



Completed Intake Form

Example Submittal: High Performance Windows

Self-screening Questions

Use the following questions to determine whether your idea is an appropriate fit for CalMTA:

- Does your technology/product or practice/service have the potential to save energy in California? Can the energy savings be measured?
- Is the technology/product or practice/service commercially available now or on track to be within the next six months?
- Is there a compelling opportunity to address a non-financial market barrier that is keeping your technology or practice from being widely adopted? Typical market barriers are market support, lack of supply, low awareness, etc.

If you answered "No" to any of the questions, unfortunately, your idea does not qualify for CalMTA development. If you are unsure of the answer to any of these questions, you should address those issues prior to submitting your idea to CalMTA. If you need help clarifying your answers, you can schedule office hours [\[LINK\]](#) to speak to the CalMTA team, or watch the video below for support.

If you can answer "yes" to all the questions, we encourage you to submit and are excited to have your help to create a marketplace of ideas to develop an impactful market transformation portfolio for California!

RFI Submission Form

Idea Name:

Submitter Name:

Company Name:

Address:

Email:

Phone:

Project Submitter Type (drop down with Manufacturer, National Laboratory, Utility/Program Administrator, Non-profit Organization, Consulting Firm, etc.)

Is your idea a: (radio buttons for Technology/Product, Service/Practice, and Other _____(specify))

Product Description & Benefits

1. Please describe the product or service. *(250 words)*

Answer: High performance windows are residential windows with two or more panes of insulating glass that outperform code minimum windows by up to 50%. These windows are improved with the addition of argon or krypton gas in the sealed space between the panes, additional panes of glass, or increased insulation in the casings. This helps add further insulation and stability. High performance windows help retain heat inside the home in the winter and cool air in the summer and also increase comfort and reduce window condensation.

2. Describe how the product or service saves electricity or natural gas, reduces peak demand, and/or reduces GHG emissions. *(100 words)*

Answer: High performance windows increase heating and cooling retention and allow the customer to more efficiently use their HVAC systems. High performance windows that are ENERGY STAR-rated perform at least 15% better than a standard windows and have an insulating value of R-3 or higher. Ultra-efficient windows perform at least 50% better than a standard window and have an insulating value of R-5 or higher. These lead to average savings of 7-15% on utility bills.

3. Are there additional benefits that your product or service will provide? If so, please describe these benefits. *(100 words)*

Answer: Having multiple glass panes in windows allows for surfaces to receive low-E coatings, depending on the needs of the customer. Low-E glass options have many benefits other than energy savings including increased occupant comfort, improved heat retention, less fading on interior furnishings, reduced condensation, and increased home value.

Target Market Description

1. Describe the target market sector and customers that will benefit from your technology or practice in California. For example, commercial, industrial, single family residential, multifamily residential, agricultural, etc., and, if applicable, key subsector. Be sure to specify whether it will benefit hard-to-

reach customers, low-to-moderate income markets, disadvantaged communities, etc., and how. (100 words)

Answer: One of the primary target market sectors for high performance windows is residential (both single family and multifamily). Both new construction and retrofit markets could benefit from high performance windows. About 50% of homes in California still used single pane windows which represents a substantial portion of the market. Low-income customers would benefit greatly from the adoption of high performance windows. A study conducted on high performance windows in Illinois showed that low-income households are more likely to have single pane windows and had higher levels of dissatisfaction with their windows. These respondents also said that the upfront cost of the windows was a larger barrier to adoption of the technology.

5. Where, specifically, is the product or service available? Is it available to consumers in California? Please provide an example of a specific outlet or service provider, if possible. (100 words)

Answer: This technology is readily available to consumers in California through window retailers like Anderson, Pella, Marvin, Milgard, and others.

6. Describe how the product or service is (or will be) delivered to the market. For instance, will it be available for direct purchase by the consumer through traditional retail establishments or will it be available only through installation by a licensed professional or something else? Is there a well-established distribution channel that can be used or would one need to be developed or adapted?

Also include any information about potential partnerships or partnership opportunities, including those with community-based or environmental social justice organizations, that would support the advancement of the technology or practice, if applicable. (500 words)

Answer: As previously mentioned, high performance windows are available for customers to purchase through traditional window retailers who can also work with the customer to install the windows. Because of this, the distribution channel for these windows is already established and while more development can occur as adoption increases, much of the groundwork has been built. There are also many utility rebates and incentives offered to encourage adoption of high performance windows to customers. "Recent work has been approved to help low-income communities benefit from high performance window technology and increase adoption. In 2020, a grant of nearly \$2 million was awarded to install high performance, thin triple pane

windows in low-income communities in California. Through the California Energy Commission and the Department of Energy, industry partners installed these windows in select communities. One of the projects involved the development of low-emissivity window coatings to help block long-wave IR rays and improve window's insulating properties. This investment was part of the California Energy Commission's Electric Program Investment Charge Program.

Increasing initiatives like this across the state of California could help to increase the number of homes with high performance windows and increase energy and cost savings state-wide. Because efforts have already begun with a focus on benefitting low-income communities, further support is likely.

7. What is your best estimate of current market adoption of the technology or practice? For instance, how many units or what percentage of the target market(s) have already adopted the technology or practice? (150 words)

Answer: Depending on the definition of high performance windows being used, the level of current market adoption can vary. On a study completed in Illinois, the reported building stock that had triple or thin triple pane windows was 3.4%, but 6.6% of customers surveyed reported having these windows. It is unclear what the adoption is in CA; however, using a definition of $> U 0.20$, it is likely that market adoption is less than 3.4% nationally.

Market Adoption Barriers

8. What is keeping the market from adopting your product or service? Please list all the key market barriers. (250 words)

Answer: The two largest barriers to adoption of high performance window technology are upfront costs and overall awareness of the technology. A study performed on high performance windows in Illinois showed an awareness gap about efficient windows for younger customers. Despite this low level of awareness, customers still showed a high level of willingness to improve energy efficiency and adopt high performance windows once an explanation was provided.

As previously noted, low-income customers were also more likely to express dissatisfaction with their windows and a desire to improve their efficiency. Despite this, they were also more likely to say they did not expect to replace their windows soon, primarily due to the upfront cost it would require or due to the fact that they rented their home.

9. What limitation(s), if any, does the product or service have that needs to be overcome? What are the technical barriers, if any? (500 words)

Answer: Not many technological limitations exist with high performance window technology as they can be installed easily. The primary barriers are the cost of the upgrade and limited awareness of the technology among eligible customers. Availability can also limit the ability of a consumer to adopt the technology, even in cases where the consumer is interested in the technology.

10. Beyond the standard or base case technology or practice, what are the alternative competing products or service (direct and indirect) and how does your product or service compete with them? (250 words)

Answer: Alternative or competing products with high performance windows are standard efficiency double pane windows. High performance windows offer a more comprehensive solution to heat retention and efficiency than other products, though they do come with a higher upfront cost. Because of this, the largest competition for many customers is the choice to not upgrade their windows due to financial restrictions.

11. What type of market interventions, assistance, or support do you think are necessary to overcome the identified barriers? (250 words)

Answer: Additional market interventions are needed from governmental and utility groups to encourage adoption of high performance window technology. While many of these efforts have already begun, the opportunity remains large for many customers to upgrade their windows. In addition to offering monetary incentives and rebates, educational efforts also need to be improved to properly inform customers of high performance window options and their benefits. By increasing awareness, customers will be more likely to choose a more efficient option, especially if combined with monetary support to do so.

12. Do you have any additional information that would help the CalMTA evaluate your proposed idea? (100 words)

Answer: Willingness among customers to upgrade to high performance windows is high. Despite this, awareness of the actual technology remains low. As many homes with single pane windows continue to age, occupants become more likely to replace these windows and there is a large market opportunity for the adoption of high performance windows. Combining the already present desire to replace with

resources that make adoption easier is critical for customers and should be taken advantage of.

13. If available, please provide names and links of any recently completed studies, workpapers, whitepapers, industry publications, articles, interviews, and other supporting documentation related to this idea. (250 words)

Answer:

- [A Beginner's Guide to High-Performance Windows](#)
- [High-Performance Window System](#)
- [4 Benefits of High Performance Windows](#)
- [Boost home comfort with high-performance windows](#)
- [High-Performance Windows to Benefit Low-Income California Communities](#)