

***Comments for the proposed
Second Triennial Investment Plan for the EPIC Program
Docket Number 12-EPIC-01***

The Clean Coalition is pleased to provide comments for the proposed Second Triennial Investment Plan for the EPIC Program.

The Clean Coalition Approach

The Clean Coalition accelerates the transition to renewable energy and a modern grid through technical, policy, and project development expertise. We conduct comprehensive cost-benefit analyses and establish community microgrids to prove that local renewables provide a reliable and cost-effective foundation for a modern power system. We leverage our experience to drive policy innovation that supports the transition to a renewables based energy system. Our unique combination of technical, policy, and project development expertise enables us to achieve effective results.

The Problem

U.S. utility executives and policymakers need proof that large amounts of clean local energy result in a more reliable, secure, and affordable power system. Today, according to the National Renewable Energy Laboratory, grid reliability concerns “effectively limit renewables to 15% penetration.”¹ Without evidence that the grid can integrate greater amounts of local renewables in a cost-effective manner, this 15% limit will continue to slow the nation’s transition towards a cleaner energy and low-carbon future.

Germany is dominated by local renewable energy. Of all Germany's solar capacity, which is large enough to meet half their country's midday energy needs, 80 percent is on community rooftops. Accelerating local renewable adoption in the United States, which boasts significantly stronger renewable resources than Germany, will put the nation on a path towards lasting energy independence. Despite Germany’s success, using local renewables to power U.S. communities is a fairly new concept, and the modeling technology and techniques required to prove its viability is not readily available.

The Clean Coalition is addressing the 15% limit head on. Through partnerships with community, utility, business, and government leaders, the Clean Coalition is developing Community Microgrid projects that prove local renewables can fulfill at least 25% of the total electric energy consumption while enhancing grid reliability and energy security. This work will enable significant penetrations of clean local energy nationwide and transform the U.S. power industry into a cleaner and more dynamic 21st Century solution.

Innovation

In order to showcase the potential of Community Microgrids in the United States, the Clean Coalition is pioneering a groundbreaking project in the Bayview-Hunters Point area of San Francisco, in partnership with a major utility, PG&E. The project demonstrates how communities and utilities can benefit from higher levels of local renewable energy, including improved grid reliability and security. Using sophisticated power flow modeling and economic

¹ <https://financere.nrel.gov/finance/content/energy-systems-integration-facility-nrel-national-renewable-15-percent-ceiling>

analysis, the Hunters Point project proves that local renewables can supply at least 25% of the total annual energy consumed in the community while using existing urban space to deliver the renewable power. Combined with an integrated cost-benefit analysis, this advanced power flow modeling is a game-changer for the power industry.

The Clean Coalition's innovative and predictive modeling techniques demonstrate how – and precisely where – higher levels of renewable energy can be supported along existing utility lines (substation feeders). These new modeling methodologies combine distributed generation sources such as solar; new grid management hardware for voltage regulation and grid reliability such as advanced inverters and energy storage; and more efficient energy use such as automatic demand response. By optimizing the mix of renewable energy locations along with these advanced grid solutions – including the costs – the model unlocks cost-effective grid support for much higher amounts of renewable energy.

These Community Microgrid solutions give utilities the confidence they need to support higher levels of local renewable energy while benefiting from increased grid reliability. This project will help deliver a more renewable and reliable energy system in Bayview-Hunters Point while laying the groundwork for extending Community Microgrids to other regions across the United States.

Scalability

The Clean Coalition is partnering with utilities and commercial tool vendors to deliver a solution that can be replicated, scaled, and deployed across the country. The modeling scenarios developed by Clean Coalition fosters a mindset that is no longer “if,” but “when.” With this approach, utility commissions and utilities can establish specific and higher renewable energy targets in communities, then upgrade the grid in cost-effective ways to support those targets. Utilities can then add renewable energy to their grids rapidly and in bulk – at scale, across a large number of renewable energy sites – until they fulfill to pre-defined and higher targets. This changes the game, creating a top-down, system-wide, and scalable solution that is vastly different to how solar is deployed today: slowly, or “one rooftop at a time,” with often unknown impacts to the grid that unnecessarily restrict deployments. In addition, the timeline required to deploy large amounts of local renewables is significantly reduced, from many years to a matter of months. The result is a modernized distribution grid based on peak generation targets, enabling a much more operationally predictable and financially viable long-term solution.

Clean Coalition is helping advance commercial power flow modeling, including innovative techniques and methodology, so that PG&E can optimize renewable energy deployments in all of PG&E's service territory. In addition, these new distribution grid planning features are being incorporated into commercial modeling tools, enabling other utilities to optimize support for local renewables in a similar manner. The Clean Coalition is standardizing and documenting the required technology, features, and methodology used in this project and will provide this information to multiple commercial tool vendors, as well as present the information at conferences and through webinars. The organization is already working with several utilities to bring clean, renewable energy online in Palo Alto, California Los Angeles, California, Long Island New York, and the U.S Virgin Islands. The modeling results and economic analysis from this project will be used in all Clean Coalition collaborations

Community Benefits

The Clean Coalition's Community Microgrid projects prove that communities can reap significant economic, energy, and environmental benefits from local renewable energy. For example, in the Bayview-Hunters point area, adding 50 megawatts of new, affordable renewable energy will invest \$200 million in the local economy, add \$100 million in new community wages, and bring

over 1,700 near-term and ongoing job-years. In addition, the Hunters Point Community Microgrid project will achieve cost parity with centralized natural gas generation while avoiding over \$80 million in total transmission-related costs. Finally, the project will reduce greenhouse gas emissions by 78 million pounds and save 15 million gallons of water, both annually – all while improving power reliability.

Residents of the Bayview-Hunters Point neighborhood of San Francisco have been unfairly burdened by a toxic environment. The area was home to San Francisco's coal and oil-fired power plant until it was shut down in 2006, and one third of the city's hazardous waste sites are located in this community. The Community Microgrid project reverses this trend, helping transform the Bayview-Hunters Point area into a leader in clean community power.

These community energy solutions grow local economies by increasing private investment, creating jobs, stabilizing energy prices, and keeping energy dollars close to home. The Clean Coalition's Hunters Point Project serves as a cutting-edge and replicable model for how clean community power will modernize America's electrical system in the most sustainable and cost-effective manner possible.

The Clean Coalition completed the Benefits Analysis based on the National Renewable Energy Laboratory's (NREL) Jobs and Economic Development Indicator (JEDI) to prove the economic, energy and environmental impacts of this project, which includes 375 acres of land preserved.

Success Criteria

Following are the specific deliverables and success criteria for this project:

1. **Completed Advanced Power Flow Model and Cost-Effective Scenarios.** The Hunters Point substation power flow model, including recommended deployment and cost-effective scenarios, will be completed in Q4 2014. The power flow model includes multiple steps: 1) siting the potential renewable energy locations in the community; 2) completing the model for the baseline (existing) power including validating the results with the utility; 3) adding the renewable energy locations to the model; 4) adding the advanced grid solutions including inverters, energy storage and demand response to the model; and 5) optimizing the mix of renewable energy and advanced grid solutions to determine the most cost-effective scenarios. The end result is an actionable road map the utility can use to upgrade their distribution grid in order to support targeted, higher levels of local renewable energy in bulk.
2. **Community Support.** Gaining community support is key to the success of the Project. Starting in July 2014, the Clean Coalition will conduct five community meetings in the Bayview-Hunters Point area to educate community stakeholders and policymakers about the project and its benefits and enlist broad support. As a preliminary introduction, the Clean Coalition has already engaged with ReVolv, Communities for a Better Environment (CBE), and a number of other Bay Area community leaders to build awareness and support for the project.
3. **Deployment.** Once the power flow modeling and economic scenarios are complete, the Clean Coalition will work with PG&E to evaluate deployment options. The model will demonstrate that the project is technically and financially viable, at which point PG&E will continue to partner in good faith to deploy the recommended Community Microgrid scenarios. As part of the deployment plan, the Clean Coalition will also recommend power procurement options, e.g. utilizing a wholesale model for power purchased by the

utility, along with “bulk” connection procedures. Completion of a PG&E approved deployment plan will indicate success of the project.

The Clean Coalition combines deep expertise across technology innovation, project development, and policy, and is uniquely positioned to deliver real world and achievable energy solutions to the industry. Since its founding in 2009, the Clean Coalition has helped bring more than one gigawatt of clean local energy online – enough to provide peak power to about one million homes. Community Microgrid projects, designed to highlight the technical and financial feasibility of high penetrations of renewables, will serve as models for modernizing America’s electrical system in the most sustainable and cost-effective manner possible.

Greg Thomson
Programs Director
Clean Coalition
415-845-3872 mobile
greg@clean-coalition.org