

**DOCKETED**

<b>Docket Number:</b>	22-BSTD-04
<b>Project Title:</b>	2022 Energy Code Photovoltaic and Battery Storage Cost Effectiveness Determinations
<b>TN #:</b>	254847
<b>Document Title:</b>	Powertree Services Inc Comments - Benjamin Apartments can be cost Effective and then some
<b>Description:</b>	N/A
<b>Filer:</b>	System
<b>Organization:</b>	Powertree Services Inc.
<b>Submitter Role:</b>	Other Interested Person
<b>Submission Date:</b>	3/5/2024 12:50:33 PM
<b>Docketed Date:</b>	3/5/2024

*Comment Received From: Powertree Services Inc.*  
*Submitted On: 3/5/2024*  
*Docket Number: 22-BSTD-04*

**Benjamin Apartments can be cost Effective and then some**

*Additional submitted attachment is included below.*

**Powertree Comments re Analysis and Cost effectiveness of Benjamin Apartments Cost Effectiveness**  
**March 5, 2024**                      **CEC Docket: 22-BSTD-04**

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**Overview:**

In considering any exemptions to a mandate we think it critical to understand that the purpose of a mandate is to spur change and that change creates the necessity for new ways of doing things to be worked out.

The Benjamin Apartments Project while analyzed as not Cost Effective by Staff can be achieved in Cost Effective if certain assumptions to the design and approach based on modern technology and not techniques that were developed for a different market segment than the one being addressed by Benjamin Apartments.

Powertree Services Inc., having focused on Multi-Family since 2009, has deployed multiple approaches and evolved it's technology for Multifamily deployments. But Powertree is not alone with recent new entrants such as Holu Hou and Allume also providing offerings.



The design approach embodied in the Benjamin Apartments project is the same that Powertree implemented in projects in 2009, almost 15 years ago with similar outcomes of complexity and un-necessary costs.

Building on these 15 years of experience, Powertree wishes to make some comments and suggestions to improve the cost effectiveness of the Benjamin Apartments Project and potentially future similar projects.

## Comments:

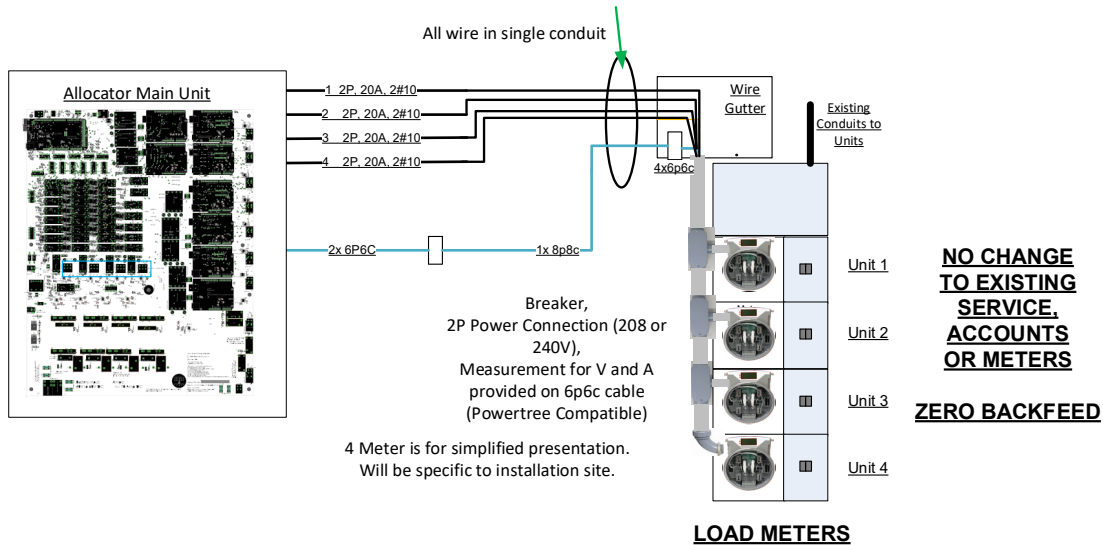
1. The property Owner/Developer has a right under Public Utilities Code Section 218(a) to generate energy for its own use and to sell or provide to its tenants. The Owner is NOT required to utilize the Utility for 100% of its electrical supply. This option is not mentioned in the report nor apparent in the bids.
2. Based on the bids descriptions in the Staff report it seems no other technological approach was investigated by the Developer or the bidding Contractors that would facilitate a Cost Effective system installation. While VNEM is not available, the purpose of VNEM being to facilitate the billing and value allocation, at least three other approaches are available in the market that could have been analyzed for bid all of which are UL certified with live projects installed:
  - a. Powertree's Energy Allocator™ system. A fully behind the meter Zero Back Feed system with Solar, Energy Storage and support for EV charging and Backup power per apartment allowing per apartment customization and Opt-In access to the onsite energy without needing either NEM or VNEM. All onsite generation is self-consumed.
  - b. Holu Hou Enhanced Hybrid: A low rise focused behind the meter solar plus battery system that switches DC generation from low use to high use apartments. Can work with NEM.
  - c. Allume Energy: A NEM adjacent phase matching system that facilitates a higher rate of self consumption.
3. Apartment loads can change dramatically over time as tenants turn over and new tenants move in and/or if a tenants changes jobs and moves from remote work (where they have high at home loads) to in-field work (where they have lower at home loads) or vice versa. A KEY design consideration is that todays (or last years) load profile WILL Change when a new tenant moves in OR the current tenant changes their work style. This dynamic is not accounted for or reflected in the Lodi designs.
4. The Solar array due to the fixed sizing and lack of controls matching generation delivery to load only achieves a fraction of its potential value and will back feed, at lower compensation rates, a significant and variable amount of its production. Powertree's study on live sites has shown that a fixed array will have a self-consumption rate of between 24% and 47% depending on the array size and tenant work style. Larger arrays and away from home workers have lower self-consumption rates. This reduces the value achievable from a system. By contrast, systems with storage and controls can achieve self-consumption rates in the high 90%+ range.
5. Wall mount disconnects and subpanels are not the only way for solar to be connected to a Tenant or recipient meter and should not be the assumption for cost estimations.

As in any application the appropriate technology needs to be used. Multi-Family presents some unique needs in their design. For example, DC Coupled systems feeding the Solar PV into a battery can have a single disconnect for the Battery and flexibility for the AC connection.

Use of Meter Socket adapters with or without Microgrid capabilities is currently approved or being approved by the IOUs and are directly transferable to non-IOU installations. [UL 414 SB approved] The meter socket adapters are safer than standard sockets as they cool the meter more and they integrate the disconnect AND V & A measurement directly into the adapter. ***Adapters take less than 30 minutes***

***to install and require NO additional wall space and lead to MUCH lower installation cost per meter.***

Here is an example SLD of a Meter Adapter installation of a Powertree system:



Companies other than Powertree are also in the process of adapting for the use of Meter socket adapters.

Legal analysis shows that the Meter Socket itself is owned by the Property and only the Utility Meter is owned or restricted by the Utility. As such, the benefits of a Meter Socket Adapter use are within the control of the Property owner and the local AHJ and can be applied in ANY Utility territory.

6. The ITC level of the projects was bid without using the Domestic Content ITC adder of 10%. Domestic panels and equipment are available and would contribute to raising the CBR. This would be an ITC level of 40% NOT the 30% used in the analysis.
7. No value is calculated or presented for the long-term Equity Value gain to the property from increased income for the property. Unlike Single Family properties Multi-Family properties value are based upon their cash flows and the short hand known in the RE Industry as the Cap Rate ([Cap Rates, Explained | JPMorgan Chase](#)). This value gets increased when solar is applied and is a separate value resource that is available to the building owner. It should be ADDED to the NPV of the cash flow itself when calculating the Cost Benefit Ratio.
8. The Utility rate escalation value of 1.6% used in the analysis does NOT reflect the actual history or recent increases actually posted by Lodi Electric. Residential figures are quoted as a 2.00% increase rate and commercial at 3.00%. As tenants are paying the Residential rates it would be more accurate to reflect the 2.00% rate.
9. A Non-Export/Zero Export system will not be impacted by the compensation rate decline of Table 14 as all energy is self-consumed and would be valued not at the export rate but rather at the displaced retail value based upon the tier of consumption. Instead of \$0.10/kwh the value would be higher by at least

the 5 years of compounded escalation on the full retail value. This would be at least \$0.15/kwh or more in value depending on an apartment's specific consumption level.

10. No consideration is made for the cost benefit and value impact of using a battery system. Under Title 24 this can allow for a 25% reduction in PV size, a tradeoff in battery cost but properly designed would entail only 1 DC disconnect per building and facilitates higher value by increasing self-consumption if the appropriate controls are available. [See comment #2 above].
11. No reference is made to any discount to value that may be provided to tenants. This would reduce the effective value to the Owner but assure an alignment of interest and benefit for the tenants.
12. Using similar system parameters but adjusted to reflect an alternate technology approach, the Powertree Allocator we see that Benjamin Apartments could achieve a positive CBR, comply with Title 24 with a 160.4KWdc plus 641 kwh battery spread across the buildings, not require NEM or VNEM and deliver savings to Tenants while achieving a positive XIRR to the Owner after savings to the Tenants. Such a system would achieve a positive Cost Benefit Ratio as follows:

30 Year XIRR	5.9%
30 Year Benefit Ratio	
NPV Value	\$ 1,223,059
Cost	\$ 1,147,979
<b>BCR</b>	<b>1.07</b>
\$/W Including ESS & ITC	\$ 4.29

NOTE here that the all-in cost per watt is POST ITC.  
Cost is below the Staff Report final cost per Watt/

13. If the benefit of the Equity value [per Comment #7 above] is considered the CBR performance improves dramatically:

NPV + Equity	\$ 2,483,391
Cost	\$ 1,147,979
<b>BCR MF</b>	<b>2.16</b>

14. While not reflected in the Staff report we draw attention to the additional Title 24 requirement for EV Charging placement and potential revenues from that capability. There is synergy between the solar, the battery which can be used for demand reduction and resilience as well as value enhancement by using the Solar PV to displace the energy loads from electric vehicles. If 4 shared used, 50A chargers, were included priced for use at 50% of the equivalent cost per mile of gasoline and fed in part from the solar in Lodi here is the projected CBR impact:

30 Year XIRR	19.7%
30 Year Benefit Ratio	
NPV Value	\$ 5,634,596
Cost	\$ 1,223,655
<b>BCR</b>	<b>4.60</b>
\$/W Including ESS & ITC	\$ 4.58

NPV + Equity	\$ 25,679,580
Cost	\$ 1,223,655
<b>BCR MF</b>	<b>20.99</b>

## **SUMMARY:**

1. The Benjamin Apartments project CAN be done with a positive Cost Benefit Ratio.
2. We suggest that CBR analysis in multi-family include the Equity addition to the property when evaluating the Present Value of Cost Savings as the local Cap Rate impact is meaningful to the Owner and the local community tax base.
3. This case shows a clear need for the inclusion of multiple technological approaches in bids to meet Title24 requirements before any exemptions are granted.
4. PRIOR TO any request for exemption a Developer should have a quote/design using at least two different technology approaches that are appropriate for the project. If only one is suitable then the reason for the others not being quoted should be noted.
5. Because there are synergies in avoiding grid upgrades, increasing resiliency, establishing support for EVs (also a requirement in Title 24) and significant value benefit for all parties we encourage including the revenue and cost impacts of the concurrent installation of EV charging when evaluating Cost Effectiveness.
6. Powertree is happy to provide more detail to the CEC on our analysis and costing with appropriate confidentiality protection.