



2075 Woodside Road | Redwood City, CA 94061
(650) 260-0005 | peninsulacleanenergy.com

**Regular Meeting of the Executive Committee of the
Peninsula Clean Energy Authority (PCEA)
AGENDA**

**Monday, October 16, 2023
10:00 am**

PLEASE NOTE: This meeting will be held in a hybrid format with both in-person and Zoom participation options for members of the public; Board members shall appear in person.

In-Person Meeting Location:
PCEA Lobby, **2075 Woodside Road, Redwood City, CA 94061**

Zoom, Virtual Meeting Link: <https://pencleanenergy.zoom.us/j/83252507093>
Meeting ID: 832-5250-7093 Passcode: 2075 Phone: +1 (669) 444-9171

This meeting of the Peninsula Clean Energy Executive Committee will be held at the Peninsula Clean Energy Lobby: 2075 Woodside Road, Redwood City, CA 94061 and by teleconference pursuant to California Assembly Bill 2449 and the Ralph M. Brown Act, CA Gov't Code. Section 54950, et seq. **Members of the Committee are expected to attend the meeting in person** and should reach out to Assistant General Counsel for Peninsula Clean Energy, Jennifer Stalzer, with questions or accommodation information (jstalzer@smcgov.org). For information regarding how to participate in the meeting remotely, please refer to the instructions at the end of the agenda. In addition, a video broadcast of the meeting can be viewed at <https://www.peninsulacleanenergy.com/executive-committee> following the meeting.

Public Participation

The PCEA Executive Committee meeting may be accessed through Zoom online at <https://pencleanenergy.zoom.us/j/83252507093>. The meeting ID is: 832-5250-7093 and the passcode is: 2075. The meeting may also be accessed via telephone by dialing +1(669) 444-9171. Enter the webinar ID: 832-5250-7093, then press #. (Find your local number: <https://pencleanenergy.zoom.us/j/83252507093>). Peninsula Clean Energy uses best efforts to ensure audio and visual clarity and connectivity. However, it cannot guarantee the connection quality.

Members of the public can also attend this meeting physically at the **Peninsula Clean Energy Lobby** at 2075 Woodside Road, Redwood City, CA 94061.

Written public comments may be emailed to PCEA Board Clerk, Nelly Wogberg (nwogberg@peninsulacleanenergy.com) and such written comments should indicate the specific agenda item on which the member of the public is commenting.

Spoken public comments will be accepted during the meeting in the Board Room(s) or remotely through Zoom at the option of the speaker. Please use the "Raise Your Hand" function in the Zoom platform, or press *6 if you phoned into the meeting, to indicate that you would like to provide comment.

ADA Requests

Individuals who require special assistance or a disability related modification or accommodation to participate in this meeting, or who have a disability and wish to request an alternative format for the meeting, should contact Nelly Wogberg, Board Clerk, by 10:00 a.m. on the day before the meeting at (nwogberg@peninsulacleanenergy.com). Notification in advance of the meeting will enable PCEA to make reasonable arrangements to ensure accessibility to this meeting, the materials related to it, and your ability to comment.

Closed Captioning is available for all PCEA Board meetings. While watching the video broadcast in Zoom, please enable captioning.

CALL TO ORDER / ROLL CALL / APPROVE TELECONFERENCE PARTICIPATION UNDER AB 2449

This item is reserved to approve teleconference participation request for this meeting by Director pursuant to Brown Act revisions of AB 2449 due to an emergency circumstance to be briefly described.

PUBLIC COMMENT

This item is reserved for persons wishing to address the Committee on any PCEA-related matters that are not otherwise on this meeting agenda. Public comments on matters listed on the agenda shall be heard at the time the matter is called. Members of the public who wish to address the Committee are customarily limited to two minutes per speaker. The Committee Chair may increase or decrease the time allotted to each speaker.

ACTION TO SET AGENDA AND TO APPROVE CONSENT AGENDA ITEMS

REGULAR AGENDA

1. [Recommend Approval of Solar Billing Plan Program \(Action\)](#)
2. [Distributed Energy Resources \(DER\) Framework and Future Programs \(Discussion\)](#)

ADJOURNMENT

Public records that relate to any item on the open session agenda are available for public inspection. The records are available at the Peninsula Clean Energy offices or on PCEA Website at: <https://www.peninsulacleanenergy.com>.

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- Videoconference with Computer Audio - see Option 1 below
- Videoconference with Phone Call Audio - see Option 2 below
- Calling in via Telephone/Landline - see Option 3 below

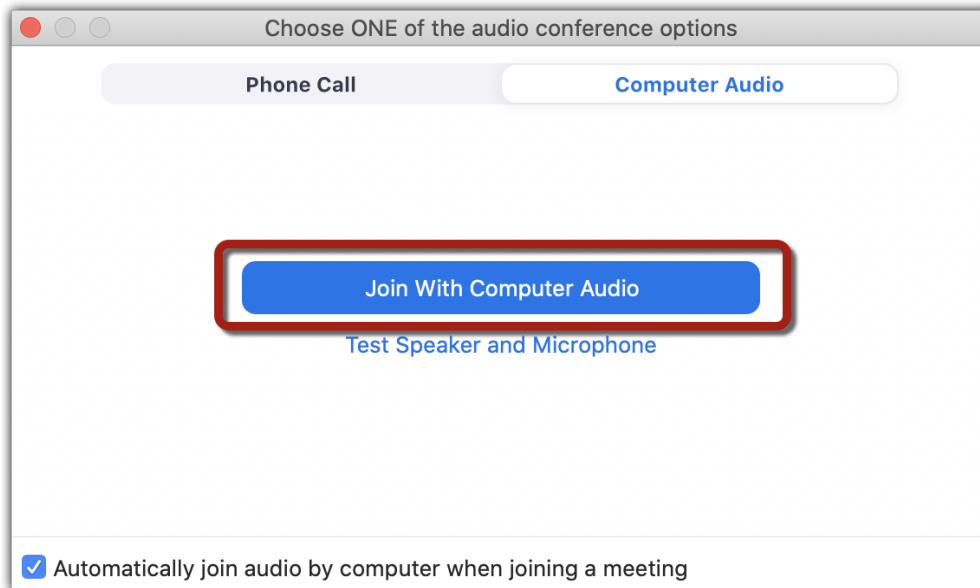
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**PENINSULA CLEAN ENERGY AUTHORITY
JPA Board Correspondence**

DATE: October 16, 2023
BOARD MEETING DATE: October 16, 2023
VOTE REQUIRED: Majority Vote

TO: Honorable Peninsula Clean Energy Authority Executive Committee

FROM: Leslie Brown, Director of Account Services
Connor Prince, Senior Analyst Account Services

SUBJECT: Recommend Approval of Solar Billing Plan Program (Action)

RECOMMENDATION

Recommend approval of the proposed Solar Billing Plan (SBP) program policy (Exhibit A) to the Board of Directors for adoption at the October 26, 2023 Board of Directors Meeting.

BACKGROUND

On December 15, 2022, the California Public Utilities Commission (CPUC) approved a successor to the NEM 2.0 tariff for new interconnection applications submitted after April 14th, 2023. That successor program, known as Net Billing Tariff (NBT) or Solar Billing Plan (SBP), is the policy framework under which new solar applications submitted starting April 15, 2023 will be governed by.

In response to the decision, PG&E developed a new program for customers which will be known as the Solar Billing Plan (SPB). The Solar Billing Plan is the customer facing name for the set of electric rates and policies that adhere to the guidelines set forth in the CPUC's Net Billing Tariff decision. To minimize customer confusion, Peninsula Clean Energy will also publicly refer to our corresponding program as PCE's Solar Billing Plan. Under the Solar Billing Plan, energy exported to the grid from a customer's solar system is valued at a much lower "avoided cost calculation" (ACC) which the CPUC has determined to be the real time grid value of exported solar generation. The exact rate varies depending on the hour of the day, day of the week (i.e., weekday vs. weekend), and month a customer exports the energy. The intent of the SBP program, per the CPUC decision, is to provide a more sustainable long-term incentive and policy framework for rooftop solar to minimize cost shift from non-participants while encouraging more distributed energy storage with future solar installations.

PCE staff has spent the last several months evaluating various options for our customers who will be enrolled in PG&E's Solar Billing Plan to develop what we believe is the best option for our own policy as this new program rolls out. Staff plans to use this first year of implementation to evaluate customer experience and industry response to this new set of policies, and may propose program updates and/or additional incentives in future years.

DISCUSSION

Unlike our net energy metering (NEM) program, which nets the imported and exported electricity usage and assesses the otherwise applicable rate schedule (OAS) price to the total kWh quantity of each time of use (TOU) period, imported electricity charges and exported electricity credits will be calculated separately under the SBP. The imported electricity charges are assessed based off the OAS rate schedule, and the exported electricity credits are calculated based off the export credit rates. The resulting charge and credit dollar amounts are then netted, and the resulting sum is the invoiced amount due alongside applicable taxes and surcharges. In other words, under the SBP every kWh that comes from the grid to the customer will be charged at the OAS retail rate whereas every kWh that comes from the customer's home back to the grid will be measured separately and assigned a credit value which is different than the retail value.

It is the recommendation of PCE staff that PCE's SBP policy should closely mirror that of PG&E, as detailed in Exhibit A. Exported Energy Credits (EEC) are determined by the Avoided Cost Calculator (ACC) and will be locked in for a period of nine years for customers whose system is connected by 2027. For customers that connect their system after 2027, their EEC rates will be updated every two years to reflect current energy prices. Mirroring the EEC rates will also help avoid confusion with solar installers, who have implied that system installation modeling will be based on standard EEC compensation. As the first year of SBP unfolds, PCE staff will analyze monthly EEC compensation and customer activity surrounding new solar system installations to determine where customers would benefit most from any potential additional incentives and/or credit adders.

Under the SBP, customers will continue to be billed monthly with any charges or credits reconciled at the end of the billing cycle as we currently do for NEM customers. The primary change in structure comes at the Annual Cash Out that occurs after the April billing cycle each year for SBP customers who are net-excess generators; meaning, that at the end of the April billing cycle they have generated more kWhs of energy than they consumed for the year (May-April). Rather than being cashed out for the value of their Export Credit Balance, they will be cashed out under the Net Surplus Compensation (NSC) model. This means their net kWh quantities for each month will be tracked over the twelve-month period (May – April), and if their net total kWh at the end of their April billing cycle is negative (excess generation) it will be multiplied by the PG&E NSC rate per kWh with an additional \$0.01 per kWh adder from PCE. The NSC calculation will result in a higher net payout for the customer than simply cashing out the existing Export Credit Balance. PCE will also set the following monetary threshold on which checks are issued for Annual Cash Outs for SBP customers: NSC cash out payments of \$300 or more will be issued via check, and payments under \$300 will be applied as an on-bill credit.

PCE will not assess a "claw back" charge to recoup double crediting for over generation that is part of PG&E's SBP policy. Since customers are being credited for over generation monthly and then again for any net generation at true up, PG&E is instituting a net export charge based on the average Export Credit Rate for all SBP/NBT customers. The CPUC recognized the double credit and allowed the recouping of a portion of it through the NSC export adjustment. The combined rates (EEC & NSC w/adder) at which customers are being credited still fall below what is paid out at the retail rate under NEM, so maintaining the two credits provides value to customers for over generation and avoids customer confusion and points of contention at the customer level.

FISCAL IMPACT

Calpine Energy Solutions, our backend data manager for billing operations, will be developing the necessary IT infrastructure to implement a Solar Billing Plan platform that mirrors PG&E's at no additional cost under our existing service agreement. Enrollment in SPB for the first year of implementation is projected to be limited, staff estimates under 300 customers will potentially be enrolled by the end of 2024 with most of those customers being legacy NEM 1.0 customers whose original interconnection agreements with PG&E have expired. Impacts to revenue are nominal due to the limited number of customers who will be enrolled in this program.

ATTACHMENTS:

[PCE Net Billing Tariff_Working.docx](#)



Solar Billing Plan (Net Billing Tariff)

Effective Date: 12/15/2023

APPLICABILITY: This Solar Billing Plan (SBP) is applicable to a customer who uses an eligible Renewable Electrical Generation Facility, as defined in PG&E’s Electric Schedule SBP ([PG&E NBT/SBP webpage link](#)), that is located on the customer’s owned, leased, or rented premises, is interconnected and operates in parallel with PG&E’s transmission and distribution systems, and is intended primarily to offset part or all of the customer’s own electrical requirements (hereinafter “eligible customer-generator” or “customer”). New solar customers who apply to interconnect their solar system to the electric grid after April 14, 2023, will be enrolled on the Solar Billing Plan. For customers on the Net Energy Metering (NEM) program: once the NEM legacy period has expired for a customer’s system, they will be transferred to the SBP tariff.

TERRITORY: The entire Peninsula Clean Energy service area of San Mateo County and the City of Los Banos.

RATES: All rates charged under this SBP tariff will be in accordance with the eligible customer-generator’s otherwise-applicable Peninsula Clean Energy rate schedule (OAS). An eligible customer-generator served under this schedule is responsible for all charges from its OAS including monthly minimum charges, customer charges, meter charges, facilities charges, demand charges and surcharges, and all other charges owed to Peninsula Clean Energy or PG&E – any applicable PG&E charges will be addressed in a corresponding tariff (<http://www.pge.com/tariffs/ERS.SHTML#ERS>). Charges for energy (kWh) supplied by Peninsula Clean Energy will be based on the imported and exported metered usage in accordance with this SBP tariff.

DEFINITIONS:

- a) “Imported electricity” is defined as energy (kWh) supplied by PCE and consumed by the customer.
- b) “Exported electricity” is defined as energy (kWh) generated from the customer’s eligible Renewable Electrical Generation Facility sent to the electric grid.
- c) “Export Credit Rates” are defined as the appropriate credit for any Exported electricity, based on the sum of the applicable interval Energy Export Rate posted on PCE’s website.
- d) “Export Credit Balance” is defined as any excess export credits that carryover into the following billing cycle.
- e) “Net Surplus Compensation (NSC)” is defined as fair market value for any balance of surplus export energy that you have at the time of the PCE Annual Cash Out. Fair

market value is determined by PG&E at a rate that is comparable to what other energy producers are paid for electricity generation in the wholesale market. Current PG&E NSC prices can be found [here](#), but do not include the PCE \$0.01 per kWh adder outlined in Section 3.

1. **Billing:** Customers with SBP service will be billed by Peninsula Clean Energy as follows: Unlike our NEM program, which nets the Imported and Exported electricity usage and assesses the OAS rate price to the total kWh quantity of each TOU period, Imported electricity charges and Exported electricity credits will be calculated separately under the SBP. The Imported electricity charges are assessed based off the OAS rate schedule, and the Exported electricity credits are calculated based off the Export Credit Rates. The resulting charge and credit dollar amounts are then netted, and the resulting sum is the invoiced amount due alongside applicable taxes and surcharges.
2. **Monthly Settlement of Peninsula Clean Energy Charges/Credits:** SBP customers will receive a statement in their monthly PG&E bills indicating any accrued charges for their usage during the billing cycle. Customers who have accrued credits during previous billing cycles will see these credits applied against current charges. Any remaining balance will be due and must be paid in consideration of the due date and remittance advice reflected on each PG&E bill. Negative credit balances can accumulate and be carried over month over month as an Export Credit Balance until the PCE Annual Cash Out. PCE charges can be offset by Export Credit Balances within the 12 months leading up to the Annual Cash Out but said credit balance is not applicable to the Annual Cash Out.
3. **Peninsula Clean Energy Annual Cash-Out:** After their April billing cycle of each year, all current PCE SBP customers with a greater Export electricity quantity (kWh) than their Imported electricity quantity (kWh) over the 12-month period will receive a Net Surplus Compensation (NSC) payment based on their net Export electricity kWh amount times the PCE NSC rate. The PCE NSC rate can be found on our website and matches the PG&E NSC rate with a \$0.01 per kWh adder. Customers who earn an NSC payment of \$300 or more will be issued a check, and customers earning an NSC payment less than \$300 will have it applied to their next statement as a bill credit. In all cases the Export Credit Balance will be reset to zero at the beginning of each Annual Cash-Out period and is not applicable for cash out as outlined in Section (2). Customers who close their electric account through PG&E or move outside of the Peninsula Clean Energy service area prior to their true-up billing cycle will have their net Export and Import balance settled 60 days after their account closure.
4. **Return to PG&E Bundled Service:** Peninsula Clean Energy customers with SBP service may opt out and return to PG&E bundled service at any time. Customers should be advised that PG&E will perform a true-up of their account at the time said customers return to PG&E bundled service. As described in [PG&E Electric Rule 23](#), certain PCE customers returning to PG&E service may receive Transitional Bundled Service (TBS) for a limited period of time; TBS will expose such customers to various market price

risks – please review PG&E’s applicable electric rules and tariffs for additional information.

5. **PG&E SBP Services:** Peninsula Clean Energy SBP customers are subject to PG&E’s terms, conditions, and billing procedures for any non-generation services, as described in PG&E’s Electric Schedule SBP and related PG&E tariff options addressing SBP service. Customers should be advised that while Peninsula Clean Energy reconciles payment/credit balances for generation, PG&E will continue to assess charges for delivery, transmission, and other services.



PENINSULA CLEAN ENERGY AUTHORITY
JPA Board Correspondence

DATE: October 16, 2023
BOARD MEETING DATE: October 16, 2023
VOTE REQUIRED: None

TO: Honorable Peninsula Clean Energy Authority Executive Committee

FROM: Rafael Reyes, Director of Energy Programs

SUBJECT: Distributed Energy Resources (DER) Framework and Future Programs (Discussion)

BACKGROUND

Peninsula Clean Energy’s mission is to reduce greenhouse gas (GHG) emissions by expanding access to sustainable and affordable energy solutions. Distributed Energy Resources are valuable assets to advance this mission. DERs are assets on the distribution grid, typically close to load, and usually behind the meter, which can be used individually or in aggregate to provide value to the grid and individual customers. The assets that qualify include in particular: battery storage, electric vehicles (EVs), grid-enabled water heaters, thermostats and other load controls. Generation sources such as solar, fuel cells (which may be considered clean if using green hydrogen for example), and fossil fuel generators (not clean) are DERs.

DERs can support decarbonization of the grid by enabling customer loads to become more flexible, then aligning customer demand with clean power supply. They can support the decarbonization of buildings and transportation both by ensuring cleaner power supply and improve operating cost, making the business case for electrification more compelling. Finally, DERs can provide resilience of the grid and facilities. Collections of dispatchable DERs that can serve grid needs are typically referred to as “virtual power plants” (VPPs).

Peninsula Clean Energy has a number of goals associated with DERs including:

- A Board goal established in 2016 for 20MW Local Power
- A Board organizational priority under the Strategic Plan to deliver renewable energy each and every hour of the day

The key tactics in the strategic plan for Community Energy Programs are as follows:

1. Create minimum of 20 MW of new local renewable power sources in PCE service territory by 2025
2. Support distributed energy resources to lower costs, support reliability, and advance

distributed and grid decarbonization

3. Foster resilience

Peninsula Clean Energy has the following innovative programs addressing these goals and objectives:

1. **Solar and Storage on Public Buildings** (also referred to as “GovPV”): This program facilitates the deployment of solar (and soon storage) on local government facilities. Customer agencies sign Power Purchase Agreements (PPAs) with Peninsula Clean Energy in which customer agencies pay for the power generated by the systems with capital costs amortized within those payments. Peninsula Clean Energy plays a central role managing the project development, procurement, financing and tax credits, construction and operations. The program operates in cohorts. The systems that will be deployed are forecasted to provide significant financial savings.
2. **Residential Solar and Storage** (formerly called Power on Peninsula): The residential program supports deployment of solar and storage which provides cost savings and outage protection for homes. In addition, the program provides for battery dispatch to support grid needs. The program, in partnership with Sunrun, had a 3-year enrollment period and a 10-year battery dispatch term. Enrollment in with Sunrun is now closed.
3. **FLEXmarket**: This program provides incentives to “aggregators” (third-party installers or administrators) based on actual delivered electric load shaping and gas reduction benefits based on metered results following installation of specific equipment of either electric energy efficiency and/or building electrification. The program is California Public Utilities Commission (CPUC) funded, supports both residential and commercial segments and is in early implementation.
4. **EV Managed Charging Pilot**: This pilot provides direct control of electric vehicle charging through vehicle telematics to shift charging times out of the evening peak and into daytime hours (when possible) or spreading the charging after midnight. The pilot is assessing incentive structures and load shaping results. It is intended for full deployment in 2024.

In addition, Peninsula Clean Energy also encourages customers to participate in other load shaping programs as appropriate such as the Emergency Load Reduction Program (ELRP) managed by PG&E. Further detail on the current status of each Peninsula Clean Energy program may be found in the Programs Update memo in this month’s agenda packet.

DISCUSSION

Because DERs are a broad category with highly varied scenarios, staff has established a framework for considering DERs beginning with draft overarching DER objectives:

- Provide **grid benefits**, especially peak shaving to reduce wholesale costs (including Resource Adequacy) and carbon intensity, aiding further penetration of renewables
- Provide **resilience**
- **Lower operating costs** for customers
- Make **electrification** more economically beneficial
- Deepen PCE-customer **relationships** and foster retention
- Reduce PCE costs and support self-sufficient business model

General Considerations

DERs can serve the function of reducing customer costs, providing energy resiliency, or enabling customers to have more responsive or flexible loads. In the long run it is likely that diverse DERs will likely be coordinated into grid serving dispatchable assets known as virtual power plants (VPPs) to serve a range of objectives. However, currently multiple barriers exist for coordinating across DER types and even across different vendors of the same type of resource. Each DER type has distinct properties which lend themselves to particular applications and have widely differing economics and market conditions. The following outlines some of these considerations.

To date, the primary DER that has served the function of reducing customer costs has been distributed solar. Due to a favorable regulatory structure, distributed solar has provided ample customer bill benefits for a long time. However, recent regulatory form – the transition from Net Energy Metering to Net Value Billing – has substantially reduced the value of behind the meter solar-only installations and now favors distributed solar when paired with storage. EVs provide an extremely attractive value proposition and are experiencing rapid growth outpacing the growth of fixed storage. Electric appliances are relatively low cost by comparison, but also deliver less economic benefit.

For load shaping, solar, storage, electric vehicles, and electrified appliances (such as Heat Pump Water Heaters and Heat Pump HVAC systems) all enable customers to have flexible loads, which can be responsive to price signals, rate design, and/or direct control by a third-party. These can complement Peninsula Clean Energy's procurement by reducing expensive peak power supply and offset Peninsula Clean Energy's increasingly expensive capacity requirements. Currently, air conditioning via thermostats and fixed storage provide the largest load shaping in use. Over time EVs are likely to provide a particularly large flexible load and eventually, bi-directional energy for energy resiliency.

The installed costs of distributed storage are generally materially higher than wholesale storage. For this reason, distributed storage is most often deployed where multiple objectives are achieved including outage protection and customer bill savings. Not all applications necessarily are able to operate together. Under certain rate classes and customer scenarios demand charge management may be very economic but not align with grid peak shaving. Similarly, batteries and other DERs can lower transmission and distribution costs and provide other benefits whose value streams are not readily captured given current state policies and energy market structures.

A third area relates to physical constraints which can significantly influence feasibility for certain resources. For example, Peninsula Clean Energy has explored whether large solar facilities could be sited within San Mateo County. Land is very limited and expensive. One candidate site assessed was a dump facility in Pescadero but the distribution grid was too constrained and the costs of development would have been extremely high. Similarly, microgrids may be a concept to protect facilities, campuses or even neighborhoods from outages arising from upstream failures. However, many potential microgrid locations would require fossil fuel generators to function due to lack of space or solar access. In addition, campus or neighborhood scale microgrids require significant funding and substantial PG&E involvement.

Peninsula Clean Energy is pursuing a fleet of programs that takes into consideration value

streams on the customer side and on Peninsula Clean Energy’s side. Current program priorities include driving new deployments of DERs that offer net positive value, and increasing the amount of backup power devices at customer sites that are prone to power outages.

The following table provides a frame of reference on scale, load shaping potential and costs:

Resource	Load Shift Potential per Unit per Day	Current Count in Territory	Costs
Residential battery	9 kWh of 13 kWh (30% reserve)	~3,600	\$16,000 (\$25-35k w/ PV)
Electric Vehicle	7 kWh (for typical commute)	45,000	Cost of vehicle (\$25-50k+)
Water heater	0.45 kWh	1,500	\$6-12k
Commercial battery	200 – 4,000+ kWh	40-50 smaller (incomplete data)	~\$1,000/kWh

Multi-site microgrids are very few across the state. One such example is the Arcata Airport and the US Coast Guard Station in Humboldt County. This microgrid was a joint project between Redwood Coast Energy Authority and PG&E. It includes a 2.2 MW PV array DC-coupled to 2.2 MW/8.8 MWh battery storage system. The system participates on the wholesale market and cost approximately \$11 million.

Virtual Power Plant Business Models

DER programs hold potential in many scenarios to be cost neutral or even financially favorable. Establishing a positive business model substantially increases the scalability of a DER strategy and creates the potential that Peninsula Clean Energy could establish a long-term line of service that is independent from its core model of sourcing and serving wholesale power. Currently Peninsula Clean Energy DER programs, excluding the EV Manage Charging Pilot, are approximately cost neutral on ongoing costs with the exception of staff management costs.

In cases where DERs deliver material customer economic benefits, value captured by both the customer and Peninsula Clean Energy has the potential to exceed the cost of DER adoption. This is true despite the fact that Peninsula Clean Energy cannot always monetize all of the value streams associated with each DER, such as benefits to the transmission and distribution grid (“T&D”). Access to the value generated on the transmission and distribution grid is essential for a stronger business case. FLEXmarket program currently is the only Peninsula Clean Energy program that captures both generation as well as transmission and distribution cost benefits.

Multiple program structures exist to support DERs as a potential business model for Peninsula Clean Energy. Below are three identified models and pros and cons associated with each.

Approach	Pro	Con
Contractual	<ol style="list-style-type: none"> 1. Provides forecast benefit (reducing RA obligations) 2. Can directly increase the installed base of grid serving DERs 3. Provides certainty for vendors, increasing motivation in our service territory 4. Less implementation complexity, easier to integrate marketing strategy 	<ol style="list-style-type: none"> 1. Potentially less flexibility and control of the assets 2. Difficult to scale due to vendor-by-vendor partnership basis
Direct contract with a provider for specific dispatch volumes	<ol style="list-style-type: none"> 1. Fast (no RFP and contracting overhead) 	<ol style="list-style-type: none"> 1. Impact is less direct and outcomes are less certain
Market Incentives	<ol style="list-style-type: none"> 2. Flexible (integrates/adapts to new/heterogeneous tech, business models, changing market conditions) 3. Adaptable (potential to adjust incentives over time) 4. Low admin cost 5. Includes market targeting & admin services 	<ol style="list-style-type: none"> 2. May be more expensive over time - continuous incentive stream required for certain measures 3. Effects may be short term for certain measures 4. Fosters vendor lock in
Incentives for metered load shaping results. Currently in use through the FLEXmarket program		
Direct Control	<ol style="list-style-type: none"> 1. May capture more of value stack (when combined with CPUC program) 2. Highest dispatch flexibility (real-time or near-real time events) 	<ol style="list-style-type: none"> 1. Requires buy/build (slow) 2. Potential high admin, increased liability if owned (cybersecurity, etc) 3. May be unreliable in some segments, likely poor heterogeneous integration and vendor dependencies 4. Requires significant marketing & admin support on fully owned program
Implementation of a control platform for PCE &/or wholesale market directed dispatch. In use in the EV managed recharging pilot. May involve asset ownership, otherwise contracted.		

Outages

Outages are a major concern of customers. These have been of increasing concern in recent years driven in large measure by extreme weather impacts on the grid. Outages may be caused by a wide range conditions including demand exceeding available generation, generator plant failures, extreme heat or fires causing transmission or distribution line or substation failures, tree falls or accidents downing poles and wires, intentional shutoffs for fire safety and other factors. In turn, both the frequency and duration of outages can vary widely.

The varied conditions mean there is not a “one size fits all” solution. The following are a range of tactics available to Peninsula Clean Energy.

- Grid support: VPPs/Local Generation
- Microgrid – circuit/neighborhood (assumes PG&E participation)

- Microgrid – campus
- Commercial site battery (& generators)
- Residential site battery
- End use storage including portable and thermal storage

Of course, there are additional solutions that PG&E, as distribution grid operator, can and does implement in the form of grid hardening and other measures. It is also important to note that battery storage systems are many times more expensive than fossil fuel generators and as a consequence not typically deemed cost competitive in many scenarios. Peninsula Clean Energy programs do not use or incentivize generators however their greenhouse gas emissions are negligible due to infrequent use.

The suitability of any given tactic depends very specifically on the situation, including frequency and duration of outages. Staff are engaged in an analysis of outages in the San Mateo County (Los Banos has few outage issues) and initial results indicate that most of the service territory has intermittent outages that are typically short and affecting few customers. A significant percentage are planned maintenance events.

However, the County also includes a number of “hotspots.” These hotspots are particular circuits where outages are either frequent or long, and in some cases affecting many customers. A high-level characterization will be offered at the meeting.

Future Steps

Current areas of focus for further development include:

1. **Execution of the GovPV program:** The GovPV program has up to 16 MW of solar in the pipeline with the second round of the program which is now in the procurement phase. This is a major undertaking which would enable reaching the goal of 20 MW total. The next phase of the program also includes developing the business model around commercial scale storage systems. Incorporating storage systems is an objective of high complexity necessitating financial modeling, risk management, operational capacity, and legal development.
2. **Developing a new residential solar and storage program :** Currently Peninsula Clean Energy has no offering for customers seeking backup power. This is a critical gap in services. Staff is exploring new business models such as those implemented by other load serving agencies such as residential battery financing.
3. **Scaling EV managed charging and FLEXmarket:** EVs are the largest load shaping opportunity giving the rapid growth of EVs in the service territory. The current pilot will substantially inform optimal program structures to scale next year. FLEXmarket provides a flexible load shaping strategy and is in-progress.
4. **Develop end use storage approach:** This is under development for Peninsula Clean Energy’s next direct install program (Home Upgrade v2). This approach is intended to provide scalable, low-cost resilience suitable for the more common shorter outages that characterize most of the service territory. It may include portable batteries and other measures.