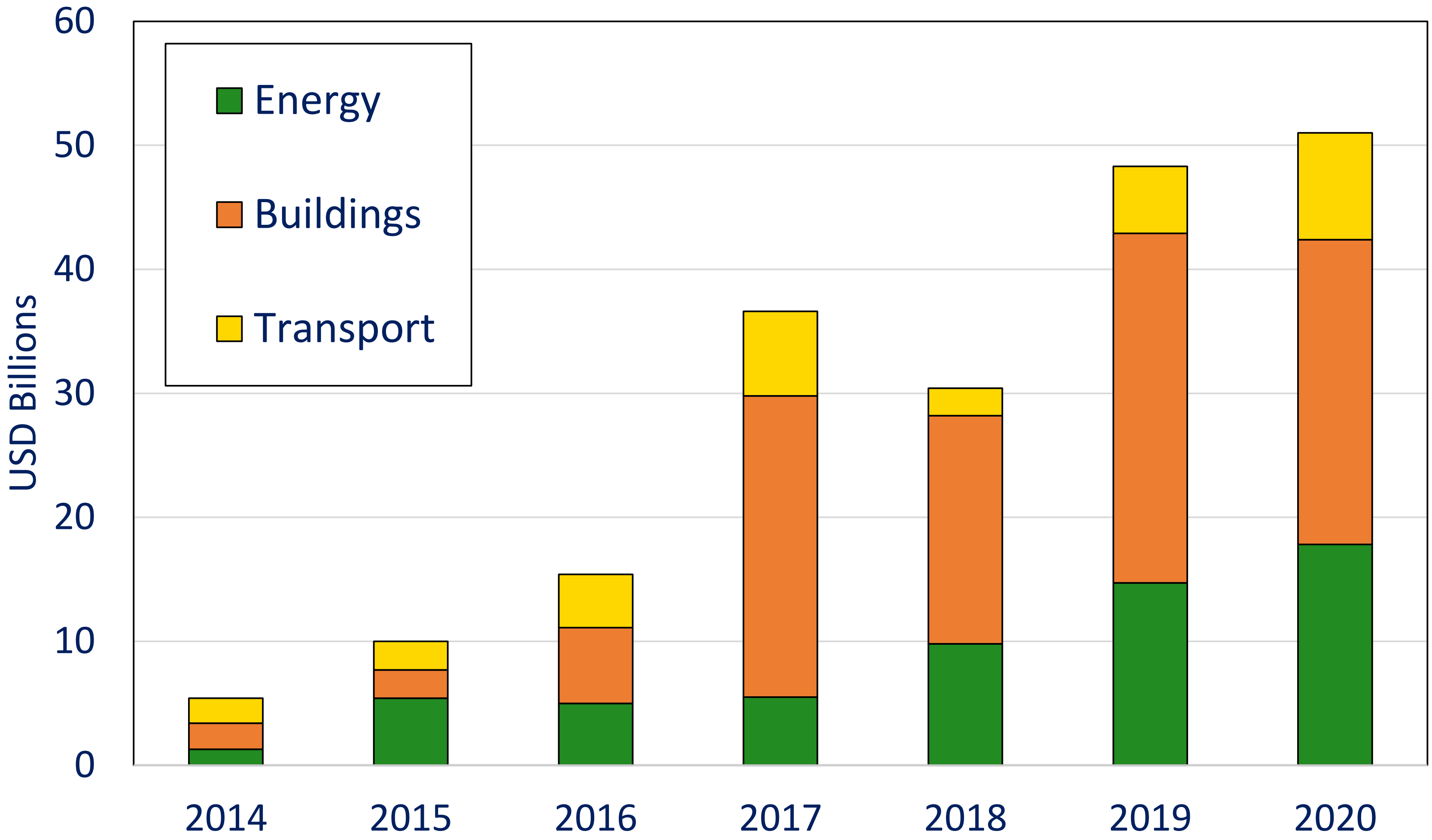
Outline

Two Successful US Policy Strategies

- Targets-with-Incentives strategies to increase business and consumer choices, stimulating rapid expansion of green energy **markets**
- Green Infrastructure strategies to focus capital markets on investment in green energy **infrastructure**

Message: BOTH Strategies Are Needed!!!

North America Green Bond Market
Renewable Energy, Energy Efficiency & Green Transportation Financing

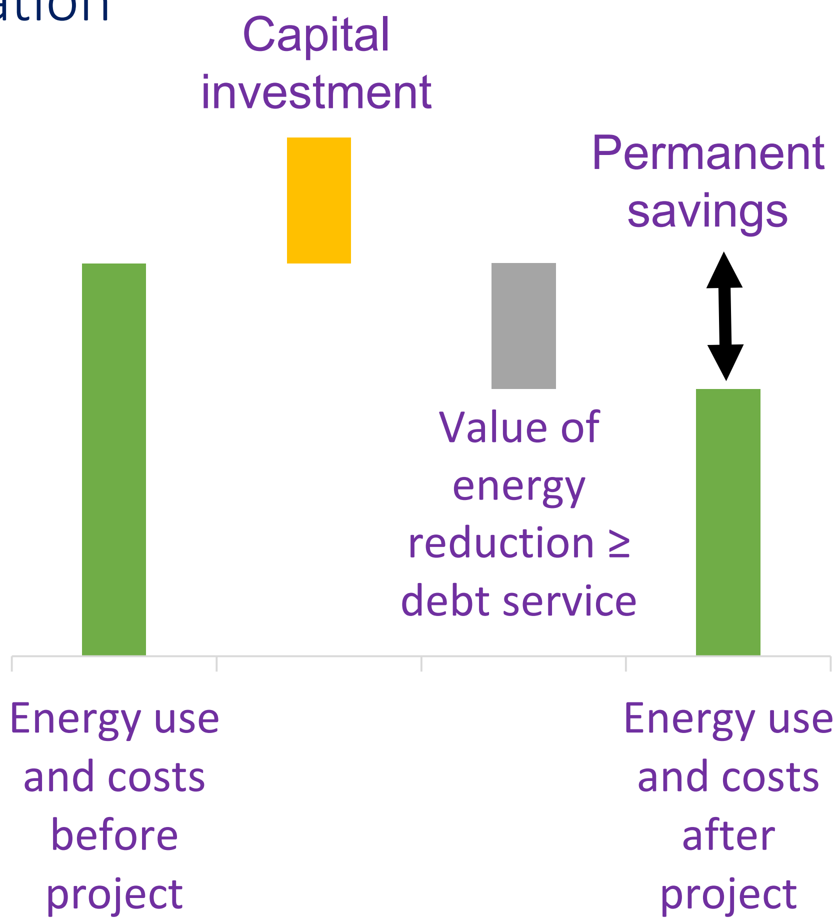


Source: Climate Bonds Initiative (CBI) (2023). (https://www.climatebonds.net/market/data/#use-of-proceeds-charts)

SUSTAINABLE ENERGY UTILITY (SEU) BOND/BANK FINANCING

Self-Financing as a Basis for Capitalization

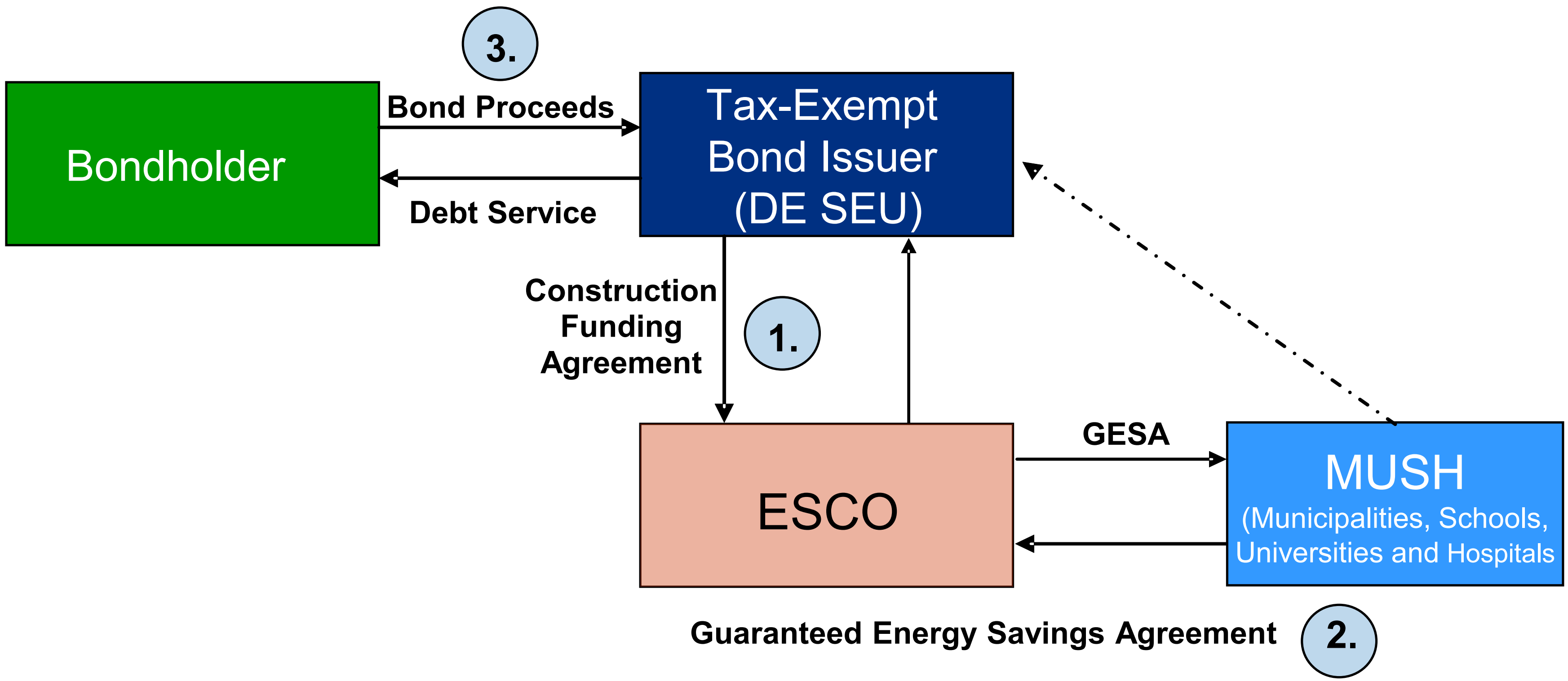
- Bond/Bank financing strategy for permanent energy savings
- Savings are guaranteed to match or exceed all capital and program costs
- Expands upon market-tested project finance contracts
- Attracts low-cost capital at scale



John Byrne and Job Taminiau (2015) "A Review of Sustainable Energy Utility and Energy Service Utility Concepts and Applications: Realizing Ecological and Social Sustainability with a Community Utility." *Wiley Interdisciplinary Reviews: Energy and Environment*, doi: 10.1002/wene.171.

Sustainable Energy MUSH Sector Bonds ("SEBs")

The SEB provides MUSH participants with significant financial, administrative and operation benefits

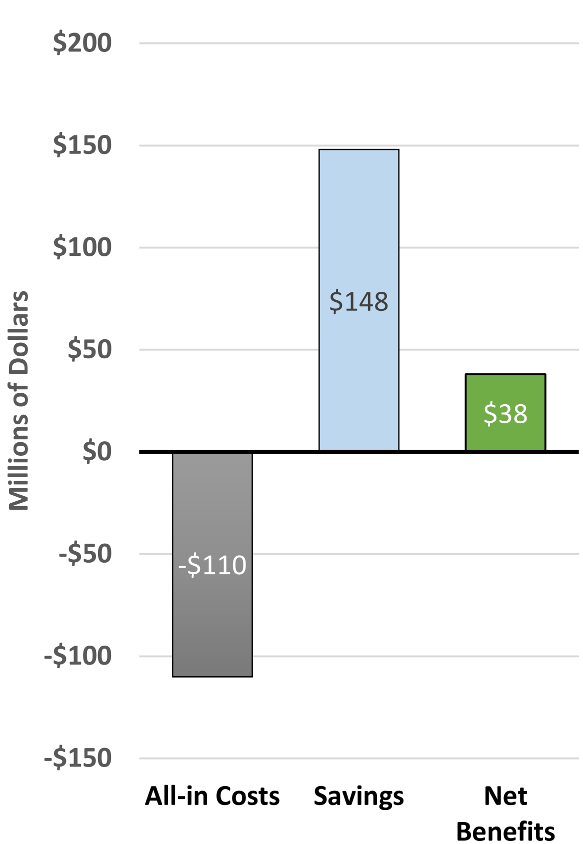


1. 2. & 3. Are based on Investment-Grade Energy Audit (IGEA)

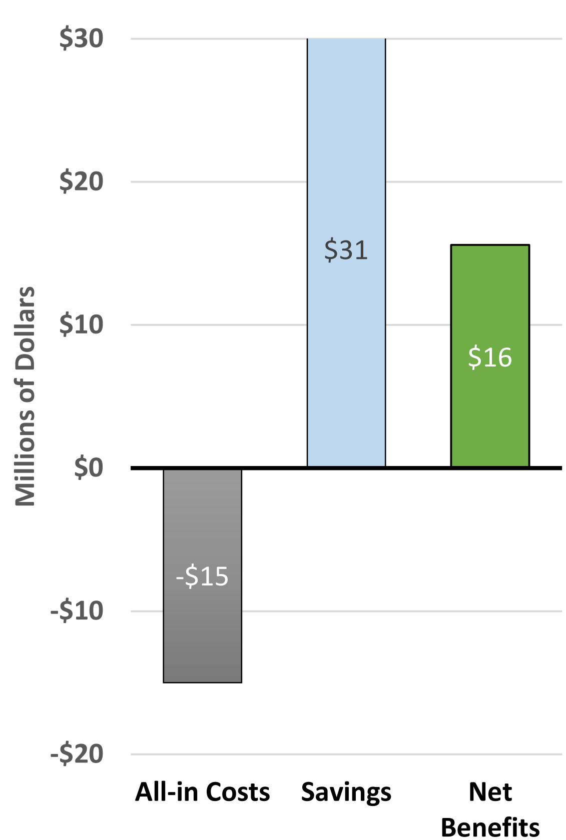
1. The Bond Issuer (in Delaware, this was the SEU) enters into a Construction Funding Agreement with the Energy Service Company ("ESCO") agreeing to provide capital for EE investments. (Citi served as bond underwriter.)
2. The ESCO enters into a Guaranteed Energy Savings Agreement ("GESA") agreement with a MUSH client. The ESCO guarantees targeted annual $$$ savings that are greater than annual debt service payments. Any annual shortfall is paid to the MUSH client by the ESCO (or if both parties agree, the ESCO can install, at its own cost, additional energy efficiency measures that meet the guaranteed savings standard
3. Tax-exempt bonds are secured by the assigned payments under the Installment Purchase Agreement

Infrastructure-Scale Green Financing Delivers Significant, Long-lasting, Guaranteed Savings

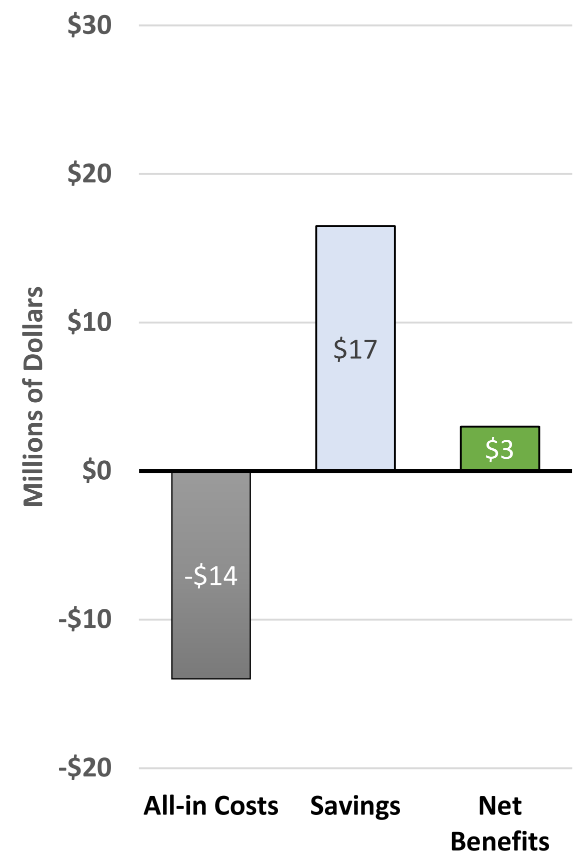
DELAWARE SEU (2011)



RSLPP (2017)



HACC (2023)



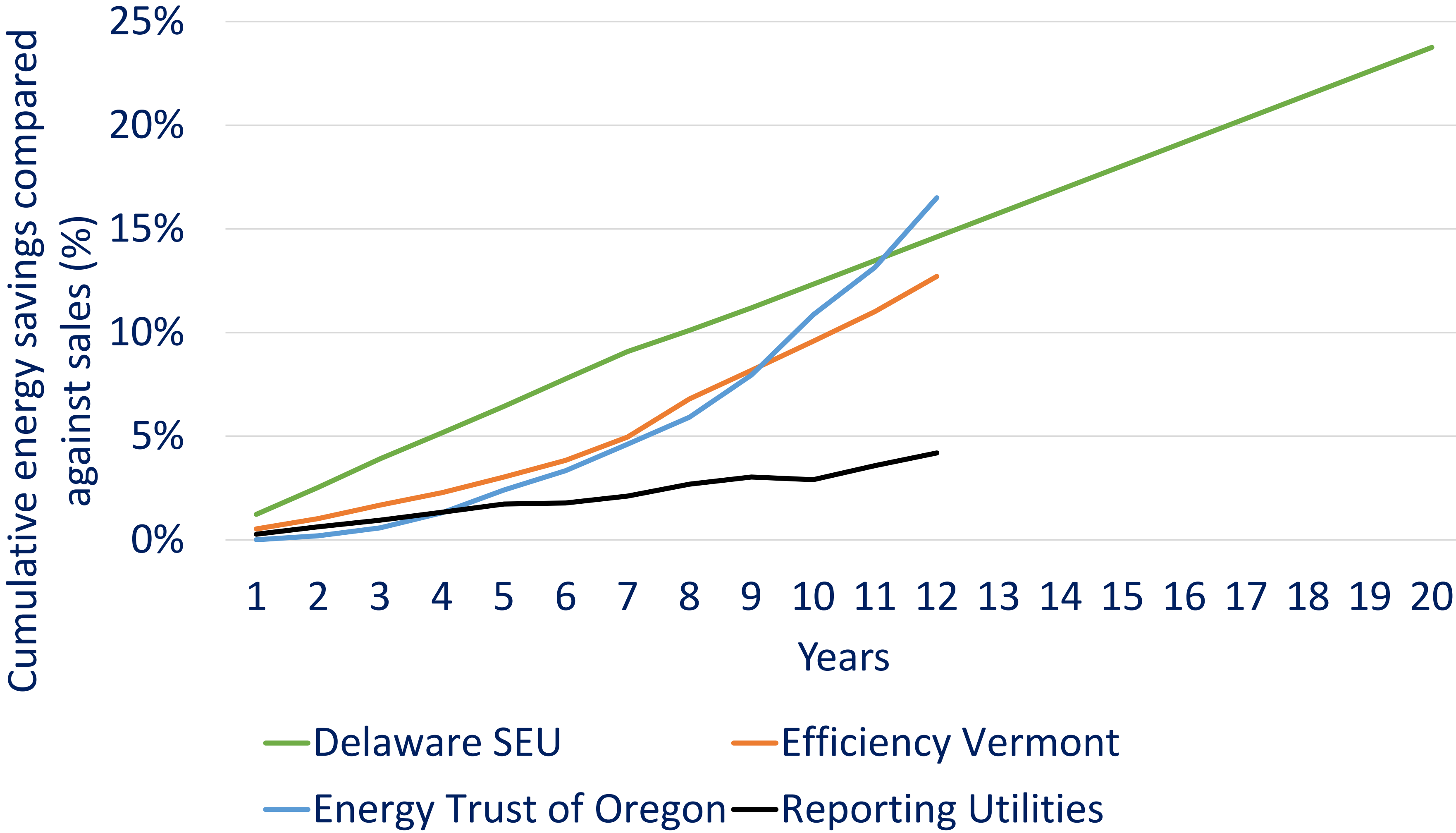
Notes:

DE SEU is an abbreviation for Delaware Sustainable Energy Utility. Its 2011 financing represented the first green bond based entirely on payments from guaranteed energy savings. The official statement for this bond financing is available on request.

RSLPP is an abbreviation for the Regional Streetlighting Procurement Program organized by the Treasury Department of Pennsylvania and FREE under its PennSEF initiative (Pennsylvania Sustainable Energy Finance https://freefutures.org/pennsef/. It was financed by a local bank and included 35 municipalities in the Philadelphia metropolitan area. For details, see https://freefutures.org/announcement/pennsef-pioneers-clean-energy-financing-for-35-municipalities/

HACC is an abbreviation for the 5-campus Harrisburg Area Community College. Bond financing was used through PennSEF. See http://newsroom.hacc.edu/article_display.cfm?article_id=3153

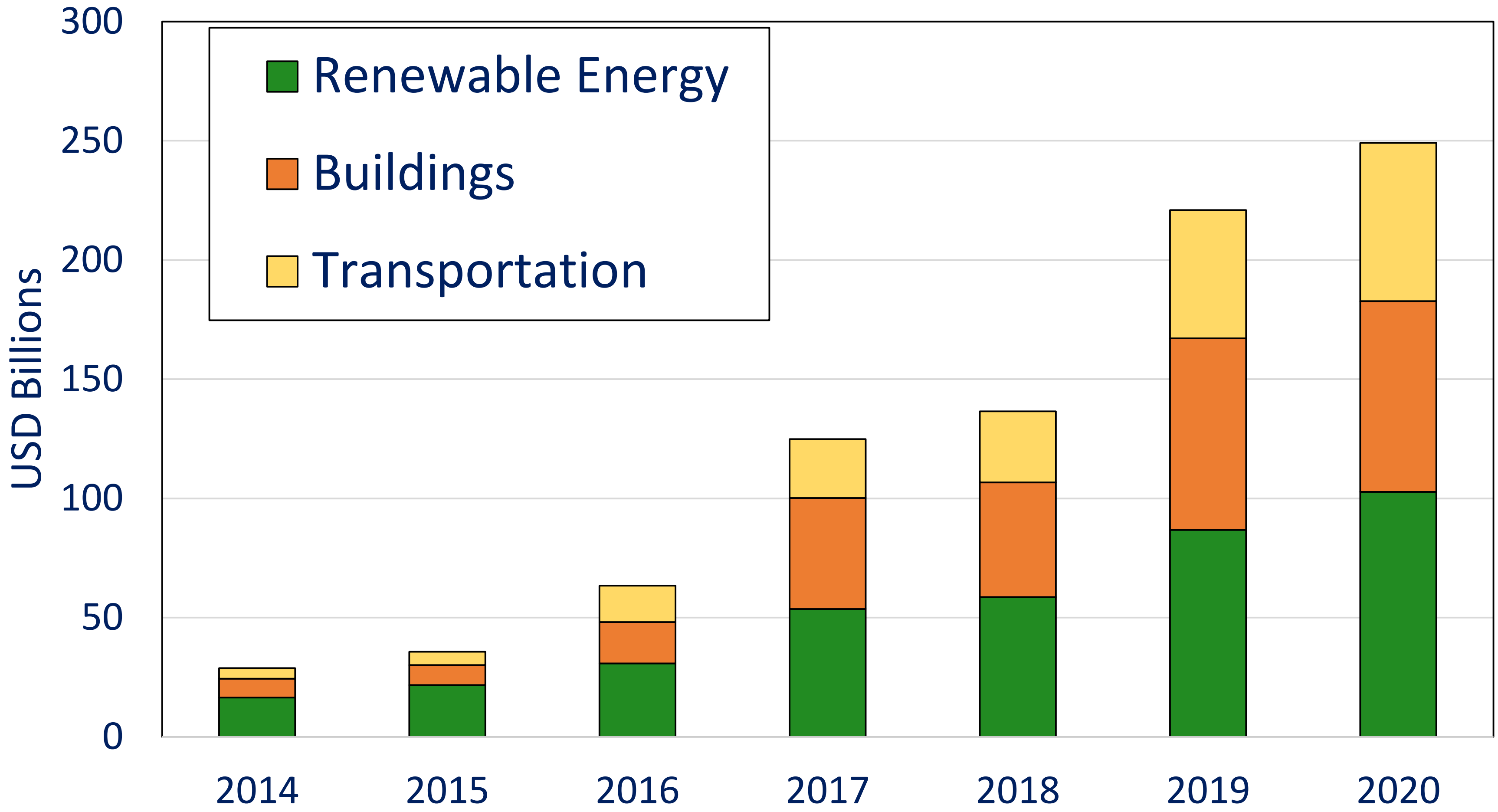
Infrastructure-scale Energy Efficiency Exceeds US Investor-Owned Utility Savings Rate*



* IOU savings programs are incentive-based.

Source: John Byrne and Job Taminiau, J. (2016) "A review of sustainable energy utility and energy service utility concepts and applications: realizing ecological and social sustainability with a community utility". *WIREs Energy Environ*, 5: 136-154. https://doi.org/10.1002/wene.171

Global Green Bond Market
(2014-2020)



Source: Climate Bonds Initiative (CBI) (2023). (https://www.climatebonds.net/market/data/#use-of-proceeds-charts)

The SEU Green Finance Model produces Triple Bottom Line results:

- It saves energy and water on infrastructure scales using much better technology that is <u>guaranteed</u> to lower costs for at least 15 years
- It increases jobs and creates new businesses to serve the <u>new economy</u>
- It proves infrastructure-scale decarbonization and economic development are <u>compatible</u> policy goals