CLEAN COALITION
Making Clean Local Energy Accessible Now

Local CLEAN Program Guide

Module 1: Overview & Key Considerations

June 2012

About the Clean Coalition

The Clean Coalition is a nonprofit organization whose mission is to accelerate the transition to cost-effective clean energy across the United States. The Clean Coalition believes that the right policies will result in a timely transition to clean energy while yielding tremendous economic benefits.

Contact Us

If you have any questions about the Guide or if you are interested in becoming a local advocate for a CLEAN Program in your community, please email LocalGuide@Clean-Coalition.org.

CLEAN COALITION
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Overview of the Guide

CLEAN Programs create local jobs and investment opportunities.

The Purpose of the Guide

This Local CLEAN Program Guide is designed to help communities and their local utilities evaluate, design, and enact **Clean Local Energy Accessible Now (CLEAN) Programs** based on global best practices and the expertise developed by the Clean Coalition through our work on designing and advocating for CLEAN Programs throughout the United States.

The Structure of the Guide

The Local CLEAN Program Guide is comprised of seven modules.

Module 1: Overview & Key Considerations provides an overview of CLEAN Programs and guides readers through the process of evaluating how a local CLEAN Program will match community goals, resources, and constraints.

Module 2: Establishing CLEAN Contracts Prices provides a roadmap for establishing optimal fixed prices for CLEAN Contracts.

Module 3: Evaluating Avoided Costs provides approaches for determining avoided costs to the utility and/or community.

Module 4: Determining Program Size & Cost Impact explains how to assess the amount of renewable electricity to purchase through a CLEAN Program and determine the associated cost impact, if any.

Module 5: Estimating CLEAN Economic Benefits provides approaches for estimating the local economic value of energy purchased through CLEAN Contracts.

Module 6: Designing CLEAN Policies & Procedures explains how to design streamlined program policies and procedures.

Module 7: Gaining Support for a CLEAN Program describes how to obtain community support and gain official approval for the program.

Introduction to the Guide

Across the country, local leaders increasingly recognize the benefits of participating in the transition to a clean energy economy. Benefits include:

- Creating local jobs and private investment opportunities
- Improving the health of community members
- Locking in reasonable electric rates for local utility customers
- Providing a safer, more reliable energy infrastructure
- Achieving the renewable energy and sustainability goals of the community
- Staying competitive in the global race to research, develop, manufacture, and install renewable energy technologies

The transition to a clean energy economy will require substantial changes to our nation's approach to electricity generation. Today, the United States primarily relies on large-scale, fossil fuel and nuclear power plants, located far from the communities where energy demand is greatest. This centralized approach requires the long-distance transmission of energy from central power plants to the local distribution grids where the energy is actually used.

The national energy policy discussion has focused on replacing our aging fossil fuel and nuclear electricity generation infrastructure with correspondingly large-scale renewable power facilities and related infrastructure. However, the construction of large-scale projects face significant barriers, including long project development lead times, frequent delays involved in the permitting and development of new transmission infrastructure, complex state and federal environmental review processes, and often intense community opposition to such projects. Moreover, the massive costs associated with transmission infrastructure highlights a major advantage of clean local energy - it is independent of the transmission grid.

In contrast to large-scale renewable energy projects, clean local energy projects become "shovel-ready" within months. These relatively small projects can be deployed on existing buildings and previously disturbed lands within communities, which enables these projects to avoid the major delays associated with the development of large-scale renewable projects.

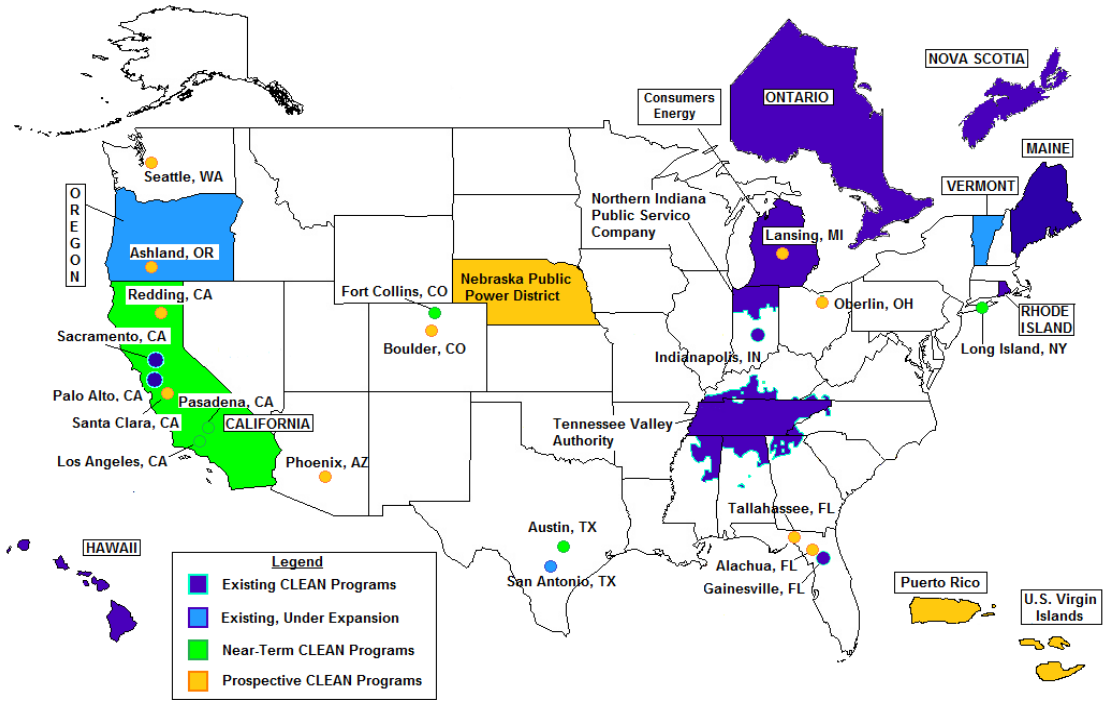
Far from Washington, local and state policymakers are leading the nation's transition to a more sustainable and decentralized energy economy. Local and state policymakers are rolling out **Clean Local Energy Accessible Now (CLEAN) Programs** to capture the economic benefits of community-scale renewable energy development. This decentralized approach harnesses the combined power of small to mid-sized renewable generation facilities that are spread throughout the communities they serve. Solar panels on multi-family housing rooftops, small wind turbines co-located on farmland, and biopower facilities that convert agricultural waste into electricity are classic examples of distributed generation projects.

CLEAN Programs empower community members to participate in the clean energy economy by making it easy for them to sell renewable energy to the local utility at a

predetermined, fixed price for a long period of time. This approach enables communities to leverage private investment dollars to meet community goals.

Leaders in Gainesville, Florida ignited the trend by adopting the nation's first CLEAN Program in 2009. Since launching their program, Gainesville Regional Utilities has experienced a 3,500% increase in solar power capacity. Over the last three years, policymakers in Indiana, Michigan, Vermont, Rhode Island, Maine, Tennessee, Texas, Hawaii, and California have also implemented CLEAN Programs.[i] Both Long Island Power Authority in New York and Fort Collins Utilities in Colorado have announced plans to launch new programs in 2012.

Figure 1: CLEAN Programs in North America (2012)



Source: Clean Coalition, June 2012

While this approach is relatively new in the United States, CLEAN Programs (internationally known as "feed-in tariffs") have proven to be the most effective policy solution for spurring renewable energy installations around the world. The Center for American Progress found that CLEAN Programs have brought more renewable electricity into the marketplace than any other policy.[ii] The U.S. Department of Energy's National Renewable Energy Laboratory (NREL) reports that CLEAN Programs are responsible for 45% of all wind energy and 75% of all solar photovoltaic (PV) capacity installed in the world before 2008.[iii] Meister Consultants Group credits CLEAN Programs for 86% of the solar capacity deployed in the world in 2009.[iv]

1) Overview of CLEAN Programs

A **Clean Local Energy Accessible Now (CLEAN) Program** is a policy tool that creates a stable market for clean energy by removing the main barriers to selling clean local energy.

How CLEAN Programs Work

To explain how CLEAN Programs work, it is useful to first understand the limitations of current policies for promoting local renewable energy in the United States. "Net metering" programs, the most popular way to promote local renewable energy in the U.S., are designed to allow utility customers to reduce onsite electric bills. Participating utility customers with a renewable energy system on their property receive a credit on their electric bills for any generated electricity that is fed back to the utility's grid. Customers essentially "bank" the value of the excess power that is generated during periods when they produce more power than they consume.

While net metering is a very effective policy for incentivizing homeowners to install solar panels, it is much less appealing to commercial and multi-family property owners, investors, and lenders. Net metering programs typically fail to provide compensation to customers that are net producers of power over an annual balancing period. Also, net metering projects only result in energy cost savings to utility customers, so they are less appealing to investors and lenders than renewable energy projects that can provide a stable revenue stream from a utility.

For these reasons, net metering policies do not make financial sense for most locations, such as the majority of shopping malls, multi-family residential properties, commercial properties, landfills, and agricultural operations. The limitations are obvious for large properties that consume little energy, but properties that are occupied by tenants also face limitations - generally, a property owner has no financial incentive to invest in net metering arrangements where tenants reap the benefits of reduced electricity purchases from the utilities. Similarly, tenants will not invest in renewable energy projects for properties that they may vacate within 20 years, which is typically the period for capturing a reasonable return on investment for a renewable energy project.

Local renewable energy projects that allow generators to sell electricity to local utilities, known as **Wholesale Distributed Generation (WDG)** projects, are not hampered by the limitations of net-metering policies. However, without CLEAN Programs, WDG projects face significant barriers. A CLEAN Program removes these barriers, as described in Table A below.

Table A: A CLEAN Program creates a stable market for clean local renewable energy projects by removing the main barriers to WDG project development:

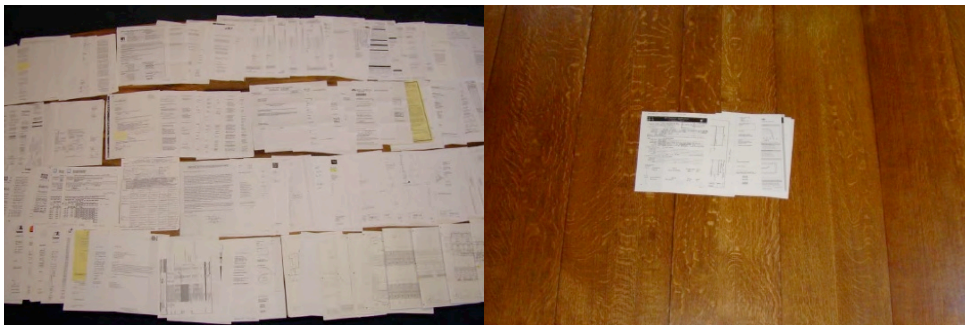
I. **Procurement:** The high risks and transaction costs of securing a contract to sell energy to the local utility is the first major barrier that each WDG project must overcome. By standardizing contract terms and rates, CLEAN Programs dramatically reduce the risks and transaction costs involved in the procurement process.

II. **Interconnection:** Gaining access to the local utility's distribution grid is the second major barrier for WDG projects. Grid interconnection processes are generally opaque, expensive, and unpredictable. By making the process more transparent and streamlined, CLEAN Programs pave the way for a smooth transition to greater reliance on homegrown, renewable energy.

III. **Financing:** Attracting financing is the third largest barrier to WDG, because of the complexity, risks, and added costs associated with existing procurement and interconnection processes. By streamlining procedures, increasing procedural transparency, reducing transaction costs, and guaranteeing wholesale rates, CLEAN Programs make WDG projects attractive to a larger pool of potential lenders and investors, including large corporations and institutional investors.

CLEAN Programs spur rapid deployment of clean local energy systems by minimizing transaction costs and risks for developers, eliminating administrative costs for utilities, and bringing certainty and transparency to the marketplace.

Figure 2: Comparison of Solar Project Paperwork in California and Germany



California Germany

Source: Gary Gerber, President of CalSEIA and Sun Light & Power, June 2009

The photo on the left above shows the amount of paperwork required for a single California Solar Initiative (CSI) project sized between 1 kilowatt (kW) and 1 megawatt (MW). In contrast, the German paperwork shown above (right) covers all CLEAN projects from 1 kW to as large as 20 MW.

Key Features of CLEAN Programs

A CLEAN Program gives property owners and investors the information necessary to evaluate the economic viability and timeframe associated with installing a new renewable energy system before investing significant levels of time and/or money. CLEAN Programs open the energy market, giving community members the opportunity to invest in clean energy projects without exposure to the high risks, transaction costs and complexity that they would otherwise need to perilously navigate.

Table B: Key Features of CLEAN Programs

- Standard and guaranteed contract between the utility and an owner of a local renewable energy facility
- Predefined, fixed rates for a long duration
- Predictable and streamlined access to the utility's distribution grid

CLEAN Contracts

A CLEAN Program includes "CLEAN Contracts," which have all of the following basic characteristics:

- The utility must enter into a standard contract with each eligible local renewable energy generator. Eligibility is predefined.
- The standard contract provides that the utility will pay a fixed, wholesale price that has been predefined.
- The standard contract provides that the utility will purchase all energy delivered by the eligible generator to the utility's electrical distribution grid for a long duration (typically 20 years).

Grid Access

For community members eager to invest in renewable energy, the process of gaining access to the utility's local distribution grid is often a "black box" that provides no certainty about the costs and timeframes for grid interconnection.

CLEAN Programs ensure that interconnection to the distribution grid is predictable, affordable, and timely. The utility achieves this goal by predefining preferable locations for interconnecting clean local energy and instituting transparent processes, costs, and timeframes for achieving interconnection.

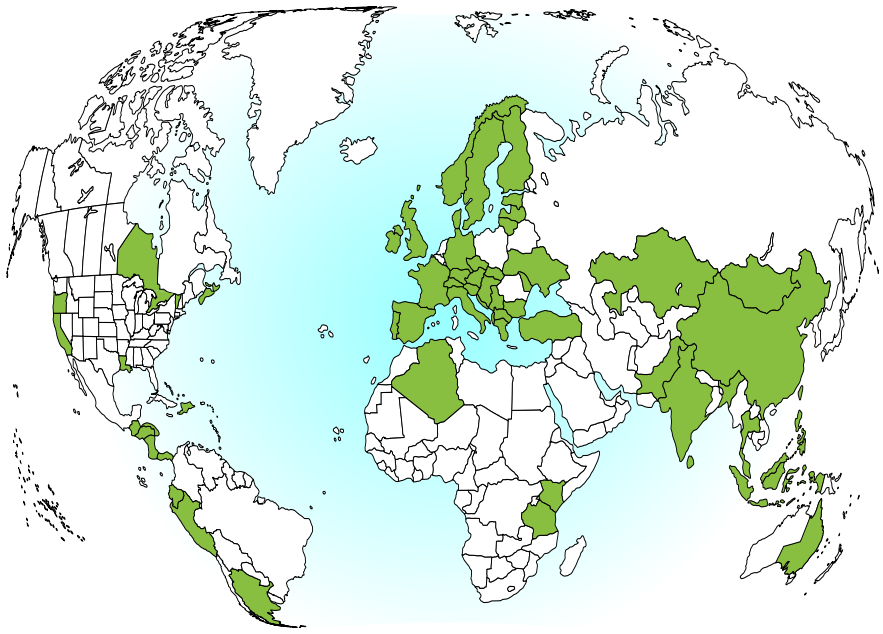
The Proven Success of CLEAN Programs

While the CLEAN approach is relatively new in the United States, it builds upon the profound success of global leaders in renewable energy deployment. CLEAN Programs are based on "feed-in tariffs", the world's most effective market-based solution for deploying cost-effective renewable energy. Feed-in tariffs feature guaranteed, standard contracts at predefined, fixed rates for a long duration between a utility and a renewable

energy facility owner. The main difference between CLEAN and feed-in tariff programs is that feed-in tariff programs may include large-scale renewable energy facilities.

The U.S. Department of Energy's National Renewable Energy Laboratory (NREL) found that feed-in tariffs are responsible for 45% of all wind energy and 75% of all solar PV capacity installed in the world before 2008.[v] Feed-in tariffs are the primary renewable energy policy tool in Europe, responsible for 85% of new wind systems, nearly 100% of new solar PV systems, and 68% of new biomass generation installed in the European Union between 1997 and the end of 2010.[vi] The global popularity of feed-in tariffs continues to rise, as evidenced by announcements of new programs in 2012 by a wide range of nations, including Japan and Saudi Arabia.[vii]

Figure 3: Global Feed-In Tariff Programs (2011)

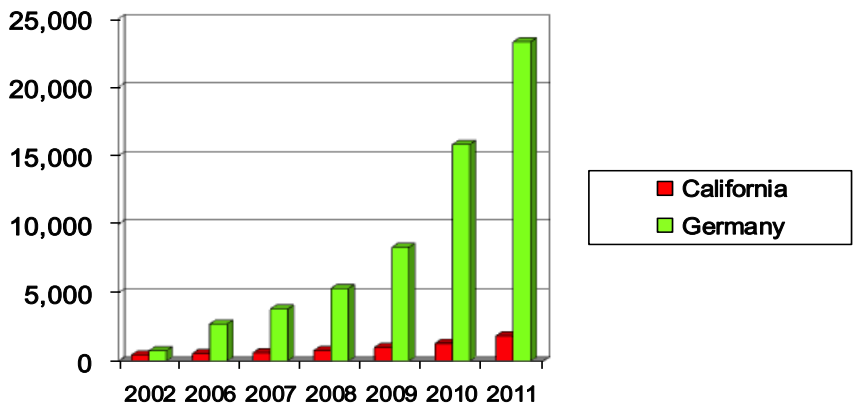


Source: Renewables 2011 Global Status Report, Renewable Energy Policy Network for the 21st Century[viii]

Even locations with lower renewable resource potential can rapidly reap the benefits offered by CLEAN Programs. Germany enacted its feed-in tariff in 2000,[ix] with the initial goal of generating 12.5% of the nation's electricity from renewable sources by 2010.[x] It reached this target three years ahead of schedule[xi] and provided nearly 17% of the country's electricity demand with renewable energy by 2010.[xii]

When compared to California, a state with vastly superior solar potential but which has lacked a robust statewide CLEAN Program, the evidence is striking. Despite having slightly less land area than California[xiii] and solar resources roughly equivalent to those of Alaska,[xiv] Germany installed more than 25 times more solar PV capacity than California in 2010[xv]. Most of this is clean local energy - over 80% of solar PV power capacity installed in Germany in 2009 was located on rooftops, and over 50% of Germany's total wind power capacity is supplied by wind projects smaller than 20 megawatts.[xvi]

Figure 4: Germany vs. California Total Installed Solar Capacity (2002 - 2011)



Source: Clean Coalition, 2012

Germany's feed-in tariff has produced significant economic benefits. In 2010, renewable energy investment in Germany totaled $41.2 billion, and more than 340,000 jobs have been created in the renewable energy sector to date.[xvii] By contrast, Germany's sole significant domestic fossil energy source, lignite coal, employs only 50,000 people along its entire supply chain, from mining to the power plants.[xviii]

Several North American CLEAN Programs have also proven successful:

- The Sacramento Municipal Utility District will have brought online all 100 MW of the program's capacity at no additional cost to utility customers than business as usual by the end of 2012. SMUD's exemplary interconnection procedures made it possible for one utility staff member to complete interconnection studies for all applications for its 100 MW CLEAN Program within 60 days, in contrast to the investor-owned utilities in California, which generally take two years to complete similar interconnection studies. See Appendix C for details.
- Vermont legislators expanded the state's program by more than two-fold in 2012.[xix]
- Gainesville Regional Utilities increased its solar power capacity from 328 kW in October 2008 to 11.45 MW by April 2012. See Appendix A for details.
- Ontario is on track to replace 100% of its coal power by 2014. In the process, Ontario's CLEAN Program has created tens of thousands of jobs and attracted over $20 billion in private-sector investment to Ontario. More than 30 companies are currently operating, or plan to build, solar and wind manufacturing facilities in Ontario.[xx]

2) Local Benefits of CLEAN Programs

Local CLEAN Programs catalyze a community's transition to a clean energy economy and empower community members to capitalize on the vast market opportunity associated with deploying clean local energy.

Here are some of the benefits of a Local CLEAN Program:

- Maximizes local economic benefits
- Leverages private investment dollars to meet community goals
- Reduces electric bills for community members
- Achieves the climate and sustainability targets of the community
- Provides a safer, more resilient energy infrastructure

Maximizes Local Economic Benefits

CLEAN Programs bring the economic benefits of energy production to local communities. Producing local renewable energy creates significantly more jobs than producing fossil fuel or nuclear energy. For example, solar PV energy production, which is one of the most common CLEAN project technologies, contributes nearly nine times the number of jobs as coal or natural gas production.[xxi]

CLEAN Programs also keep energy dollars in the community by giving community members the opportunity to invest in local renewable energy facilities by reducing the complexity, risk exposure, and transaction costs of renewable project development.

Another benefit is that CLEAN Programs enable cities and counties to repurpose or maximize the productivity of many different types of underutilized spaces in their communities, such as brownfields, parking lots, rooftops, and agricultural land. For example, local governments have an excellent opportunity to turn energy-intensive, costly wastewater treatment plants into sustainable, revenue-producing enterprises by converting the organic waste they process into methane energy.[xxii]

Leverages Private Investment Dollars to Meet Community Goals

CLEAN Programs do not rely on subsidies, rebates or other expenditures by state or local governments. Instead, they leverage private investment dollars to meet community goals by reducing the costs, risks, and timeframes for renewable energy project development.

The reduction of costs, risks, and timeframes leads to dramatically greater numbers of local project installations, which in turn results in greater economies of scale, driving down local renewable energy system installation costs further. The Lawrence Berkeley National Laboratory found that the lower installed costs of small solar PV systems in Germany and Japan that occurred as a direct result of the increase in solar PV installations in those countries indicates that increased solar PV market scale in the United States will also drive significantly lower installation costs.[xxiii] As increased project development reduces local installation costs, communities can continue to grow their renewable energy markets even more cost-effectively.

Reduces Electric Bills for Community Members

CLEAN Programs protect communities from rising fossil fuel costs by locking in reasonable electricity rates for utility customers. During the first few years, a robust CLEAN Program may result in a small rate increase for community members. However, within a few years, fossil fuel rates generally begin to rise above fixed CLEAN Contract rates. Moreover, some utilities can implement CLEAN Programs with no ratepayer impact. For example, the Sacramento Municipal Utility District purchased 100 MW of renewable energy through a CLEAN Program at no additional cost to utility customers than business as usual.[xxiv]

CLEAN Programs also help electricity ratepayers avoid the costs of long-distance transmission of energy. Developing a new high-voltage transmission line to deliver electricity from a large-scale renewable power project to consumers often costs billions of dollars.[xxv] Further, transmitting energy across long distances is very inefficient and results in significant loss of energy. For example, transmission line losses range between 7.5% and 14% for California and are around 8% for the City of New York.[xxvi]

Local utilities pay a substantial fee for receiving energy from the transmission grid. The municipal utility for the City of Palo Alto calculated that Transmission Access Charges (TACs) and other cost factors associated with transmission currently add roughly 2.5 cents/kWh.[xxvii] CLEAN Programs take advantage of existing distribution grid capacity and opportunities to make cost-effective distribution grid upgrades, while reducing demand for transmission line capacity.

Achieves the Climate and Sustainability Goals of the Community

Across the country, community leaders and utility administrators are trying to achieve climate and sustainability goals, while minimizing budget and ratepayer impacts. CLEAN Programs can be easily integrated into local action plans and can help communities and utilities meet local and state renewable energy and climate targets, rapidly reduce air pollution and greenhouse gas emissions, and accelerate the replacement of fossil fuel and nuclear power plants, without cost to the government or significant electric rate increases.

CLEAN Programs can be easily implemented and administered by utility staff. The Gainesville Regional Utilities (GRU) did not hire a single additional staff member to implement or administer its CLEAN Program. GRU's Program implementation involved creating standard requirements, contracts, interconnection processes, and payments for projects; as a result, the utility saved valuable staff time that was previously spent on decision making, negotiations, legal disputes, and payment administration. More information is available in Appendix B.

CLEAN Programs also help communities avoid the divisive issues associated with the siting of large-scale renewable power projects and related infrastructure. The siting of new large-scale renewable power plants and expansions of high-voltage transmission infrastructure often divides communities between those who favor these projects and those who fervently oppose the disruption of sensitive ecosystems and the erection of unsightly transmission towers, lines, and other infrastructure. In contrast, CLEAN projects take advantage of underused urban spaces and disturbed land.

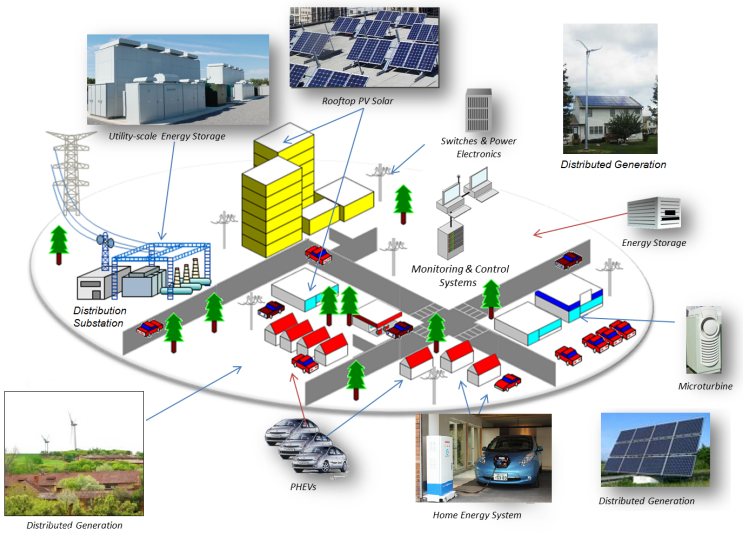
Provides a Safer, More Reliable Energy Infrastructure

CLEAN Programs not only reduce harmful pollutants that endanger human health, but they also address our nation's vulnerable power grid. Currently, any disruption in power generation or transmission on our highly centralized grid – from severe weather, mechanical malfunction, human error, or terrorist attack – can result in power failures affecting entire regions of the country. As a result, large-scale power outages are not uncommon in the United States. A September 2011 blackout triggered by a transmission line failure left millions of Americans in California and Arizona without power and cost an estimated $100 million.[xxviii] Similar transmission failures caused a massive 2003 outage, which affected more than 50 million Americans in the Northeast and Midwest.[xxix]

When blackouts occur, our nation's economic engine grinds to a halt. The Galvin Electricity Initiative found that blackouts cost Americans an estimated $150 billion in economic losses annually.[xxx] In addition to disrupting our economy, grid failures also jeopardize public safety by impairing critical services, such as water, sewage treatment, heating, and cooling. As a result, blackouts during severe winter weather or extreme heat conditions can cause life-threatening situations.

Jim Woolsey, former Director of U.S. Central Intelligence, asserts that the vulnerability of our power grid poses a major national security risk. Terrorist attacks at a few isolated physical points in the grid – or a coordinated cyber-attack – could compromise the nation's water, sewage, phone, transportation and medical systems, and most of our basic economic functions that all depend on electricity. Woolsey believes CLEAN Programs effectively address this threat by increasing clean local energy production, which mitigates the impact of any single power station or power line failing. Furthermore, intelligent grid solutions, such as demand response and energy storage, significantly increase grid reliability. Coupled, distributed generation and intelligent grid solutions allow for the creation of resilient microgrids that can 'island' to provide essential services, even during a long-term emergency.[xxxi]

Figure 5: Clean Coalition Vision of the Distributed Generation + Intelligent Grid Future



Source: Clean Coalition, June 2012

3) Key Considerations for Evaluating a Local CLEAN Program

The determination of whether a CLEAN Program is right for your community requires evaluations of your community's relationship with its utility, the renewable energy resources available locally, and the goals and constraints of a local CLEAN Program.

Evaluating the Utility Relationship

The relationship that your community has with its utility is an vital consideration. A community with more control over its local utility has greater freedom to implement a comprehensive CLEAN Program.

- If your community relies on a municipal utility or cooperative to procure and distribute its electricity, the community can require its local utility to implement a CLEAN Program.
- If your community relies on an investor-owned utility to procure and distribute its electricity, local leaders may be able to negotiate with the utility to implement a CLEAN Program. If the investor-owned utility is not cooperative, local advocates may choose to launch a state legislative campaign to mandate a program.
- If your community benefits from **Community Choice Aggregation (CCA)** or has similar rights to procure energy, the community purchasing authority can implement a **CLEAN Contracts Program**, which is a CLEAN Program without the Grid Access features. For example, the CCA of Marin County, California has implemented a CLEAN Contracts Program.[xxxii]

If your community cannot secure the cooperation of its utility, your community can still take advantage of its clean local energy resources by implementing a **CLEAN Campus Program**.

- Cities, counties, corporate campuses, manufacturing campuses, school districts, water districts, and other entities that control properties and purchase energy from investor-owned utilities can increase onsite renewable power production, lock in reasonable electricity rates, and reduce power outages by implementing a CLEAN Campus Program.
- CLEAN Campus Programs feature predefined rates and standard contracts and procedures. In contrast to the Request for Proposals approach to clean energy transactions, the CLEAN approach results in far lower transaction costs and burdens for all parties, which translates into lower electric rates. These programs may be funded in a variety of ways, including franchise fees.[xxxiii] More information about CLEAN Campus Programs is available here.

Evaluating Local Renewable Energy Resources

It is important to understand what renewable energy resources are available and likely to be cost-effective in your community. Every community possesses a variety of renewable

energy resources, such as wind, sun, and organic waste. Local CLEAN Programs should be focused on the resources that are most abundant and cost-effective for the community. Many tools are available online to help community members calculate local renewable energy resources, such as wind, solar and biopower energy. For example, the U.S. Department of Energy has compiled a list of tools to help communities evaluate options for generating renewable energy.[xxxiv] Module 2 of the Local Clean Program Guide provides guidance on the pricing levels required for any contemplated technologies.

Evaluating Program Goals & Constraints

The goals and constraints of a community will inform the specific design of any local CLEAN Program. Generally, the key stakeholders will include city or county staff, local utility staff, local sustainability-oriented parties, including renewable energy industry participants, and interested community members.

As described in Section 2 above, a local CLEAN Program can achieve multiple goals of a community. Community stakeholders can help to identify the specific goals of their community that will be a priority for their Program. Goals may include:

- Stimulating the local economy
- Enhancing local government revenues
- Attaining national recognition for clean energy leadership
- Creating economies of scale for local renewable energy industries
- Minimizing utility bill increases
- Achieving local sustainability goals on time

Community stakeholders may also help to define how the community can mitigate their CLEAN Program's potential constraints, which may include taking actions such as:

- Starting with a pilot-sized program
- Limiting the consumer rate impact (e.g. no more than a 1% increase to consumer rates for the first two years of the CLEAN Program)
- Keeping the initial program simple to maximize the likelihood of program success
- Complying with or minimizing changes to existing contractual obligations of the utility

The subsequent modules of this Local CLEAN Program Guide explain in far greater detail how to design and implement CLEAN Programs to maximize economic and sustainability results in relation to specific goals, resources, and constraints.

4) Local CLEAN Programs Deliver Results Now

Local CLEAN Programs deliver rapid results and make clean local energy accessible NOW. By minimizing bureaucracy and maximizing efficiency, CLEAN Programs empower local communities and utilities to dramatically accelerate the pace of solar, wind, and biopower project deployment.

When the City of Gainesville, Florida looked for a policy tool to unleash clean local energy, planners from the local utility found that a CLEAN Program would provide the highest rate of renewable energy deployment at the least cost per kilowatt-hour generated.[xxxv] As a result of its CLEAN Program, Gainesville has experienced more than 3,500% growth in its cumulative solar PV capacity in only three and a half years. Gainesville's CLEAN Program is further described in Appendices A and B.

The Sacramento Municipal Utility District's CLEAN Program has been enormously successful in bringing significant amounts of clean local energy online in a timely and cost-effective manner. By the end of 2012, nearly all 100 MW of the program's capacity will be online at no additional cost to utility customers than business as usual. See Appendix C for more information about Sacramento's program and Module 7 for information about how utility staff members secured approval for the program.

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[xi] Ibid.

[xii] Paul Gipe, "New Record for German Renewable Energy in 2010," March 24, 2011, 2011, accessed November on 21, 2011, *available at* http://www.wind-works.org/FeedLaws/Germany/NewRecordforGermanRenewableEnergyin2010.html.

[xiii] California's land area is approximately 156,000 square miles. Germany's land area is approximately 138,000 square miles. See U.S. Census Bureau, California Land Area, 2000, *available at* http://quickfacts.census.gov/qfd/states/06000.html, and National Geographic, Germany Facts, 2011, accessed on November 21, 2011, *available at* http://travel.nationalgeographic.com/travel/countries/germany-facts.

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Appendix A – Gainesville CLEAN Program Brief

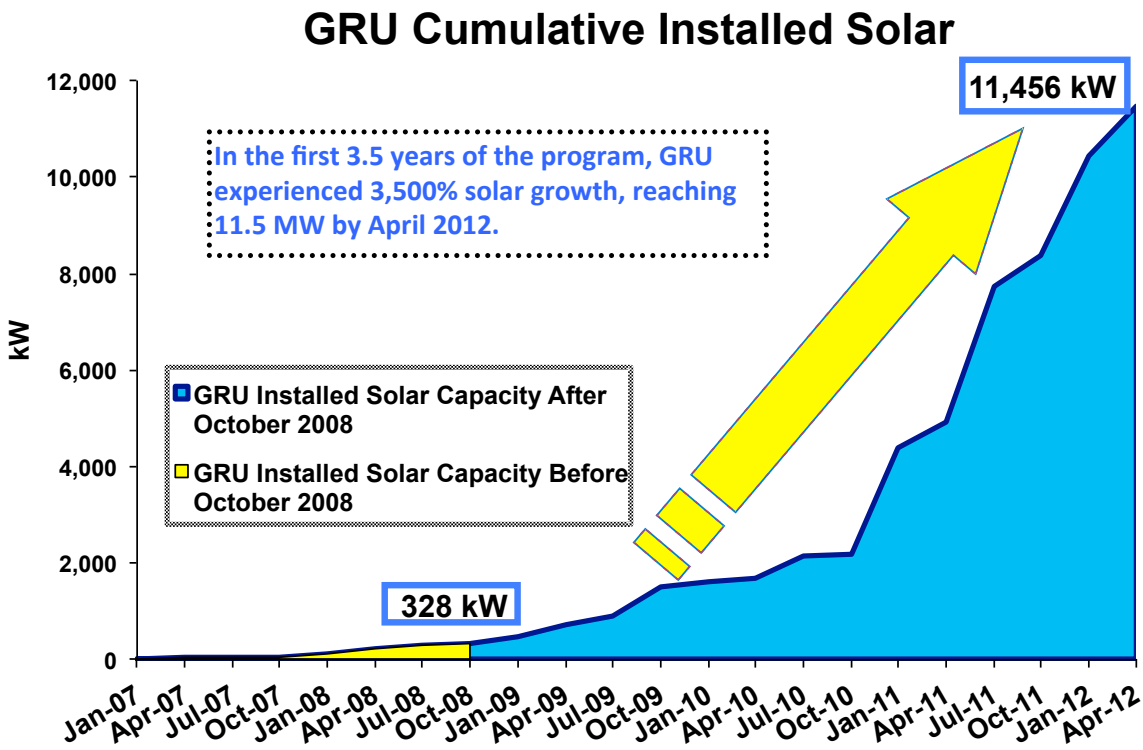
Gainesville Program Highlights	
Utility	Gainesville Regional Utilities (GRU)
Program Size	4 MW per year
Project Size	1 MW max for ground-mounted, 300 kW for building or pavement-mounted
Pricing	$0.24/kWh - $0.32/kWh
Fees & Deposits	$500 - $1200 & $30/kW
Eligible Energies	Solar Photovoltaic (PV)

Overview

Gainesville Regional Utilities (GRU) serves 90,000 electric customers in Gainesville, Florida. In 2007 GRU implemented a retail net metering program, coupled with a $1.50 per watt (W) installation cost rebate. Despite these efforts, by late 2008 the city still had less than 400 kilowatts (kW) of deployed solar. The City Commission then undertook a comprehensive effort to shift toward renewable energy and reduce greenhouse gas (GHG) emissions following a robust local debate on energy supply options and Gainesville's adoption of the US Conference of Mayors' Climate Protection Agreement. GRU drew upon a successful German program and, within six months, enacted the first comprehensive, cost-based, CLEAN Program in the United States in March of 2009.

GRU's CLEAN Program (locally known as a "Feed-In Tariff" Program) has been a great success. As a result of its CLEAN Program, Gainesville has experienced more than 3,500% growth of its cumulative solar PV capacity over three and a half years. GRU's solar capacity increased from 328 kW in October 2008 to 11.45 MW by April 2012. GRU granted all of its initial annual 4 megawatt (MW) allocation in the first week of the Program's existence and, within five months, the program was fully subscribed for the next seven years. GRU has filled all 32 MW of its CLEAN project allocations through 2016, and there is currently a multi-year wait list for the program.[i]

The Gainesville CLEAN Program has accelerated the city's clean energy economy. The city is establishing a local solar industry base to serve communities throughout the region. The 35-fold increase in volume of deployed solar has significantly increased economies of scale, driven down the costs of installing a solar system, and created hundreds of new jobs. It should be noted that employment growth was entirely in the private sector. Gainesville Regional Utilities (GRU) did not hire a single additional staff member to implement or administer its CLEAN Program. GRU's Program implementation involved creating standard requirements, contracts, interconnection processes, and payments for projects; as a result, the utility saved valuable staff time that might otherwise have been spent on decision making, negotiations, legal disputes, and payment administration to deploy an equivalent amount of renewable energy. See Appendix B for information about GRU's experience implementing and administering Gainesville's program.



Source: Clean Coalition and Gainesville Regional Utilities, May 2012

Allocation & Contract Terms

Contracts are issued on a first-come-first-served basis. GRU offers 20-year, fixed-rate contracts for all energy produced by Program projects[ii] (no partial net metering is allowed). Project owners are also eligible for all federal tax benefits and other incentives that might be available.

Participant Eligibility

To be eligible to participate in the Gainesville CLEAN Program, a solar photovoltaic (PV) project must be located within GRU's electric service territory, but the PV system owner does not have to be a GRU customer. The project must also be approved by GRU engineering staff. Any system that has previously received a rebate from GRU or entered into a net-metering program is not eligible for the Gainesville CLEAN Program.[iii]

Project Milestones

Once a queue year begins on January 1st, sellers must initiate their projects by March 31st by contacting GRU's Solar Program Coordinator. Sellers then have 60 days to obtain engineering approval. After receiving engineering approval, the Solar Energy Purchase Agreement (SEPA) is signed by both parties. The sellers then have 60 days to acquire the equipment needed for the project and 120 days to complete construction and begin operation. Any projects that fail to meet these deadlines are subject to termination.[iv]

Fees & Deposits

There is a non-refundable processing fee when submitting an application. The fee is $500 for systems 10 kW or less and $1,200 for systems greater than 10 kW. Upon acceptance of the power purchase contract, a queue reservation deposit of $30/kW is required.[v]

Interconnection

Interconnection is standardized through the SEPA contract, and participants will be paid for 100% of the solar energy they generate, all of which is delivered to the GRU grid.[vi]

Pricing

Pricing for the GRU CLEAN Program is based on the average installed cost of solar PV systems. Rates for 2012:[vii]

- Rooftop, over-pavement, and ground-mounted projects less than 10 kW: $0.24/kWh (based on average installed cost per watt of $5.50).
- Rooftop or over-pavement projects 10-300 kW and ground-mounted projects 10-25 kW: $0.22/kWh (based on an average installed cost per watt of $5.00).
- Ground-mounted projects greater than 25 kW: $0.19/kWh (based on an average installed cost per watt of $4.00).

Installed cost per watt includes all costs associated with construction, including all materials and labor.

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Appendix B – Letter from GRU on Program Success

GRU More than Energy℠

GAINESVILLE REGIONAL UTILITIES
STRATEGIC PLANNING

Implementing the Gainesville Feed-In Tariff

John Crider, Gainesville Regional Utilities

In January of 2009 the city of Gainesville, FL, decided to replace an existing commercial solar net metering rebate program with one based on the European Feed-In Tariff model, specifically the model adopted by Germany. Gainesville was impressed with the results from the German program which, when compared to any other incentive program, statistically provided the highest rate of deployment at the least cost per kilowatt-hour generated.

Gainesville had operated a solar rebate program for several years prior to 2009. The rebate program resulted in about 350 kilowatts of installed capacity, which was enough to rank Gainesville as the number one solar city in Florida on a per capita basis. However, the program had administrative difficulties that Gainesville wished to solve.

The primary defect with a rebate program is that funds are paid to project owners as upfront cash. Once this incentive is received to purchase the equipment, there is no ongoing incentive for project owners to maintain their system and ensure the production of energy. Gainesville found a preponderance of inactive, abandoned, and poorly maintained systems that failed to provide the ongoing energy that was promised. Efforts were made by Gainesville to oversee and protect the investment in these systems, but this demanded much staff time and project tracking to properly police the projects.

The Feed In Tariff has proven to be a much simplified and straightforward program to implement, and guarantees that the city's funds are used most efficiently since every dollar spent purchases actual energy generated. The simple performance-based incentive can be stated in one sentence: "Gainesville will pay you a flat rate for every kilowatt-hour of energy generated for 20 years". It's a policy that is transparent, easily understood, and straightforward to administer.

Several aspects of the program have proven to simplify and streamline the process. First, there is a standard set of "bright line" requirements for a project to qualify, demanding no staff analysis or interpretations. Second, there is a clear method for assigning capacity to qualifying projects, again demanding very little staff time or decision-making. There is no staff time wasted with evaluating RFPs and no additional costs to the project developer to compete in an RFP process. Third, each project regardless of size signs a short, standard offer contract and interconnection agreement. There is no valuable staff time wasted in negotiations and legal disputes. (In comparison, the traditional contract Gainesville recently signed for a biomass plant not covered under the FIT program took 9 months to complete the RFP review process and another year to negotiate contract terms.) Finally, administration of payments is standardized and can automated using a traditional utility billing system.

The Gainesville FIT program has entered into its third year, and its impressive results have been achieved with a rate impact of less than 1%. In effect, the City of Gainesville has expanded its level of deployed solar by more than an order of magnitude with a rate impact far below inflation. Perhaps most impressive is that the move to the FIT required zero new staff to administer, proving both the efficiency and effectiveness of the policy when properly implemented

John Crider
Strategic Planning Engineer

Appendix C – Sacramento CLEAN Program Brief

Sacramento CLEAN Contracts Program Highlights	
Utility	Sacramento Municipal Utility District
Program Size	100 MW
Project Size	Up to 5 MW
Pricing	Differentiated, see below
Fees & Deposits	$1400 interconnection review fee & $20/kW deposit
Eligible Energies	All California Energy Commission renewable energies & combined heat and power (CHP)

Overview

The Sacramento Municipal Utility District (SMUD) CLEAN Program has been enormously successful in bringing significant amounts of clean local energy online in a timely and cost-effective manner. By the end of 2012, nearly all 100 megawatts (MW) of the program's capacity will be online at no additional cost to SMUD customers than business as usual.[i] SMUD's exemplary interconnection procedures made it possible for one utility staff member to complete interconnection studies for all applications for its 100 MW CLEAN Program within 60 days,[ii] in contrast to the investor-owned utilities in California, which generally take two years to complete similar interconnection studies.

SMUD is the nation's sixth largest publicly owned utility (POU) and serves nearly 4% of California's total electric load. If this program were expanded proportionally throughout the entire state of California, more than 2,500 MW of cost-effective clean local energy could rapidly come online.

SMUD launched its CLEAN Program in 2010. SMUD offers standard contract terms and rates to eligible renewable energy resources, as well as qualifying combined heat and power installations, up to 5 MW in size.[iii] The program was immediately met with high demand to participate. SMUD received enough applications to fill the 100 MW queue within just a few months of opening the program.

Allocation & Contract Terms

The seller has the option to enter into a contract for 10, 15 or 20 years.[iv]

Participant Eligibility

Projects must be located within SMUD's service area and no larger than 5 MW. Additionally, projects must be an eligible renewable energy project or a qualifying combined heat and power installation, certified as such by the California Energy Commission (CEC). Fossil-fuel combined heat and power (CHP) projects are also included in the program.[v]

Project Milestones

Once SMUD presents the applicant with the Power Purchase Agreement (PPA) and interconnection agreement, applicants have 30 days to return all information required. Otherwise, they will lose their spot in the queue and 100% of their deposit will be returned. Under the terms of the PPA, SMUD will terminate the Agreement if the facility has not achieved commercial operation within ninety (90) days following the scheduled commercial operation date.[vi]

Fees & Deposits

There is an interconnection review fee of $1400, as well as a reservation deposit that is equal to $20/kW of the proposed project capacity. The reservation deposit shall be refunded so long as commercial operation is achieved within 90 days of the scheduled commercial operation date.[vii]

Interconnection

Project developers must execute an interconnection agreement with SMUD, shall pay and be responsible for designing, installing, operating, and maintaining the facility in accordance with all applicable laws and regulations, and shall comply with all applicable SMUD, WECC, FERC, and NERC provisions, including applicable interconnection and metering requirements. Seller shall also comply with any modifications, amendments or additions to the applicable tariff and protocols. To make deliveries to SMUD, seller must maintain an Interconnection Agreement with SMUD in full force and effect.[viii]

Pricing

Prices are differentiated by contract length and time of year. Rates are also differentiated and different for combined heat and power projects.[ix]

Rates in $ per kilowatt hour (kWh) for renewable energy projects

Time of Use Period	2012 Start Year			2013 Start Year ($2013)			2014 Start Year ($2014)		
	10-Year	15-Year	20-Year	10-Year	15-Year	20-Year	10-Year	15-Year	20-Year
Winter Off Peak	$0.0665	$0.0723	$0.0787	$0.0707	$0.0766	$0.0831	$0.0732	$0.0798	$0.0866
Winter On Peak	$0.0762	$0.0825	$0.0895	$0.0807	$0.0872	$0.0942	$0.0835	$0.0906	$0.0979
Winter Super Peak	$0.0872	$0.0959	$0.1042	$0.0932	$0.1017	$0.1100	$0.0977	$0.1066	$0.1151
Spring Off Peak	$0.0572	$0.0626	$0.0686	$0.0615	$0.0669	$0.0729	$0.0639	$0.0699	$0.0761
Spring On Peak	$0.0672	$0.0728	$0.0791	$0.0711	$0.0769	$0.0833	$0.0738	$0.0802	$0.0868
Spring Super Peak	$0.0698	$0.0758	$0.0823	$0.0740	$0.0801	$0.0867	$0.0769	$0.0836	$0.0903
Summer Off Peak	$0.0682	$0.0745	$0.0809	$0.0730	$0.0792	$0.0856	$0.0755	$0.0822	$0.0890
Summer On Peak	$0.0768	$0.0826	$0.0891	$0.0814	$0.0873	$0.0937	$0.0834	$0.0901	$0.0968
Summer Super Peak	$0.1722	$0.1953	$0.2122	$0.1869	$0.2081	$0.2244	$0.2002	$0.2200	$0.2363
Annual Average	**$0.0777**	**$0.0850**	**$0.0924**	**$0.0829**	**$0.0901**	**$0.0975**	**$0.0864**	**$0.0941**	**$0.1017**

Source: SMUD Feed-In Tariff Rates

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