

DOCKETED

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23-ERDD-01 Retrofitting with Innovative Building Envelope Solutions Concept

Additional submitted attachment is included below.

March 6, 2024

Jonah Steinbuck
Director of the Energy Research and Development Division
California Energy Commission
715 P Street
Sacramento, California 95814

Subject: GTI Energy's Comments on CEC's Draft Solicitation Concept for Retrofitting with Innovative Building Envelope Solutions

Director Steinbuck,

GTI Energy is pleased to present our comments in response to the following EPIC draft solicitation concept: Retrofitting with Innovative Building Envelope Solutions Draft Solicitation Concept.

Group 1: Value Proposition Improvement- Residential Envelope Technology Retrofit Opportunity for Opaque Envelopes (VPI-RETRO- Opaque Envelopes)

- This group requires insulation materials meeting performance requirements of R8/inch or higher. The group also requires a minimum technology readiness level (TRL) of 7, which is defined as "Full-scale, similar (prototypical) system demonstrated in relevant environment." Examples of aerogel and vacuum insulation panel (VIP) have been included in the Topic description. While aerogel and VIPs are mature technologies, their application for retrofitting buildings is not well-established. To our knowledge, aerogel and VIPs have only seen limited and specialized applications in building envelopes. Hence, any proposed work with these two technologies will, by necessity, start at a TRL lower than 7 to set appropriate expectations. This would be the case with any novel insulation technology.
- The topic lists a range of applicability criteria (bullets b, c, d, e and f under "technology capabilities"). It would be helpful to clarify if any proposed technology needs to be an all-encompassing solution or if a proposal can target a subset of these applicability criteria. An all-encompassing solution requirement is likely to be exceedingly challenging, particularly if measuring the contributory value of a specific measure is an intended outcome.
- The requirement that the insulation technology must be demonstrated in a combination of single family, multi-family, and manufactured homes might be too challenging, given the maximum award amount of \$2,000,000. The installation methods, tools, and training for the three different home styles are likely to be different based on the choice of insulation technology and these processes or technologies may require some developmental work.

Group 2: Value Proposition Improvement - Residential Envelope Technology Retrofit Opportunity for Vacuum Insulated Glass (VPI-RETRO- Vacuum Insulated Glass)

- This group requires projects to be less costly, less invasive, and/or easier to install than traditional retrofit methods. The cost metrics in Table 2 appear to only include the capital cost of materials and installation, yet Section B(i) describes how cost-effectiveness can be calculated based on life-cycle costs. It would be helpful to get more clarity on what specific cost metrics need to be targeted by applicants for this group and others.

Group 3: Value Proposition Improvement - Residential Envelope Technology Retrofit Opportunity for with Multiple Measures (VPI-RETRO- MM)

- This group requires that applicants must have received prior DOE funding (i.e., E-ROBOT, ABC FOA, BENEFIT FOA, etc.) for similar envelope type projects. There are other agencies that have funded envelope-focused RD&D, including new materials and installation methods, which can be leveraged for this CEC solicitation. NYSERDA has awarded significant R&D funding through recent rounds of PON 3519 on advanced HVAC and Envelope Systems and Components,¹ and there are other state or federal programs. Hence, CEC is requested to expand prior proof-of-concept funding requirement to include agencies like NYSERDA, ARPA-e, MN CARD, etc.
- Same comment on cost metrics as Group 2. It will be helpful to get more clarity on how life-cycle cost-effectiveness fits into the targeted cost goals. At first glance, the target costs listed in Table 3 seem to be based on first costs of material and installation only.

General comment:

- Rather than maintaining an exclusively residential focus, would CEC consider adding light commercial buildings of similar construction style as multi-family buildings? For example, small office buildings or mixed use (residential and commercial) buildings that would benefit from similar retrofit technologies.

Sincerely,



Paul Glanville, P.E.
Sr. R&D Director
GTI Energy

¹ <https://www.nyserda.ny.gov/Funding-Opportunities/Closed-Funding-Opportunities/2023>; NextGen Buildings Innovation Challenges, Program Opportunity Notice (PON) 3519