CESA
CALIFORNIA ENERGY STORAGE ALLIANCE

October 21, 2019

To: Asal Esfahani, CPUC (Asal.Esfahani@cpuc.ca.gov)
Andrea Woodall, CSE (Andrea.Woodall@energycenter.org)
Jason Legner, SoCalGas (jlegner@solcalgas.com)
James Stevenson, SCE (James.Stevenson@sce.com)
Andrew Ace, PG&E (asab@pge.com)

Subject: R.12-11-005: CESA's SGIP TES Informal Comments

Re: CESA's informal comments on Self-Generation Incentive Program (SGIP) thermal energy storage (TES) workshop questions

---

Dear CPUC Energy Division and SGIP Program Administrators (PAs):

CESA appreciates the opportunity to share our informal comments as a follow-up to the SGIP TES Workshop on September 13, 2019. Both this commenting opportunity and the workshop have been helpful for stakeholders like CESA to better understand individual TES company SGIP participation challenges in light of the new greenhouse gas (GHG) emission reduction requirements, recent time-of-use (TOU) rates shifting peak periods to 4-9pm, and opening the possibility to consider water heating technologies within the program. Our specific feedback for the questions posed is detailed below.

Heat Pump Water Heaters (HPWH)

1. **Are there rule changes that need to be made to bring HPHWs into the Program and how should we calculate incentives (what kW/kWh offset methodology should we use and what should the incentive rate be/how should the incentive be calculated?)**

CESA believes material modifications are necessary to bring much needed water heating storage technologies such as heat pump water heaters (HPWHs) and electric resistance water heaters (ERWHs) into the SGIP. Roughly 90% of California households use natural gas-fueled water heaters.[1] Consistent with SB 100 goals, the Commission and PAs should creatively leverage existing programs such as the SGIP to provide meaningful pathways for deeper decarbonization and electrification in the building sector.

---

[1] California Energy Commission, *Facilitating the Market Transformation to Higher Efficiency Gas-Fired Water Heating*, at a.iii

In terms of a kWh methodology, CESA has collaborated with NRDC and agrees with their deemed table detailing the kWh of load shift that occurs from heating a HPWH to a specific temperature set point for a specific water gallon capacity. For example, NRDC in Table 1 below has done some modelling to show kWh of load shifted for a specific gallon capacity and temperature set point. This methodology works for most climate zones in California except for the mountain zone, which would have materially different and higher kWh numbers. Certainly, these deemed values need to be further vetted but it is an initial proposal that should be considered at the upcoming HPWH workshop. Once a concrete kWh deemed table is agreed upon, incentives can then be expressed in the normal $/Wh units that the program utilizes. In the meantime, incentives may need to be expressed in terms of percentage of eligible equipment costs.

Table 1: Rated Capacity of HPWH (kWh)[2]

		Tank volume (gal)		
		50	**65**	**80**
Set point (F)	**120**	2.4	3.2	3.9
	130	2.9	3.7	4.6
	140	3.3	4.2	5.2
	150	3.7	4.8	5.9

CESA has outreached to HPWH market players to receive feedback on what level of incentives are needed to move the needle for these technologies. A controlled HPWH will require a 60% incentive (to account for a mixing valve and controls), with a higher 83% incentive for Equity customers. Meanwhile, for a controlled ERWH a 15% incentive would be required, with a higher 25% incentive for Equity customers. The upper bound incentive proposed attempts to mirror the most recent Equity incentive decision, where incentives were set at $0.85/Wh which corresponds to 83% of total eligible costs for the median 13.2 kWh, two-hour residential storage system. The almost one-third percentage drop of an ERWH from a controlled HPWH stems from the fact that ERWH are approximately one-third less energy efficient as a HPWH.

Given that the capital costs range between $800 to $1,0000 for ERWHs and between $1,800 to $3,000 for HPWHs, which is much less than what is needed for battery storage systems, the current SGIP application process may need to be modified to support meaningful market uptake of these technologies. Unlike electric storage systems, which have project development milestones (*e.g.*, utility interconnection process) and are higher capital cost investments, ERWHs and HPWHs can be deployed in a more streamlined fashion. Without a modified application process, uptake of SGIP incentives for ERWHs and HPWHs may be limited. Similar to how

[2] These values are calculated based on physics-based calculations that determine the electrical energy required to heat the volume of water in each tank from a temperature of 60 F to the set point temperature, assuming a coefficient of performance of 3. These values can be referenced in the HPWH kWh offset and GHG reductions worksheet

residential storage projects are subject to a more streamlined two-step (instead of three-step) application process given the smaller size/risk and administrative burden of such projects, ERWHs and HPWHs should have an administrative pathway commensurate with its size, costs, and scale. As such, CESA envision two application pathways for ERWHs and HPWHs to claim SGIP incentives:

- **Streamlined single application:** A homeowner (HO) seeking to purchase an eligible ERWH or HPWH can apply via the SGIP portal and simply input total eligible costs, select among the already approved water heater models, and submit the necessary documentation (*e.g.*, executed installation agreement, plumbers permit, project schematic). See Attachment A.

- **Batched application:** Similar to the above, the batched application pathway allows for a streamlined opportunity by which builders of new construction housing tracts or rental property owners can more seamlessly receive incentives for deploying ERWHs and HPWHs at scale. Specifically, a builder or property owner could claim SGIP incentives for multiple ERWHs or HPWHs from eligible equipment in all units. See Attachment B.

a. Should HPWH be allowed only if replacing an uncontrolled electric WH, (with or without storage?)

SGIP incentives should only be eligible for controlled electric water heaters with storage capabilities. Specifically, there are two use cases where electric water heaters should be allowed to receive SGIP incentive funds:

1. Retrofitting "grid-interactive" controls onto existing ERWHs or HPWHs

2. Deployment of new ERWHs or HPWHs with grid-interactive controls in place of gas water heaters

There could be a third use case where new HPWHs are deployed with grid-interactive controls to replace controlled or uncontrolled ERWHs. There could be incremental efficiency benefits of upgrading from ERWHs to HPWHs but CESA is not entirely convinced that this is the best or most effective use of SGIP funds if one of the Commission's core objectives is to push for greater electrification of end-use loads like water heaters, which, with controls, allows water heaters to manage its charge/load in line with marginal GHG emissions and grid support needs. For uncontrolled ERWHs, it may be a more effective use of funds to incentivize retrofits of smart controls to ERWHs to make it thermal storage, while for controlled ERWHs, it would equate to upgrading the water heater for efficiency rather than for storage capabilities.

Importantly, CESA believes there should incentives pathways for only controlled ERWHs and HPWHs since we view uncontrolled water heaters as energy efficiency investments (*i.e.*, an energy efficient water heater), for which there are already many different incentive programs available today. Water heaters become "thermal storage" when installed or retrofitted with smart controls, which provide the load shifting and storage capabilities that are intended to be incentivized through SGIP. Even though default load profiles of uncontrolled water heaters provide GHG benefit from fuel switching (*i.e.*, from gas to electric heaters) and from increased efficiencies (*i.e.*, from ERWHs to HPWHs), these investments represent energy efficiency investments without smart controls that allow for responsiveness to rates and grid-service programs and contracts. At the same time, in GHG assessments, CESA believes it will be important to recognize the fuel-switching benefits of water heaters similar to how CESA has advocated for the consideration of 'build margins' for battery storage investments funded by SGIP.

Finally, CESA sees value in focusing on controlled ERWH and HPWH investments through SGIP, which allow these resources to adapt over time across their 10-year permanency period if grid conditions change.

b. Or, would HPWH technology be better suited for DR programs?

CESA believes that demand response (DR) program participation alone would not be sufficient for ERWH and HPWH deployment, given that there are upfront capital costs that need to be offset to support their deployment. DR program participation is a helpful means to incentivize grid-beneficial behaviors and provide a potential revenue stream for ERWHs and HPWHs, but this alone will not support their deployment at this early stage of the market. Similar to how DR programs alone would not be sufficient for new electric storage capital investments, more support is needed to offset the capital costs of ERWH and HPWH investments. Instead, as a market transformation program, SGIP could be structured in a way to support the deployment of electric water heating technologies in California.

c. Does the eligibility technology need to be HPWH or can it be electric resistive?

No, eligible technologies for SGIP should be for both ERWHs and HPWHs. ERWHs may have lower efficiencies than HPWHs[3] but the former also has lower capital costs, where relatively less SGIP incentives would be needed to support ERWH deployment, and ERWHs have the potential to provide a quick fuel-switching option to the state (*i.e.*, from gas to electric). With smart controls in place, ERWHs can provide significant and reliable thermal storage and load shift potential. For example, Shifted Energy recently announced an executed 2.5-MW virtual power plant (VPP) agreement with Hawaiian Electric (HECO) and Open Access Technology International, Inc. (OATI) for 2,400 grid-interactive water heaters,[4] demonstrating how ERWHs can provide customer benefit while also meeting the other objectives of SGIP to provide grid support and reduce GHG emissions. Though all ERWHs will not need to be aggregated and contracted to provide storage and load-shift benefits, such announcements highlight how ERWHs should also be eligible for SGIP incentives. Similarly, Great River Energy has been using smart ERWHs as DR

[3] ERWHs typically utilize up to three times more energy to heat the same amount of water at the same given set temperature as compared to HPWHs.
[4] "Shifted Energy to Equip 2,400 Water Heaters in Hawaii with Grid-Interactive Technology to Create Virtual Power Plant." Shifted Energy Press Release on October 1, 2019. https://www.shiftedenergy.com/news/

assets for over 30 years (over 70,000 ERWHs by one estimate), representing a large-scale and proven example of how ERWHs can provide significant value to the grid if incentivized and supported through SGIP.[5]

2. **Are there specific SGIP GHG requirements, in the decision, that should be modified or eliminated for HPWH and why?**

    a. **Can HPWHs provide GHG reductions based on a GHG signal and behavioral charge/discharge activities?**

ERWHs and HPWHs can produce significant GHG emission reductions below the current 5 kg-CO2/kWh GHG requirement, though these assets may not be as controllable on a near real-time basis as the 5-minute GHG signal compliance requirement would suggest. Given the reserve needed to meet customer needs for hot water, this could limit how much load shifting capability is available to respond to a dynamic GHG signal. Perhaps with adding tanks or upsizing tanks to increase thermal storage capability, ERWHs and HPWHs can address customer needs and provide greater capability to respond dynamically to a GHG signal to ensure GHG compliance.

At the same time, even if certain ERWHs and HPWHs without sufficient reserve are less able to follow dynamic GHG signals, results from modeling conducted by NRDC (with support from CESA) have shown that they can provide significant GHG emissions reductions, even when constrained to specific "charging" windows. For example, in modeling load shift from a 4-9pm window to a 9am-2pm window from an uncontrolled to controlled HPWH, modeling results using average load profiles and GHG emission factors from the Avoided Cost Calculator resulted in annual GHG emission reductions of approximately 70 kg-CO2/kWh.[6] More analysis, modeling, and further vetting of the methodology are likely needed, but early results show that the GHG emissions reduction requirement is achievable.

Large TES

3. **Should Large TES incentives be based on the prescribed approach used for S-TES or the Trane/UC Davis methodology?**

Large TES technologies should have the optionality to select their preferred methodology, whether it is the established deemed methodology for small TES (*i.e.*, Refrigeration TES kW Offset Worksheet for Axiom), the Trane/UC Davis' methodology, or an alternate methodology that is proposed in the future. TES technologies are wide ranging in their functions and load offsets or reductions, including for refrigeration, HVAC, and water heating. Given these differences, the PAs

[5] Opalka, Bill. "How the unheralded water heater is on the cutting-edge of demand response." Utility Dive published on November 12, 2013. https://www.utilitydive.com/news/how-the-unheralded-water-heater-is-on-the-cutting-edge-of-demand-response/193871/

[6] This assumes the rated water heater "storage capacity" is set at an equivalent capacity level for 52 annual cycles.

should refrain from prescriptively forcing a single methodology on the wide-ranging set of TES technologies in the market.

At the same time, the Trane/UC Davis methodology has advantages to deemed methodologies in incentivizing the type of real-world and data-driven grid response and GHG emissions reduction, which is the direction that SGIP is going, as well as in ensuring that large TES systems that provide load shifting on peak summer days (including in 1-in-10 heat storms) are fairly and accurately compensated. While simpler, deemed methodologies utilize an "averaging approach" that may not account for specific equipment in specific weather conditions (*e.g.*, ambient temperatures) that provide value to the grid when storage and load shifting capacity is needed the most, resulting in "haircuts" to payments to large TES systems. Rather than rely on assumed averaged values, the proposed methodology seeks to install meters on every component of the TES system and HVAC system. The methodology presents an auditable approach, which provides better assurances to PAs and the Commission that measurement and verification (M&V) is as granular as possible.

Furthermore, CESA is aware that there are TES companies that are currently in the process of keeping or modifying an existing approved methodology by leveraging robust modeling capabilities that seek to heavily populate instrumentation across the entire equipment ecosystem to measure in real time the kWh that is being offset by the TES. Although quite similar to the Trane methodology, allowing for other companies to propose alternate methodologies is potentially in the program's best interest as it will foster competition of ideas and also create methodologies that are most appropriate for a subset of TES technologies.

Finally, CESA stresses that some TES stakeholders have expressed concern that having PAs go through the process of approving or rejecting a methodology will continue to halt SGIP TES projects from being deployed. The Commission and PAs should not put a pause to already existing methodologies as this stop-go nature of the program can harm the TES business community, which is counterproductive to the state's decarbonization goals. In other words, the consideration of the Trane/UC Davis (or other future alternative) methodologies should not hinder TES companies from using existing methodologies to participate in SGIP and receive incentives.

a. Is the Trane/UC Davis approach too complicated for SGIP participants, even for large TES?

Clearly, the established deemed methodology has its advantages of being simple and being readily available to be used in this next phase of the SGIP. The small TES methodology has been adopted elsewhere by the CEC and a number of other utilities in California and elsewhere. Therefore, if certain large TES companies prefer the option to take the deemed route, that pathway should be left open, subject to these systems meeting the GHG targets set forth in D.19-08-001. At the same time, many large TES companies have expressed that they can use the Trane/UC Davis approach if the methodology and calculations are publicly available.

An important hurdle to leveraging the Trane/UC Davis methodology is in getting buy-in from the PAs to develop and implement this methodology. Once in place, CESA believes that it will ease the use of this methodology for other large TES participants. If the complexity seems to be a barrier for the PAs to consider this methodology, CESA recommends additional working groups led by Trane and UC Davis to work through the details of their approach.

b. **If so, should any simulations required be solely based on EnergyPlus for consistency, or should other commercially available models be allowed?**

An energy simulation program for companies that seek the deemed approach route may be appropriate, but CESA has concerns with determining which program should be used for this pathway at this moment since there was limited to no discussion on this topic at the last workshop. CESA suggests that a portion of a future TES stakeholder meeting be dedicated to discussing the merits and shortcomings of proposed simulation programs.

4. **Are there specific SGIP GHG requirements, in the decision, that should be modified or eliminated for Large TES and why?**

CESA sees no need to modify or eliminate the specific SGIP GHG requirements at this time for large TES technologies. How large TES technologies achieve the GHG requirements may be different, but it is reasonable to subject large TES to the same GHG target rules as for all other energy storage technologies.

<u>Small TES</u>

5. **Any there specific SGIP GHG requirements, in the decision, that should be modified or eliminated for Small TES and why?**

Consistent with the above response, GHG requirements should not be modified for Small TES. The established deemed methodology for small TES (*i.e.*, Refrigeration TES kW Offset Worksheet for Axiom) should continue to be allowed as a pathway for participation.

a. **The GHG signal 5-min interval was expressed as problematic. Can the signal interval remain, and the technology controller average the signal into whatever appropriate/usable data interval or else use the hour ahead signal provided?**

Responding to the five-minute signal was indeed expressed as a challenge during the workshop but responding in five-minute intervals is not the requirement. While compliance will be measured against the 5-minute signal, the actual requirement lies in meeting the 5 kg-CO_2/kWh annual requirement. Small TES companies should be able to respond to hour-ahead and day-ahead signals, so it will be helpful for the GHG vendor to calibrate and identify the error between these less granular signals with the 5-minute signal for small TES companies to assess their compliance risk with GHG requirements. To the degree possible, we should strive to make these other GHG signals as accurate as possible so that TES technologies that can be confidently dispatched to achieve both programmatic GHG goals and economic savings.

General

6. **An issue was raised in the Workshop with regard to making back incentive penalties for poor GHG performing systems by increased cycling. Should this be allowed for TES and potentially other storage technologies? Lack of simplicity in Program rules was expressed as a barrier to participation. What aspect of the current rules need to be simplified/modified to increase participation in SGIP by TES customers?**

This is an area that requires some clarification. As CESA understands it, the 5 kg-CO2/kWh target is based on the rated energy capacity of the energy storage resource, not based on the kWh equivalent across 104 minimum cycles. In other words, the concern raised in the workshop may be related to assessing GHG performance (in kg-CO2) of TES resources if only 104 minimum cycles are assumed. In this case, TES resources face the risk of facing GHG penalties for not meeting the annual GHG target since GHG emission reductions may be less for TES resources on a per-cycle basis due to lower roundtrip efficiencies. Importantly, TES resources would not be fairly credited for its annualized GHG emissions when taking into account all of its cycles, beyond just the minimum 104 cycles required for energy storage resources generally, especially considering TES resources are capable of and typically used for higher frequency of cycling.

However, as CESA understands, D.19-08-001 clarified that emission increases attributed to a storage system would be calculated by "multiplying a storage system's charging interval data (in kWh) by the five-minute real time emissions factors associated with those time intervals (in kg or tons of CO2). Similarly, the avoided emissions would be calculated by the five-minute real time emissions factors for the same time intervals. The difference between these two amounts would indicate whether a system increased or decreased emissions and by what amount."[7] That is, GHG emission reductions are assessed by every charge and discharge GHG delta and not by denominating kWh performance to the minimum 104 cycling requirement.[8] Even if $/kWh performance-based incentive (PBI) payments are calculated based on the 104 annual cycling requirement and if the GHG target was set based on modeled results of the 104 annual cycling requirement, CESA understands D.19-08-001 as assessing 5-minute GHG compliance based on the kg-CO2 impact of all cycles in the year. If this interpretation is correct, CESA believes that no

[7] D.19-08-001 at 31.

[8] Otherwise, GHG performance would not credit or account for any additional cycles achieved beyond the minimum 104 cycling requirement. Furthermore, it would be unclear in terms of which 104 cycles to use for GHG performance as each cycle is not equivalent in terms of GHG emissions performance.

GHG rule changes or incentive paybacks for increased cycling is needed in response to the issue raised in the workshop since the increased cycling will already be accounted for.[9]

On the other hand, CESA recommends that SGIP modify its incentive rate step-down structure based on duration. Recently, D.19-09-027 approved 100% of base incentives for durations between 0-4 hours and 50% between 4-6 hours only for eligible Equity Resiliency customers. Understandably, these rule changes were narrowly focused on deploying energy storage systems to the most vulnerable customers in need of resiliency during public safety power shutoff (PSPS) events, applying this duration-based incentive rate step-down structure more broadly to all customers would support TES deployments and value the fact that TES systems are inherently well suited to provide long-duration discharge benefits. Though this issue may be addressed in the future SB 700 implementation decision and may not be well-suited for the current informal commenting and PA implementation process, CESA wishes to see the same incentive step-down structure approved in D.19-09-027 for the Equity Resiliency Budget decision be extended to general market participants. This new incentive proposal would support the TES industry in meeting the GHG requirements, considering the new TOU peak periods present material economic challenges for certain TES systems.

7. **What degree of confidence would be required in the GHG Signal providers forecasts, for each of the forecasts: 5 minutes ahead, hour ahead, day ahead, 72 hour ahead in order to improve economic performance of the TES system while meeting the GHG requirements of the Program?**

According to our members, a 99% degree of confidence for the 5-minute should be required of GHG signal providers to reward large TES systems for following a near real-time signal. As for small TES companies, a 95% to 99% degree of confidence is desired for the hour-ahead signal since the daily operations of small TES will realistically follow an hour-ahead signal because small TES resources are likely not designed to charge, discharge, and charge in 5-minute intervals.

8. **Has any analysis been done to determine economic performance of TES system based on the most recent proposed tariffs that align peak GHG emissions rates with a shifted peak period (4-9 pm)?**

According to our members, the new shifted peak period is challenging for certain TES systems (*i.e.*, particularly for certain cold storage systems) since these new TOU rates are designed to incentivize charging during solar generation hours in the middle of the day when marginal costs and marginal GHG emissions are the lowest. However, these mid-day periods also coincide with the highest temperatures of the day. For TES systems that are offsetting HVAC or refrigeration systems, this means that the TOU rate structures and GHG requirements will encourage greater

[9] For TES systems with higher cycling capabilities but with $/kWh PBI payments calculated based on 104 annual equivalent cycles, TES systems will be able to recover their PBI payments on a quicker-than 5-year period. At the same time, CESA recognizes that D.19-08-001 appears to have verification and enforcement tools in place for the post-PBI period to ensure continued GHG performance.

charging during the middle of the day instead of charging in the middle of the night when outside air temperatures (OATs) are lowest and therefore require less energy to achieve the same charge function. Although this is a challenge and tightens economic margins, TES members have expressed that the economic performance of TES still pencil out even within this new shifted peak period between 4-9 pm, though certain projects will just not be economically viable. The TES community thus generally views the new peak period and GHG requirements as a key challenge for projects being widely developed. Given these difficulties, CESA recommends that it is important to value energy storage duration from 0-4 hours at 100% of base incentives and 4-6 hours at 50% base incentives to value the longer duration benefits[10] as well as to help in offsetting some of the financial hardships of the new peak period and GHG rules.

Conclusion

CESA appreciates the opportunity to provide these informal comments and hope these responses are helpful. Please do not hesitate to reach out if you have any follow up questions or would like to discuss further.

Sincerely,

Jin Noh
Senior Policy Manager
CALIFORNIA ENERGY STORAGE ALLIANCE (CESA)
jnoh@storagealliance.org

Francisco Ortega
Senior Regulatory Analyst
CALIFORNIA ENERGY STORAGE ALLIANCE (CESA)

[10] CESA has previously commented on adjusting SGIP incentive step-down structures in general to recognize the value of four-hour and six-hour durations. Energy storage resources qualifying for resource adequacy (RA) capacity requires four-hour duration to get full rated capacity value, while forward-looking grid planning models have identified load shifting as being the primary use case for energy storage. Growing resiliency needs have also highlighted the value of longer-duration storage solutions, such that it is reasonable to make the incentive rate step-down adjustments not only to the Equity Resiliency Budget but to the general funds as well. In turn, TES systems will also be valued for its longer-duration load-shifting capabilities.

Attachment A – Potential Single Application Process for HPWH/ERWHs
(Subject to further discussion and refinement)

The SGIP project development cycle envisioned is as follows:

- Homeowner (HO) has made the decision to buy a HPWH/ERWH
- HO seeks to leverage an SGIP incentive for this technology
- HO hires a plumber to install HPWH/ERWH (Installed within 4 hours)
- HO visits the selgenca.com to receive incentive by doing the following:
    - HO fills the total eligible costs of the HPWH/ERWH and submits to portal
        - If an ERWH, to also includes the costs of controls
    - HO inputs the make and model of HPWH/ERWH (prefilled equipment specification) by using a drop-down menu of eligible equipment within the portal. The SGIP/CEC equipment list will be leveraging the Tier 3 NEEA list for HPWHs and for ERWHs to qualify they would require an Energy Factor of 0.95[11]. Since no publicly available list exists for ERWHs that have the 0.95 threshold, SGIP PAs should start developing a list of all ERWHs meeting that threshold. For HPWHs the equipment list should be able to capture the following details in the back-end:
        - Nominal gallon capacity
        - Rated gallon capacity
        - Model number
        - Electric breaker size
        - Uniform Energy Factor
        - Element wattage
        - Compressor (BTU/H)
        - Sound level (dBA)
        - Duration of discharge (at specific temperature set point and flow)
        - Charge in kWh to reach set point and quantity of water
    - HO submits photograph of the final installed product and most recent electric bill with the correct address linking the project
    - HO submits executed installment agreement with plumber and warranty
    - HO submits plumbers permit for the installation of the HPWH/ERWH
    - HO submits schematic of project
- PA reviews application and has a one-month upper limit deadline to grant incentive.

[11] Energy Star Residential Water Heaters: Final Criteria Analysis https://www.energystar.gov/ia/partners/prod_development/new_specs/downloads/water_heaters/waterheateranalysis_final.pdf

<u>Attachment B</u> – Potential Batched Application Process for HPWH/ERWHs
(Subject to further discussion and refinement)

The SGIP project development cycle envisioned is as follows:

- Builder/property owner has made the decision to deploy HPWH/ERWHs in a housing tract new or existing
- Builder/property owner seeks to leverage an SGIP incentive for this technology deployment
- Builder/contractor installs HPWH/ERWHs across the housing tract
- Builder/Property owner visits the selgenca.com to receive incentive by doing the following:
    - Building/property owner fills the total eligible costs of the HPWHs/ERWHs and submits to portal
        - If an ERWH, to also includes the costs of controls
    - Building/property owner inputs the make and model of HPWH/ERWH (prefilled equipment specification) by using a drop-down menu of eligible equipment within the portal. Since it's in batch form there will be a box input x amount of HPWH/ERWHs to be installed. The SGIP/CEC equipment list will be leveraging the Tier 3 NEEA list for HPWHs and for ERWHs to qualify they would require an Energy Factor of 0.95. Since no publicly available list exists for ERWHs that have the 0.95 threshold, SGIP PAs should start developing a list of all ERWHs meeting that threshold. For HPWHs the equipment list should be able to capture the following details in the back-end:
        - Nominal gallon capacity
        - Rated gallon capacity
        - Model number
        - Electric breaker size
        - Uniform Energy Factor
        - Element wattage
        - Compressor (BTU/H)
        - Sound level (dBA)
        - Duration of discharge (at specific temperature set point and flow)
        - Charge in kWh to reach set point and quantity of water
    - Builder/property owner submits photograph of the final installed products
    - Builder/property owner submits plumbers permit for the installation of the HPWH/ERWH where applicable
    - Builder/property owner submits schematic of projects
- PA reviews application and has a one-month upper limit deadline to grant incentive.