



Ramp Up Resilient Power Finance

Bundle Project Loans through a
Warehouse Facility to Achieve Scale

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RESILIENT POWER

Concept Note

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Abstract

This paper is part of a series of reports and concept papers that Clean Energy Group (CEG) will publish in the next two years on the issue of Resilient Power. Resilient Power is the ability of a community to provide clean, reliable energy in the face of power outages, an increasingly regular event due to severe weather. New resilient power technologies can provide electricity during outages, and also at other times so communities benefit fully from clean reliable energy.

Clean Energy Group's Resilient Power Project is designed to help states and municipalities with program and policy information, analysis, finance tools, technical assistance, and best practices to speed the deployment of clean, resilient power systems in their communities. An important focus of the project is to help vulnerable and low-income communities deal with power outages due to severe weather events, as they have suffered disproportionately in damaging storms like Superstorm Sandy and Hurricane Katrina. Installing clean energy technologies such as solar and storage in multi-family housing, assisted living centers, fire stations, and schools that serve as shelters can protect people from harm, reduce pollution, and strengthen community resiliency. This paper continues the fifteen-year effort of CEG to make resilient power a major part of disaster planning and energy policy, work that is now showing results in new state and local programs to fund resilient power across the country. But much more needs to be done.

Acknowledgements

This paper is a product of Clean Energy Group and part of a series of reports issued through the Resilient Power Project, a joint project of Clean Energy Group and Meridian Institute. This project works to expand the use of clean, distributed generation for critical facilities to avoid power outages; to build more community-based clean power systems; and to reduce the adverse energy-related impacts on poor and other vulnerable populations from severe weather events. This project has been generously funded by The JPB Foundation, JPMorgan Chase Foundation, The Kresge Foundation, and The Surdna Foundation. The views and opinions expressed in this report are solely those of the author(s).



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Introduction

Since 1998, Clean Energy Group (CEG), a national non-profit organization, has worked to expand markets for clean energy technologies, including solar, land-based wind, offshore wind, fuel cells, energy storage, and biomass. In 2002, CEG created and now manages a sister organization, Clean Energy States Alliance (CESA), another nonprofit organization that helps state and municipal clean energy funds to work together to deploy tens of thousands of clean energy projects around the country.

As part of our work, Clean Energy Group has advocated for the use of advanced clean energy technologies in critical public and private facilities that need reliable power during power outages. Instead of depending on dirty and unreliable diesel generations, Clean Energy Group has advocated for the use of clean, community-driven distributed energy sources like solar PV with battery storage to provide energy security and back-up power in the event of power emergencies.

In 2013, with support from major foundations, Clean Energy Group launched a new national project—The Resilient Power Project—to advance the deployment of resilient power technologies in states and local communities. The project will help communities to better prepare for, and more quickly recover from, damages caused by power outages during destructive weather events, with installations of cleaner distributed energy sources.

Through the Resilient Power Project, Clean Energy Group works to help communities install these systems in critical facilities such as police and fire stations, schools that serve as community shelters, multi-family housing, food banks, wastewater treatment facilities, and other locations that need power to keep communities safe when the grid goes down. The project is especially interested in ensuring that these new protective power technologies are deployed in low-income communities, which are particularly vulnerable to grid outages, and which are often overlooked when new, innovative technologies are adopted.

Resilient power, sometimes called “energy assurance,” expresses a simple concept: it is the ability to provide needed power, independent of the grid. Because our electric grids are vulnerable to storms and other disasters, the ability to generate electricity to power critical facilities and infrastructure should the grid go down is paramount in emergency planning.

The Resilient Power Project provides technical assistance on the technology options and on financing solutions that can make resilient power installations more affordable. It will not have the capacity to actually finance projects, but it will work with developers, state and local officials, and finance entities to help provide the best information about the financing options for clean-energy, resilient power projects.

This financing paper on using the warehouse credit facility for aggregated, resilient power project loans is another in Clean Energy Group’s series on resilient power.

The paper describes one finance tool among a broad range of financing mechanisms that are either just beginning to be used or that have a strong potential for providing low-cost, long-term financing for clean energy technologies such as solar with energy storage (solar + storage). The goal is to identify financing tools that can be used to implement projects and that will attract private capital on highly favorable terms, thereby reducing the cost of solar and resilient power installations.

We look forward to helping communities use these financing tools to deploy resilient projects and protect people from the adverse impacts of power outages from severe weather and other threats to the grid.

Why We Need Resilient Power

Losing power is always an inconvenience, but in many cases it can be life-threatening. Hospitals, nursing homes, 911 call centers, emergency shelters, and other critical facilities need reliable, resilient electrical power to deliver their emergency services to the community when the surrounding power grid is down. Elderly and disabled citizens rely on electrically powered technologies in their homes, as power is needed for pumping water, running elevators, refrigeration for medicines, heating and cooling systems, and respirators. As our reliance on electricity has grown over the last century, so too must its reliability and resilience.

Clean, distributed energy technologies such as solar and high-efficiency technologies such as combined heat and power (CHP) and fuel cells, offer many advantages, including reduced pollution, decreased reliance on fossil fuels, and economic development. But with the addition of new technologies, such as energy storage and microgrids, resilient power systems can provide another major benefit: they can help keep the power on when the electric grid fails.

Electricity is the life-blood of communities. Without it, nothing works—not only lights but also heating and cooling, refrigeration, transportation, communications, and fueling. Tragically, during disasters, even critical services such as medical, police and fire, and disaster shelters cannot function properly without electricity.

Traditionally, critical facilities such as hospitals have used diesel-fueled backup generators, but these have several downsides. Diesel backup generators too often fail, as has been seen in several recent widescale outages. By some estimates, more than 60% of the region's diesel backup generators failed during Hurricane Sandy, leading to loss of life, hospital evacuations, and billions in damages.

Besides being polluting, diesel-powered generators require fuel deliveries that are not always possible during natural disasters, and they are often not properly maintained, which contributes to their high rate of failure. Furthermore, diesel generators represent sunk costs for equipment that sits idle 99% of the time.

By contrast, technologies such as solar power combined with energy storage and islanding technology can provide daily benefits to the host facility, including cost savings, and can be disconnected from the grid to continue supplying reliable, safe electricity to a facility when the grid goes down.

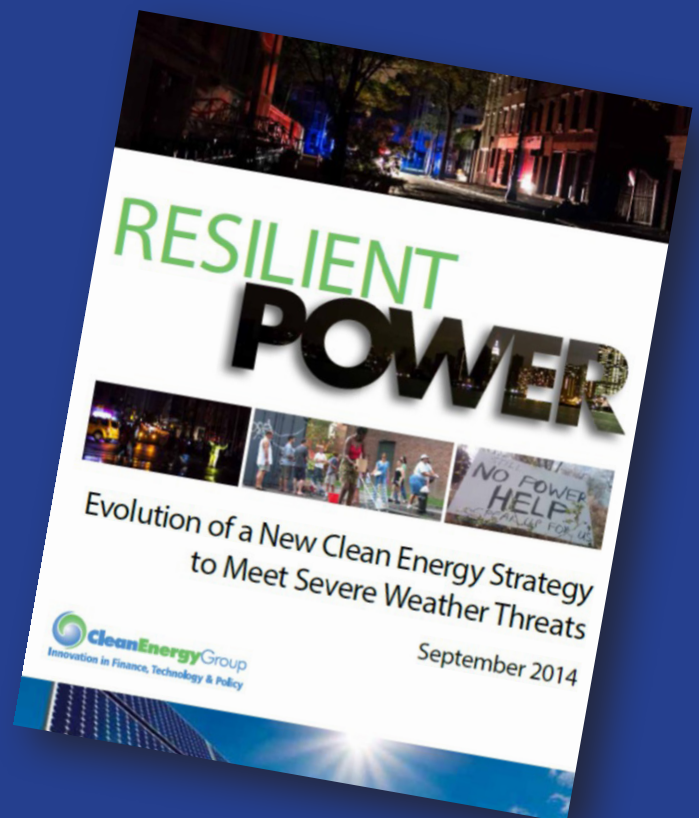
Storms, floods, and other natural disasters have become both more frequent and more damaging. Our ability to deal with these challenges depends on our capacity to adapt to our changing environment and prepare for these events. The technology needed to make electric power more resilient in the face of extreme weather events is available now—our challenge is to adapt and to adopt clean, resilient power quickly.

Clean Energy Group released a paper about the progress of resilient power efforts since the New York City blackouts in 1999 to Superstorm Sandy. The paper goes on to announce the launch of the Resilient Power Project and describes the importance of new technologies like solar PV with energy storage to provide resilient power as weather patterns become increasingly volatile and longer power outages become more frequent.

The paper, *Resilient Power: Evolution of a New Clean Energy Strategy to Meet Severe Weather Threats*, outlines the dangers that power outages can pose to our most vulnerable populations, the failures of traditional backup power sources, and the opportunities to develop distributed energy systems with clean and dependable energy technologies.

The report can be downloaded at <http://www.cleangroup.org/assets/Uploads/Resilient-Power-Project-Evolution-Report.pdf>.

The recording from an accompanying webinar can be found at <http://www.cleangroup.org/ceg-resources/resource/clean-energy-group-webinar-an-introduction-to-resilient-power>.



Warehouse Credit for Resilient Power

This concept paper explores how to bundle and finance multiple resilient power projects through use of a warehouse credit facility. Clean Energy Group is working to engage with public and private stakeholders, including state public benefit funds, green banks, clean energy project developers, energy storage companies, and other entities to consider issues surrounding the development of a framework for financing multiple, aggregated, resilient power projects to create a scalable and sustained financing model for resilient power deployment.

One proven approach to aggregated financing of projects is the warehouse credit facility. It is a short-term credit facility used to assemble a portfolio of originated loans into a financial security that is sold to investors. Widely used in mortgage lending, warehouse credit facilities are often used for other commercial and consumer loan obligations.

Increasingly, this model is being used to roll up a portfolio of clean energy loan transactions into securities that can be sold to institutional investors, thereby replenishing capital to be lent again.

In the last year, there have been a growing number of resilient power projects installed or proposed around the country. These include novel projects like the 402 kW solar PV array with storage at Konterra's corporate headquarters in Maryland, a solar storage microgrid (4 MW of storage) in Vermont, and combined heat and power (CHP) projects in New Jersey.

Apart from protection from the severe weather from storm events like Superstorm Sandy or Hurricane Irene, the projects have one other feature in common: they have all been financed on a one-off basis.

This is understandable in these early markets. But as this nascent market develops, there are some key questions on financing and scale that should be asked.

- Can we begin to develop a more robust financing strategy to aggregate resilient power projects to get to scale?

- Can we address the finance needs of the wide range of local resilient power projects that we know are needed in cities and communities stretching across diverse geographic regions through some kind of regional or multi-state, coordinated financing facility?
- Can an efficient finance mechanism be created to incorporate resilient power in multifamily affordable housing and community facilities so that vulnerable populations can shelter in place during extended power outages?
- Can the existing green banks or similar financing entities in states work toward creating a warehouse credit facility to aggregate pipelines of resilient power financings?

At a time when states in the Northeast region are funding many new resilient power projects with dedicated public funding, and state green banks and targeted resiliency banks like the New Jersey Energy Resilience Bank have been created, we believe there are new opportunities to spur clean energy and resilient power development.

This time also coincides with local and state governments' interest in how best to plan and finance the next generation of electric power infrastructure. Some states are looking closely at innovative ways to evaluate new infrastructure projects in terms of their life cycle costs, award contracts based on long term performance, and identify new financing structures that allocate risks and rewards between public and private entities.

The purpose of this concept note is to start a conversation on these issues with interested stakeholders and to consider how we can begin to develop a framework for financing multiple, aggregated resilient power projects at scale.

New Resilient Power Projects and Financing on the Rise

To date, close to a half billion dollars in state and federal money has been newly put in place to finance resilient power projects across the Northeast. Most of these finance programs are likely to deploy their capital for a broad range of grant and loan transactions.

What is missing is an integrated finance approach for resilient power projects that structures grants and credit enhancement to support the financing of a pipeline of projects. Rather than a series of one-off projects, a portfolio of transactions that share a similar structure and underwriting standard could be financed.

Many of the same states that have created resilient power programs also have established clean energy finance institutions. Whether called Green Banks or Energy Resilience Banks, these finance institutions are designed to create finance products to reach scale. And of course, these same states have other financing entities that issue bonds for infrastructure investments.

Overall, their purpose is to access capital markets. As the New York Green Bank has described its approach:

“The Green Bank will work to eliminate the market barriers and fill these financing market gaps by partnering with private sector intermediaries through the use of various forms of financial support such as credit enhancement, warehousing and securitization, enabling a much larger supply of private capital to finance clean energy projects.”

In regard to resilient projects, some immediate questions naturally arise:

- Can large and small financed transactions—in sectors as diverse as government infrastructure (e.g., water treatment facilities), MUSH market, commercial and industrial, and affordable housing and community facilities—be addressed through the same integrated finance strategy?
- Is it possible to apply the financial purposes of the existing state clean energy banks to a targeted problem like the need for resilient power?

New Jersey Creates the First Energy Resilience Bank to Support Resilient Power Projects

In July of 2014, New Jersey created the nation’s first Energy Resilience Bank (ERB). The ERB is an important step to create new public financing to support local, distributed resilient power projects that can provide continuous power before, during, and after severe weather events like Superstorm Sandy.

This innovative approach would be financed through use of \$200 million of New Jersey’s second Community Development Block Grant-Disaster Recovery (CDBG-DR) allocation. The New Jersey Board of Public Utilities (NJBPU) approved a sub-recipient agreement with the New Jersey Economic Development Authority (EDA) to work jointly in the establishment and operation of the ERB. According to NJ Governor Christie’s announcement, “the ERB will support the development of distributed energy resources at critical facilities throughout the state ...to minimize the potential for future major power outages and increase energy resiliency.”

The ERB will make direct loans and grants, but can also provide credit enhancement for bond issuances and other private financing participations. Although the initial priority is clean water and wastewater treatment facilities, other critical facilities could also be funded, including hospitals, emergency response facilities, municipal town centers, correctional facilities, transportation and transit, public housing and regional high schools that can be used as shelters in case of emergency.

With this effort, New Jersey has created what could become a national model to finance resilient power projects to deal with severe weather events. This is especially important as severe weather creates havoc in the power sector, where power outages harm businesses, threaten lives, and hamper the recovery of vulnerable populations. After Superstorm Sandy, more than 8 million people were without power, causing hundreds of millions of dollars of damage, and endangering the lives of the elderly, the poor, and the disabled.

For more information, CEG hosted a webinar on the NJ ERB; details and the webinar recording can be found at <http://www.cleangroup.org/ceg-resources/resource/clean-energy-group-webinar-new-jersey-s-energy-resilience-bank>.

- Is it possible to dedicate time and attention from the banks to create a set of financial products to specifically address the scale up needed for multiple resilient power projects in many market segments?

This concept note will explore these questions and suggest a possible approach to advance resilient power and the public purpose of the green banks and other energy financing entities in the region and across the country.



Learn more about the NYSERDA Energy Efficiency Bonds Issuance at <http://bit.ly/NYSERDA-EEBonds>.

Warehouse Credit Facility: A Proven Tool to Leverage Investor Capital for Clean Energy

A warehouse credit facility is a short-term credit facility that is used to aggregate a portfolio of originated loans into a financial security that is then sold to investors. Widely used in mortgage lending, warehouse credit facilities are also often used for other commercial and consumer loan obligations.

Increasingly, this model is being used to roll up a portfolio of clean energy loan transactions into securities that can then be sold to institutional investors, thereby replenishing capital to be lent again. For instance, on August 13, 2014, the New York State Energy Research and Development Authority (NYSERDA) announced that it had raised \$24.3 million in Residential Energy Efficiency Financing Revenue Bonds (Series 2013A) to finance and refinance loans that were issued through the Green Jobs-Green New York (GJGNY) program for energy efficiency improvements. The Bonds are secured by a pledge of loan payments from the residential energy efficiency loans that were issued through the GJGNY program, which total approximately \$29.2 million in principal from 3,116 residential loans.²

Similarly, clean energy and efficiency commercial projects—as well as micro-grids—are being financed with loans through Connecticut Green Bank’s C-PACE program, which are then aggregated and sold as a security into the bond market.³ And the Warehouse for Energy Efficiency Loans (WHEEL) recently obtained a \$100 million credit facility provided by Citi and the Pennsylvania Treasury to aggregate and securitize residential energy efficiency loans to sell to institutional investors.⁴

Context and Background for Aggregated Financing

Any scalable financing strategy relies heavily on successful project aggregation. Multiple project pipelines for solar and energy storage developers and other intermediaries are needed both to attract capital for deployment and to structure financial products that will be used.

What the right entity is to underwrite and originate the financing transactions will depend in large part on what market segment the resilient power project falls into.

Affordable housing, community facilities, government buildings and services, large nonprofit institutions, small manufacturers, and commercial entities have different existing credit relationships and will likely use different loan and lease originators for these new projects as well.

Different sources of capital are available to fund different lenders' transactions depending on the market segment and credit transaction characteristics. All financed transactions can potentially benefit from various sources of credit enhancement and subsidy.

In all of these questions, a key issue arises. When possible, could resilient power financing transactions be warehoused in a state or regional financial institution and securitized for sale to private investors, providing liquidity to the loan originators and further reducing the cost of capital?

We find ourselves at the early stages of developing community clean resilient power for critical facilities and services. As we continue to build experience in deploying a wide range of clean distributed generation plus storage systems from small to quite large (10 kW to 5 MW), it is good to look beyond these important initial one-off demonstration projects.

Using the warehouse credit facility could be a way to move the market if the following considerations are addressed.

Connecticut Green Bank's C-PACE Program

The Connecticut Green Bank developed and manages Connecticut C-PACE. Although PACE financing has been in practice for years, Connecticut's Commercial PACE (C-PACE) program has achieved notable success with its many innovations. Within a year of its launch, it was the largest in the country and brought \$20 million in financing to clean energy projects in Connecticut. In May 2014, it reached a landmark in its short history with the first-ever securitization of its commercial energy-efficiency loans. Achieving this "holy grail of energy efficiency finance," the deal helped prove that energy efficiency is able to attract private capital, catalyzing the PACE market and energy efficiency financing across the country. The Connecticut Green Bank also played a significant role in demonstrating that the warehouse model can be used to attract private investment for energy efficiency C-PACE loans. In this instance, a portfolio of transactions—a "warehouse" of commercial energy efficiency loans that shared a similar structure and underwriting standard—were bundled for sale in the financial markets.

C-PACE has energized the state's clean energy economy by attracting private investment and deploying more clean energy to achieve greater public benefit. One hundred Connecticut municipalities participated in the program, accounting for more than 83 percent of the state's commercial and industrial building stock. The program authorizes a tax lien to be placed on the property and the assessment to be serviced. The security of the tax lien provides confidence to the private market that the financing will be repaid and therefore private capital can flow to qualified buildings. In 2014, the C-PACE program completed the first commercial PACE securitization.

This transaction represented the first known securitization of commercial energy-efficiency loans and demonstrated liquidity in the C-PACE market. For building owners, the access to low-cost, long-term financing allows them to do deeper energy upgrades than they otherwise would have done, which in turn benefits the public sector by providing more economic activity and environmental improvements in participating municipalities.

Learn more about this program in a *Renewable Energy World* blog by CEG's Program Coordinator, Maria Blais Costello, at <http://bit.ly/C-PACE-BLOG>.

- What financing strategy would address the wide range of local resilient power projects that we know are needed in cities and communities stretching across diverse geographic regions?
- Can a warehouse credit facility be used to provide liquidity for both large resilient power projects (waste water treatment facilities, utility-owned microgrids, etc.) and for smaller community resilient power facilities (multifamily affordable housing and assisted living facilities, emergency shelters, police and fire services, dialysis and community health centers, publicly-owned buildings, etc.)?
- What market segments of resilient power projects are likely to yield sufficient pipelines of projects to result in a marketable security?
- Is there an opportunity to roll up similarly structured transactions from multiple jurisdictions and across state lines to increase the size of the ultimate security?

The conceptual framework is the same for warehousing both large-scale and smaller community resilient power financing transactions. But clearly, aggregating a pipeline of large wastewater treatment project financings—such as those being contemplated by the New Jersey Energy Resilience Bank—is likely to more quickly achieve the size of bond issuance that institutional investors require (\$25–100 million at minimum). We also know from recent experience that aggregating smaller transactions similarly structured and priced can successfully be rolled up into bond issuances, as evidenced by the NYSERDA’s recent securitization of a portfolio of residential energy efficiency loans.⁴

Another example of this approach is a recent securitization by the Connecticut Green Bank/CEFIA. In May 2014, the Wisconsin-based Public Finance Authority (PFA) completed a bond transaction that securitizes up to \$30 million of commercial property assessed clean energy (C-PACE) loans originated by CEFIA.

Under the Connecticut C-PACE Program, CEFIA made loans of up to \$2.5 million to commercial property owners to fund clean energy and efficiency improvements on their properties.⁵ PFA issued energy revenue bonds to finance the purchase of a portfolio of C-PACE loans from CEFIA, which bonds were secured with the debt service on the C-PACE loans and the property assessment liens. This securitization of the C-PACE loans is believed to be the first of its kind in commercial energy efficiency, and there seems to be strong demand for similar securities.

Strong national and regional community development financial institutions (CDFIs) are also well positioned to build pipelines of conforming loan transactions that can then be aggregated for securitization. These CDFIs have as many as 30 years of experience managing credit facilities that are capitalized with bank loans, foundation program related investments (PRIs) and other sources. They have originated billions of dollars in loans and successfully serviced their loan portfolios over time. Some of these CDFIs are now in the process of developing financing platforms that assemble equity and debt to finance clean energy and energy storage projects at scale. This could become a significant pipeline of aggregated transactions to be held in a warehouse credit facility.

A scalable financing strategy relies heavily on successful project aggregation. Identifying multiple project pipelines through solar and energy storage developers and other intermediaries is needed both to attract capital for deployment and to structure financial products that will actually be used.

Participants and Possible Roles for an Integrated Financing Strategy

The following identifies some of the participants organized by the roles they could play in an integrated financing strategy for resilient power projects:

Aggregation of pipelines of project loans

- Solar PV and energy storage developers (e.g., Green Mountain Power's Stafford Hill Project - one of the first exclusively solar-powered microgrids)
- Economic development agencies
- Community and housing development corporations
- Community development finance institutions (CDFIs)
- Hospital and higher education finance authorities

Loan origination by market segment

- Affordable housing and community facilities, Nonprofit CDFIs (Enterprise Community Partners, LISC, LIIF) and bank CDFIs
- Government buildings and services – Development finance agencies, banks
- Nonprofit institutions (hospitals, universities, etc.), Development finance agencies, banks
- Small manufacturers and commercial entities – NYCEEC, NYCEDA

Loan warehousing

- State and regional green banks, WHEEL

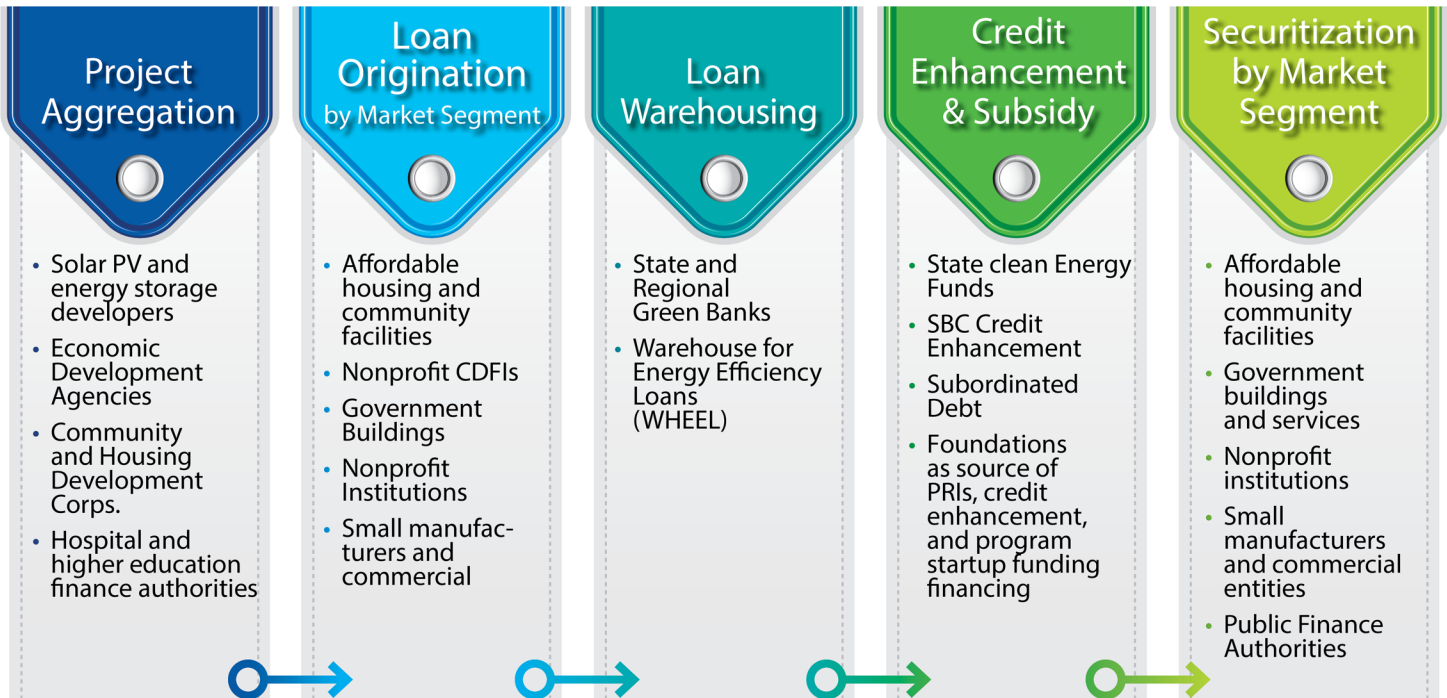
Credit enhancement and subsidy

- State clean energy funds
- SBC credit enhancement for bond issues
- Subordinated debt provided by CDFIs, economic development agencies
- Foundations as a source of PRIs, credit enhancement and program start-up funding for the originating lenders

Securitization by market segment

- Affordable housing and community facilities – Housing and 501(c)(3) bonds, banks, insurance company and foundation PRIs
- Government buildings and services – General obligation and taxable/tax exempt revenue bonds (Morris Model, disaster recovery bonds, etc.), state energy resilience banks, commercial banks
- Nonprofit institutions (hospitals, universities, etc.), 501(c)(3) bonds, commercial banks
- Small manufacturers and commercial entities, Industrial development bonds, commercial banks
- Public Finance Authorities – multi-jurisdictional issuers of tax-exempt and taxable bonds
- For all of the above market segments, clean distributed generation plus storage can be owned by utilities and financed through the rate base and leveraged through bond financing (e.g., Green Mountain Power).

An Integrated Financing Strategy for Resilient Power



Financing Models for Resilient Power

BOND FINANCING

- General obligation bonds
- Morris Model
- 501(c)(3) bonds
- Housing bonds
- School construction bonds
- Disaster recovery/climate resiliency bonds
- Commercial/municipal PACE bonds

PUBLIC AND PRIVATE OWNERSHIP STRUCTURES

- 3rd party ownership with PPA
- Municipal improvement districts
- Utility ownership

CLEAN ENERGY FINANCIAL INSTITUTIONS

- State Energy Resilience Banks
- Warehouse credit facility
- West Coast Infrastructure Exchange model

CREDIT ENHANCEMENTS

- Public benefit funds
- U.S. DOE Loan Guaranty



A Warehouse Credit Facility Concept for Resilient Power Projects

Fortunately, new institutions do not need to be created for these financing purposes. The necessary institutions already exist that can play the roles required for an integrated financing strategy for resilient power.

The major challenge, though, is identifying sufficient demand for financing within these market segments to justify creating what may well be a \$25-50 million warehouse facility with the involvement of all the participant roles described above.

For a warehouse facility to work efficiently, a number of conditions are necessary.

- There needs to be one or multiple robust pipelines of transactions to create within a reasonable time a sufficiently large security that will interest investors. Some of the market segments identified above involve a potentially large number of large financing transactions. For instance, in New Jersey, 94 wastewater treatment plants lost power and were flooded; one month after Superstorm Sandy, seven of New Jersey's drinking water systems were still subject to boil water advisories. Utility-owned microgrid systems with resilient power also require significant amounts of financing, such as the Stafford Hills Solar + Storage Microgrid Project in Rutland, Vermont, owned by Green Mountain Power, which included 4 MW of battery storage.⁷
 - The pricing, tenors, and other structuring aspects of the underlying transactions need to be consistent. The more variance there is from market-rate pricing and plain vanilla structuring and documentation, then the more costly and greater subsidy will be needed to securitize and sell the warehouse portfolio. A lack of uniform loan structuring will also contribute to the need for heavier reliance on recourse to the issuer and other external credit enhancement.
 - One important role of the warehouse credit facility is its ability to communicate the required underwriting criteria, transaction structures, and documentation that transactions need to conform to in order to be purchased and securitized for institutional investors. This is how low-cost, long-term capital will be made available to a pipeline of resilient power projects.
- There are several initial issues that need to be addressed to begin building an integrated financing strategy for resilient power:
- It is necessary to identify which market segments are likely to have sufficient demand and scale to justify a warehouse credit facility. Pipelines of near-term projects must be identified, which need and can repay a conforming loan product that can be rolled up into a warehouse credit facility.
 - For the targeted market segments, an assessment is needed of the capacity of project developers and loan originators to close loans in a reasonable period of time so that a warehouse credit facility can be readily deployed.
 - Potential sources of credit enhancement need to be identified both at the asset level and at the time of portfolio securitization.
 - A simple programmatic structure involving one or more entities is needed that would support the warehouse credit facility function.

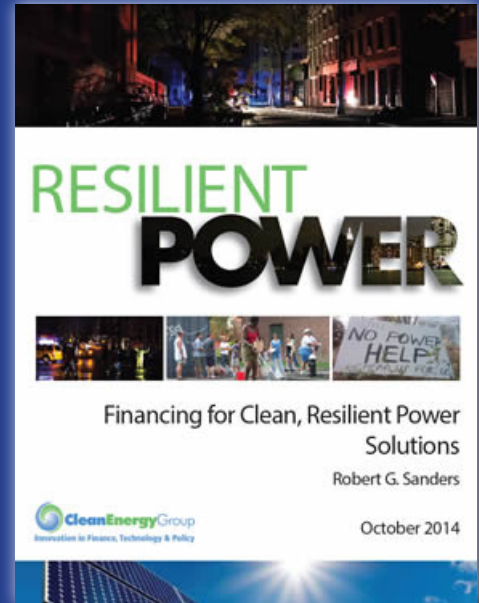
Conclusion and Next Steps

This is a preliminary conceptual framework for providing access to capital to a wide range of resilient power market segments. Any specific financing program should be designed to respond to actual market opportunities, finance gaps, and project pipelines.

Clean Energy Group plans to initiate a process to bring together interested parties, drawn from the categories of financing participants noted above, and explore how a specific resilient power financing program might be designed to better respond to actual market opportunities.

Markets for resilient power will continue to develop, and resilient power will become an established and accepted part of any state or local resiliency plan, along with committed funding, technical support, and program assistance.

Clean Energy Group will continue to work closely with states and localities to address the technical, policy, and financial barriers to implement resilient power projects. Those who wish to follow this progress are encouraged to use the resources found at <http://www.resilient-power.org>.



Learn more about other financing tools to support Resilient Power Solutions at <http://www.cleangroup.org/assets/Uploads/CEG-Financing-for-Resilient-Power.pdf>

Endnotes

¹ Petition of the New York State Energy Research and Development Authority to Provide Initial Capitalization for the New York Green Bank, State of New York Public Service Commission.

² <http://www.nyserdera.ny.gov/About/Newsroom/2013-Announcements/2013-12-06-New-York-State-Earns-a-Deal-of-the-Year-Award.aspx>

³ <http://srmnetwork.com/connecticuts-cefia-announces-industry-first-c-pace-portfolio-sale>

⁴ See http://www.naseo.org/Data/Sites/1/documents/committees/financing/documents/WHEEL_Primer.pdf

⁵ New York State won the Bond Buyer “Deal of the Year for Small Issuer Financing” award for its innovative residential energy efficiency financing using revenue bonds, <http://www.nyserdera.ny.gov/About/Newsroom/2013-Announcements/2013-12-06-New-York-State-Earns-a-Deal-of-the-Year-Award.aspx>

⁶ See <http://www.natlawreview.com/article/unique-opportunities-property-assessed-clean-energy-pace-financing-connecticut>

⁷ See <http://www.cleangroup.org/blog/solar-energy-storage-resilient-power-in-vermont/>

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Todd Olinsky-Paul

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As Project Director for Clean Energy Group and Clean Energy States Alliance (CESA), Todd Olinsky-Paul manages member services and new member outreach efforts, along with communication efforts for members and external stakeholders. He is director of the Energy Storage and Technology Advancement Partnership (ESTAP) project, a federal-state funding and information sharing project that aims to accelerate the deployment of electrical energy storage technologies in the U.S. He also directs the CESA Solar Thermal Working Group, and works on emerging projects in the areas of biomass thermal energy and critical infrastructure energy resiliency. Todd joined CESA from the Pace Energy and Climate Center, where he served as the Manager of Communications, Education, and Outreach, as well as an Energy Policy Analyst. Todd's recent work has focused on energy storage technologies and policy, wind and biomass generation and siting issues, renewable energy and grid interactions, financing and policy incentives, and emerging science. He has authored numerous reports for state and federal agencies. Todd has a Master of Science in Environmental Policy from Bard College and a Bachelor of Arts from Brown University. Todd@cleanenergygroup.org

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Clean Energy Group

Clean Energy Group (CEG) is a national, nonprofit organization that promotes effective clean energy policies, develops low-carbon technology innovation strategies, and works on new financial tools to advance clean energy markets. CEG works at the state, national, and international levels with stakeholders from government, the private sector, and nonprofit organizations. CEG promotes clean energy technologies in several different market segments, including resilient power, energy storage, solar, and offshore wind. Above all, CEG also works to create comprehensive policy and finance strategies to scale up clean energy technologies through smart market mechanisms, commercialization pathways, and financial engineering. CEG created and now manages a sister organization, the Clean Energy States Alliance, a national nonprofit coalition of public agencies and organizations working together to advance clean energy through public funding initiatives.



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