Innovative Financing for Energy Storage

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Research Objective

Develop and disseminate practical guidance on financing novel applications of energy storage with new federal funding programs.

Applications

1) Financing community-serving storage projects
2) Financing storage as a transmission asset
3) Financing emerging storage use cases

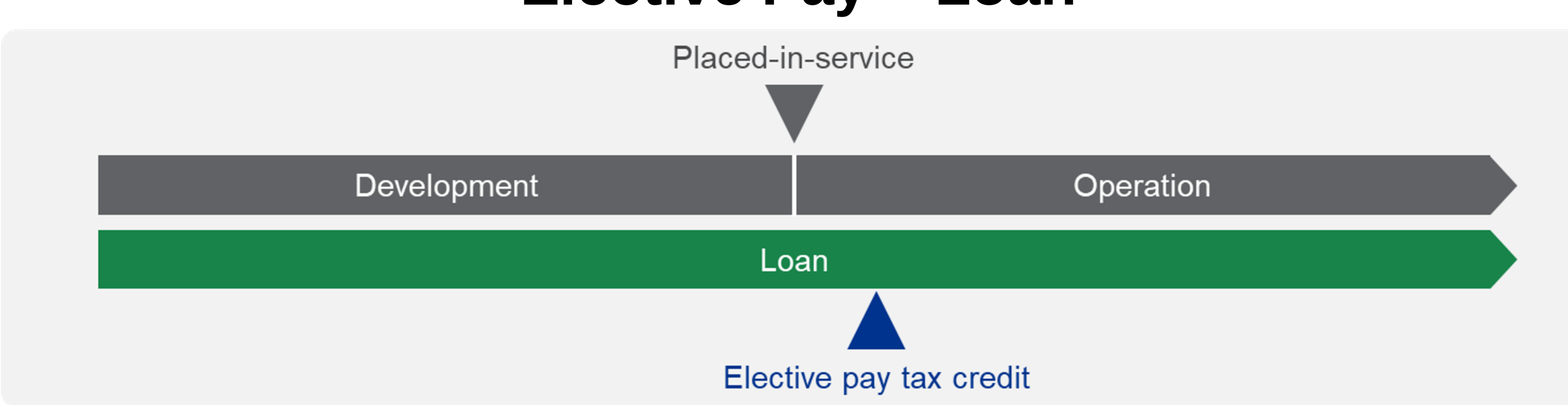
Community-Serving Energy Storage Background and Need

Federal legislation and programs have recently established new funding mechanisms for energy storage:

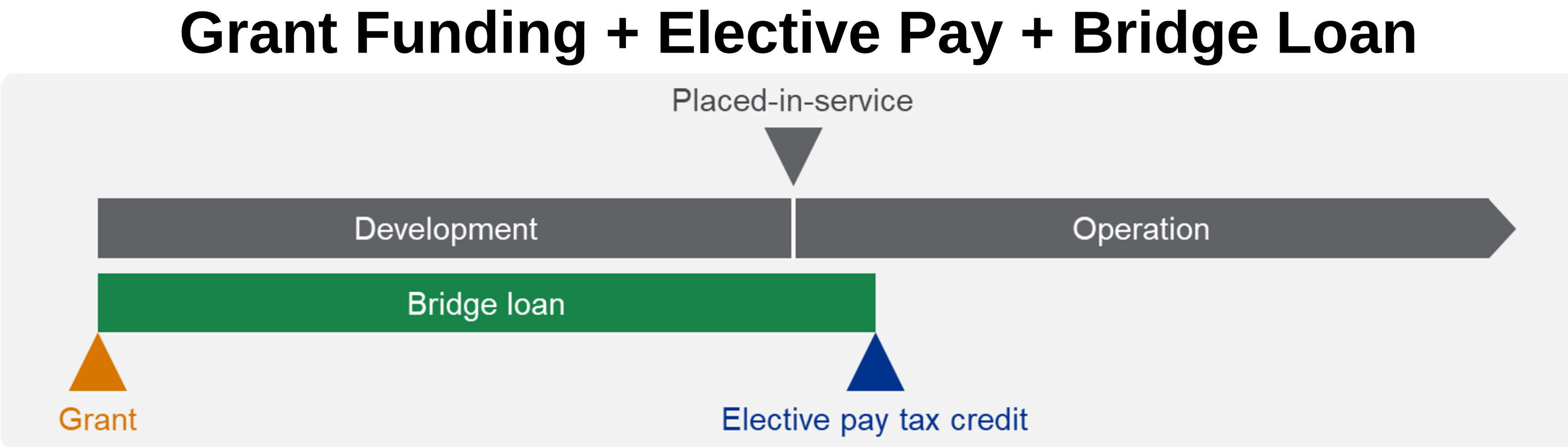
1. The Inflation Reduction Act (IRA) created an **investment tax credit (ITC)** available to energy storage on a stand-alone basis.
2. The IRA also created an **elective pay** mechanism that makes the ITC available to tax-exempt organizations like local and tribal governments and community groups.
3. The Environmental Protection Agency's **Greenhouse Gas Reduction Fund (GGRF)** offers multiple kinds of loans and other financial assistance**.**

Models for Community-Serving Storage

Elective Pay + Loan



Grant Funding + Elective Pay + Bridge Loan

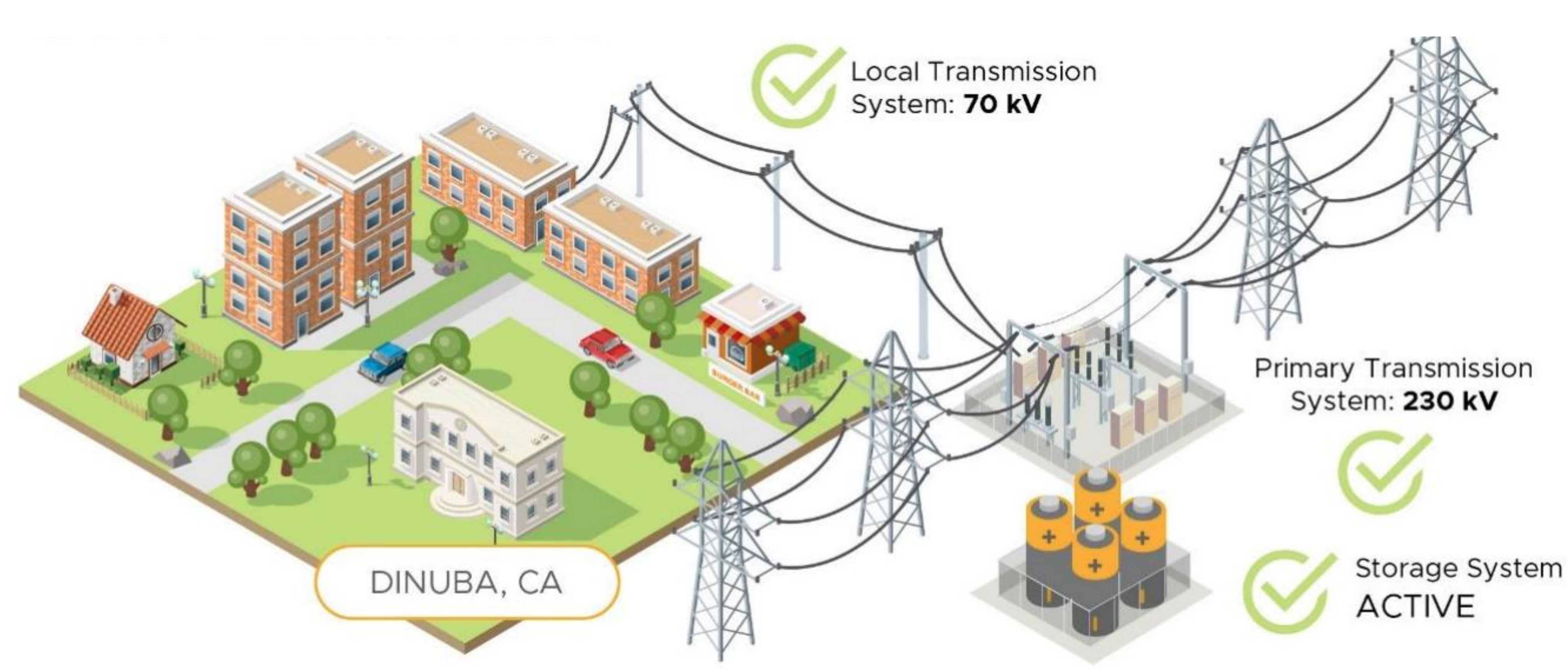


Key Findings

Structure	Potential best application	Potential advantages	Potential disadvantages
Grant funding	Community entities with philanthropic connections Combining with the other financial structures as a capital supplement	Generally, no expectation of repayment	Often comes with cost-sharing requirements Sometimes provided on reimbursement basis
Grant + elective pay tax credit + bridge loan	Projects focused on energy resilience or other services that may not generate monetizable savings or revenues	Allows a community to benefit from elective pay tax credit without having to produce the equivalent capital upfront	May involve transactions with multiple parties, increasing complexity and administrative burden
Financing + elective pay tax credit	Projects that are expected to generate significant monetizable savings or revenues	A single transaction could include refinancing at the time the elective pay tax credit is received	Likely requires a project or entity that has a reasonable prospect of repayment, demonstrated through credit history or project savings/revenues
Third-party ownership	Projects unable to raise upfront capital Community entities that may not want the risk or burden of building and owning a project	No or limited upfront capital cost for community entity Reduced administrative burden for community entity, during financing and elective pay interactions	Contracts may be complex Services to the community entity will likely be priced to cover the third-party's costs plus a return on capital

Financing Storage as a Transmission Asset (SATA)

- SATA is a unique use case that has different regulatory requirements than a general storage application.
- Existing transmission is owned by utilities or merchant providers; SATA would have similar ownership.
- Low-cost debt financing from utilities could make SATA more accessible.
- FERC precedents for debt-to-equity ratios for regulated transmission projects have implications for the financing structure of SATA projects.
- Tax credit transferability may be required for projects with high debt-to-equity ratios.



Twitchell et al. 2022.
Enabling Principles for Dual Participation by Energy Storage as a Transmission and Market Asset.

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