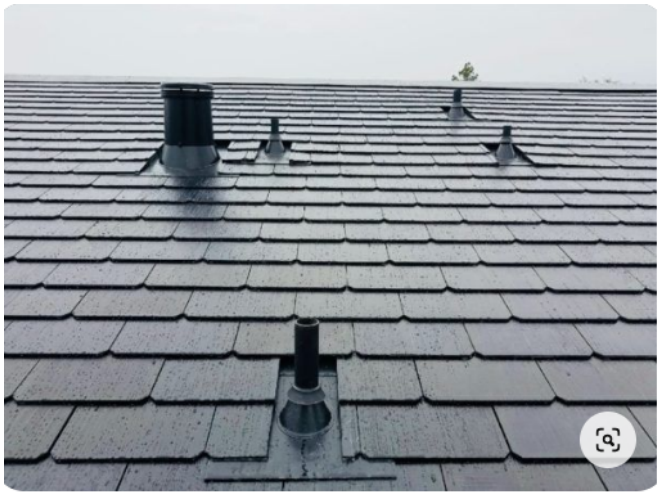
Meeting: February 21, 2024
RE: Solar in Historic District
February 20, 2024

Dear Members of the Planning Board and the Historic District Commission,

The question of solar roofs in the Historic District used to be difficult. If roofs are a thatched, wooden or slate it might not be appropriate to cover them. One could imagine a household with an electric car, electric hot water, electric furnace and all electric appliances that are completely solar powered providing zero emissions to our very fragile world.

It should be noted that solar shingles have been developing over the last 10 years or more and are now available on the market and are very efficient.
https://www.forbes.com/home-improvement/solar/solar-shingles-buying-guide/
More on Tesla shingles:
https://www.inverse.com/innovation/tesla-solar-roof-cost-availability-how-to-buy-install#:~:text=At%20the%20time%20of%20writing,York%2C%20Oregon%2C%20Pennsylvania%2C%20Rhode
Tesla Solar Shingles example link:
https://www.pinterest.com/pin/teslas-solar-roof-tiles-showcased-in-new-residential-installation-pictures--505669864405822247/

Picture Below:



In the Historic District solar shingles or even roof refits might be worth taking into consideration. Solar refits or solar shingles could be viable options which don't really change the look of a standard roof.

https://roofit.solar/
These two products are best used when the entire roof is going to be replaced. These could be the best option for the Historic Districts.

The last option to consider could be roofs not able to be seen or roofs which could be almost completely covered by solar panels.
For roofs that are already the more modern asphalt or metal roofs; it could make sense to allow them to be covered in solar panels IF the roof side being covered is covered almost completely to avoid a patchwork look.Not this:

Taken from Granite State Solar website

Here is a list of the most appealing solar panel roofs:
https://www.architecturaldigest.com/reviews/solar/most-visually-appealing-solar-panels

Solar can be accomplished in the Historic District if homeowners and the HDC weigh out the best ways to create a covering that does not attract attention to the roof and leans toward something that looks like a roof and not an appendage on the roof. Dark roofs with dark solar panels, the use of solar shingles or roof refits all making the use of solar possible in the Historic District with a little imagination.

Finally an article to aid in this conversation:
https://www.architectmagazine.com/technology/old-meets-new-the-debate-over-photovoltaics-in-historic-districts-1_o

Respectfully submitted,
Elizabeth Bratter,
159 McDonough St
property owner

From: Kimberli Kienia
To: Kimberli Kienia
Subject: FW: Webform submission from: Planning Board > Body Blocks
Date: Wednesday, February 21, 2024 9:19:19 AM

From: City of Portsmouth <webmaster@cityofportsmouth.com>
Sent: Wednesday, February 21, 2024 9:10 AM
To: chellman@TNDEngineering.com; Peter L. Britz <plbritz@cityofportsmouth.com>; Peter M. Stith <pmstith@cityofportsmouth.com>
Subject: Webform submission from: Planning Board > Body Blocks

Submitted on Wed, 02/21/2024 - 09:09

Submitted by: Anonymous

Submitted values are:

Name
Barbara Jenny

Email
workingstiff@comcast.net <mailto:workingstiff@comcast.net>

Subject
Solar panel ordinance proposal

Message
To the Boards:
In 2017ish, we applied to the HDC for permission to install flush solar panels on the roof at 92-94 Pleasant St. (The vote was approved with a slim majority of one vote after a lengthy discussion.) We were—and still are—passionate about preserving and restoring original architectural details of the building AND conserving resources where possible. We understand that the science of climate change is fact, and that humans must make hard decisions in order to preserve entire towns and shorelines, and not just individual buildings.
I write because 6+ years later we are still benefiting from the electricity and hot water our solar panels produce. That said, the solar hot water array, while still productive, has become obsolete, with smaller indoor hybrid heat pump water heaters now the state-of-the-art in efficiency. We are also watching solar panels improve exponentially, becoming thinner and more flexible in terms of installation options.
My suggestion in this context is that the HDC not relinquish authority and consideration of solar panels in the historic district, but rather redefine its approach to helping residents—with an attitude of YES—find solutions to install the most discreet systems, including the mechanicals. The HDC and Planning Boards might also guide the city in advocating for the state to develop solar farm partnerships with utilities so residents can invest in solar farm shares to offset or even feed their residential consumption.

Barbara Jenny
Working Stiff Properties
92-94 Pleasant St
Portsmouth

CC. HDC

bcc-email
chellman@TNDEngineering.com,plbritz@cityofportsmouth.com,pmstith@cityofportsmouth.com

City of Portsmouth
Planning Board
Attn: Rick Chellman, Chairman
1 Junkins Avenue
Portsmouth, NH 03801

RE: HDC-Solar Proposal

Dear Chairman Chellman and Members of the Board,

Regarding the proposal to exclude solar power from the HDC's review, I am submitting the following for your review. I have also forwarded a slide show showing 16 solar installations within a few blocks of my home which I hope will contribute to the discussion. At the end there are some specific recommendations to the possible ordinance change.

Thank you

Joe Caldarola

Comments regarding the proposal

Those of us who have not paid close attention may have missed the tremendous advances in Solar PV in the last 10 years.

15,000 pounds of CO_2**.** The carbon emissions saved from the solar power system on just one house, my house, in 2023

15,000 lbs=7.5 tons. How much is that? by reference the EPA says that the average new car sold in 23 will emit 4 tons on CO_2 per year

Adding solar to just one house has more impact than taking a car off the road for an entire year

ASTOUNDING.

This is not an either- or, It is a both-and

It's not that we shouldn't support historic preservation….. Of course we should.

It's that, given where we are with the climate crises, a new value has arisen that is at least equal in importance: carbon reduction and clean energy.

Both-and…..Neither should be allowed to impede the other

It *is* subjective, witness the split votes.

If somehow, we *could* get solar power installed on every roof in the Historic District,

my subjective opinion is that it would be beautiful, something Portsmouth could be proud of.

It would make National News: “Historic Portsmouth supporting green solar power”

WOW!

Follow-up: the slideshow shows how facilitating solar power requires that the panels be allowed to face the sun. Any requirement to keep them out of view makes the system not possible most of the time. In 14 of the 16 homes with solar arrays near my home the panels are visible from the street.

Comments to a possible ordinance:

Attorney McCourt’s suggestion of adding related wording to include related hardware would be helpful. It might be best to specify such items as mounting tracks and hardware, electrical conduits, squirrel barriers, and other necessary hardware.

Re the suggestion that the exception apply to panels mounted directly on a roof, it might be better to use the language in the HDC renewable energy criteria: “parallel to and as close to the roof structure a possible.” , as the panels are always mounted on tracks which position the panels slightly above the roof surface.

16 Solar Power Arrays Near Dennett Street

Two not visible from public view

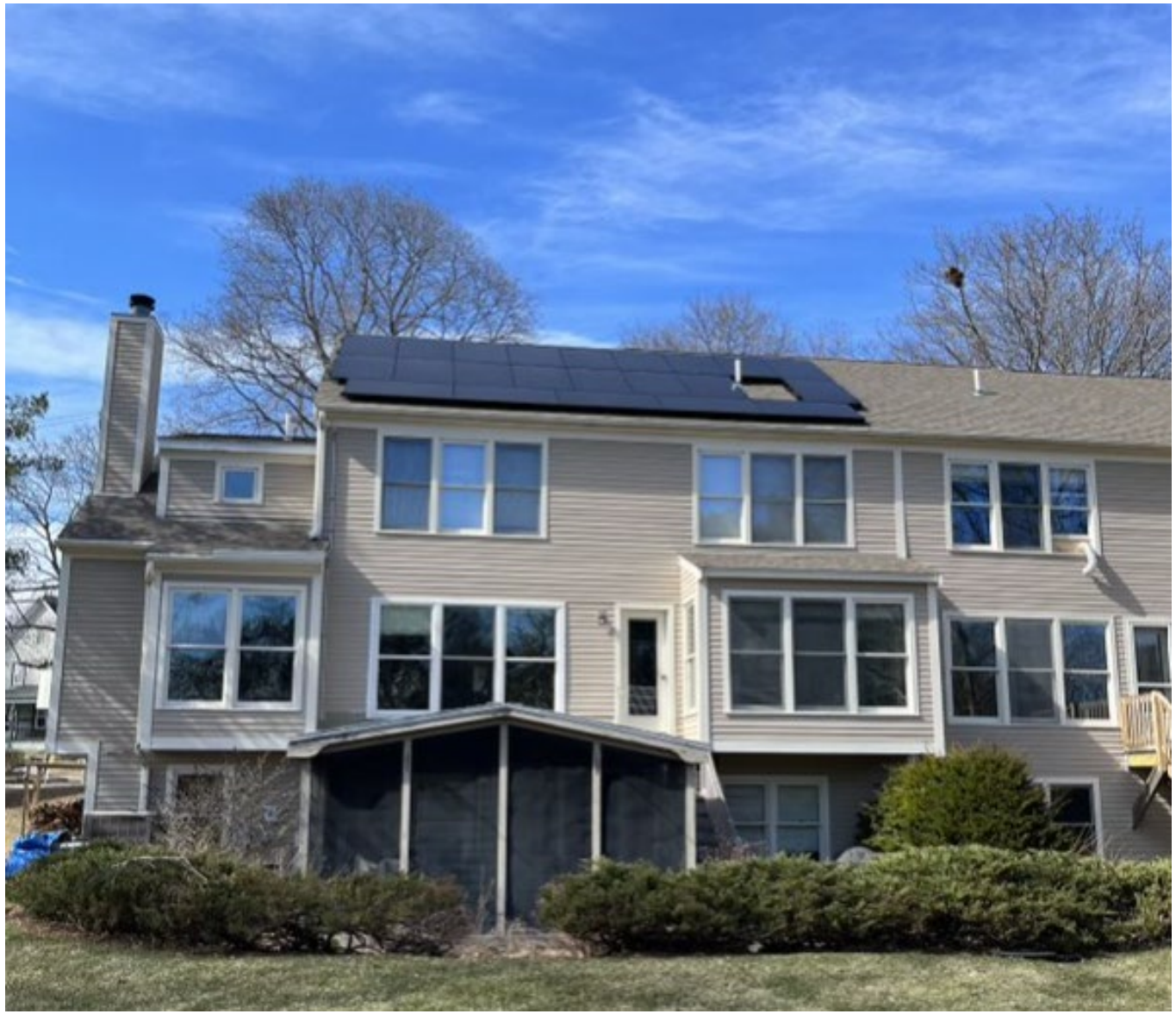
Fourteen Visible

To facilitate solar power, the panels need to be located where the sun is

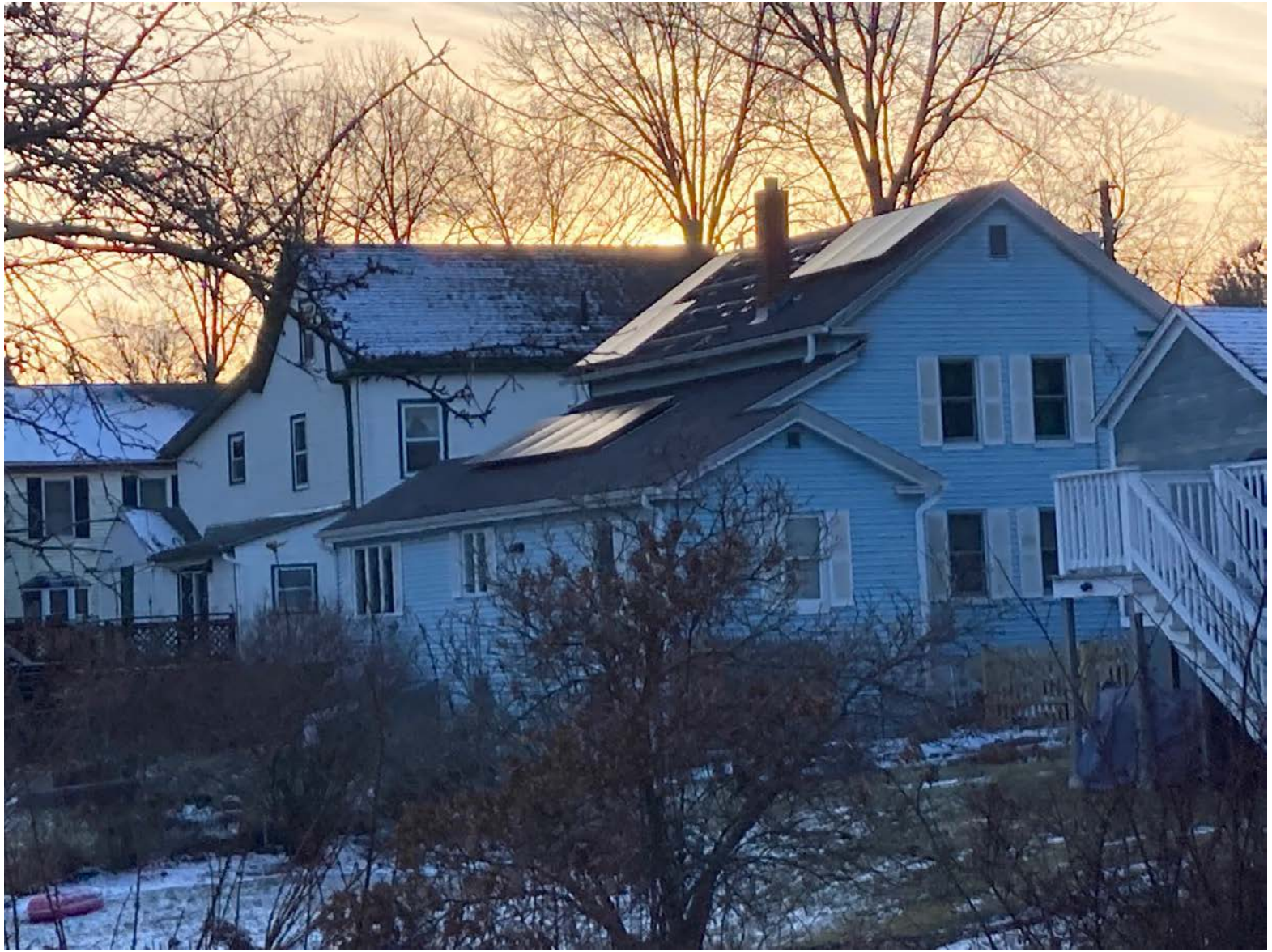
Historic District Commission
Guidelines for Renewable Energy

“Locate collectors where they are hidden or minimally visible from public view.”

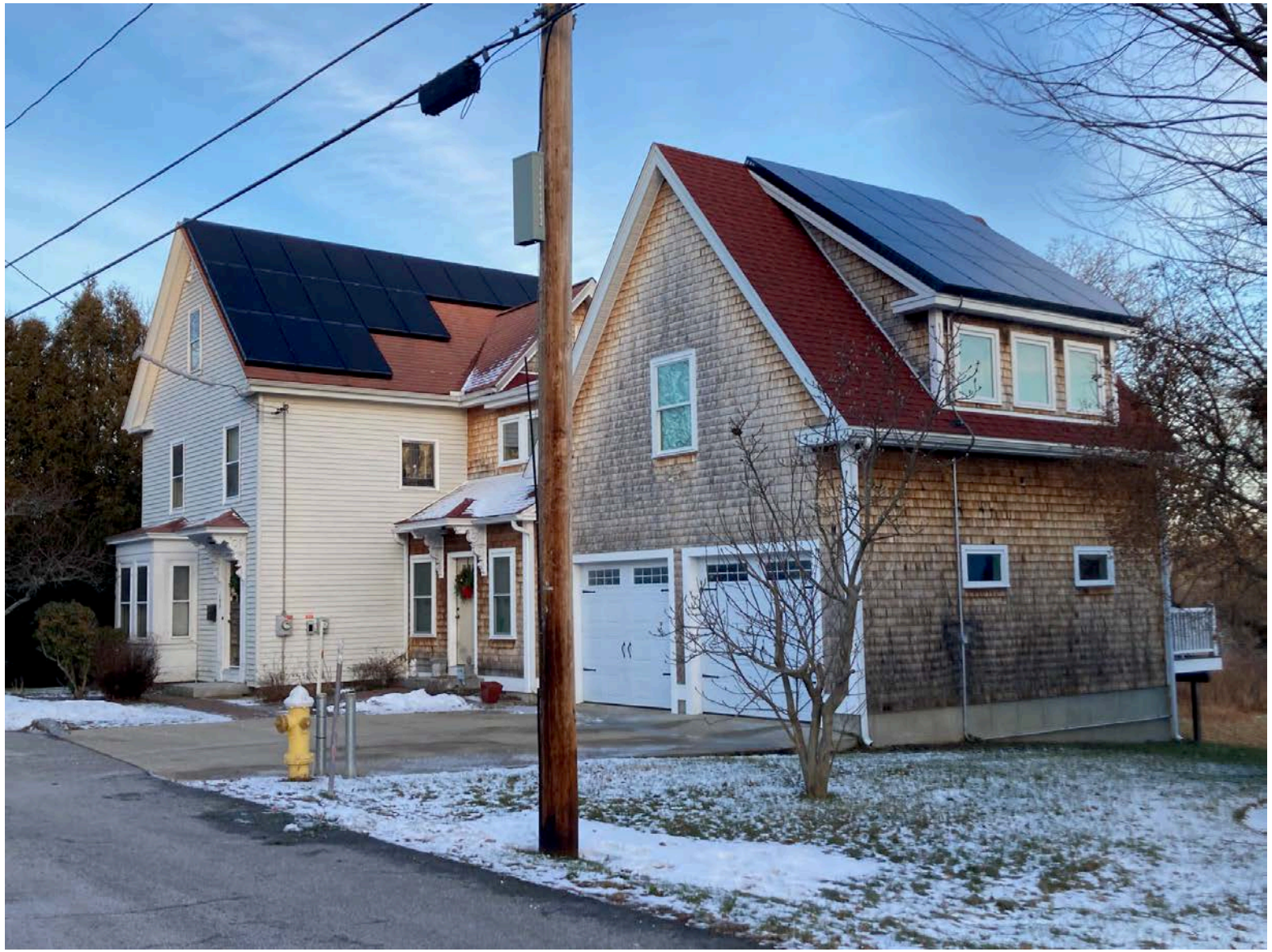
“The frame and panels should be the same color as the roof structure…”



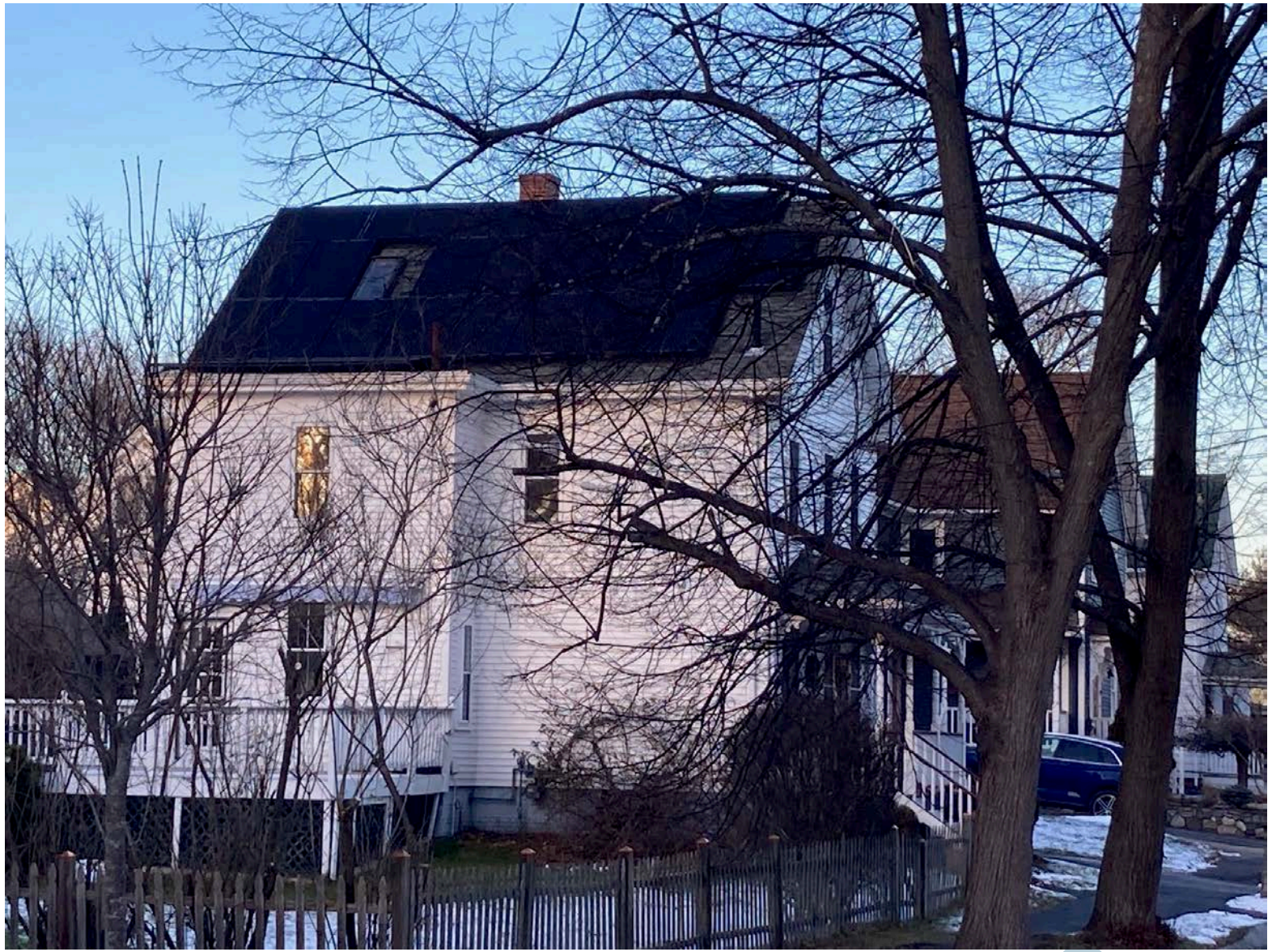
Dennett Street-Not visible from public view-1



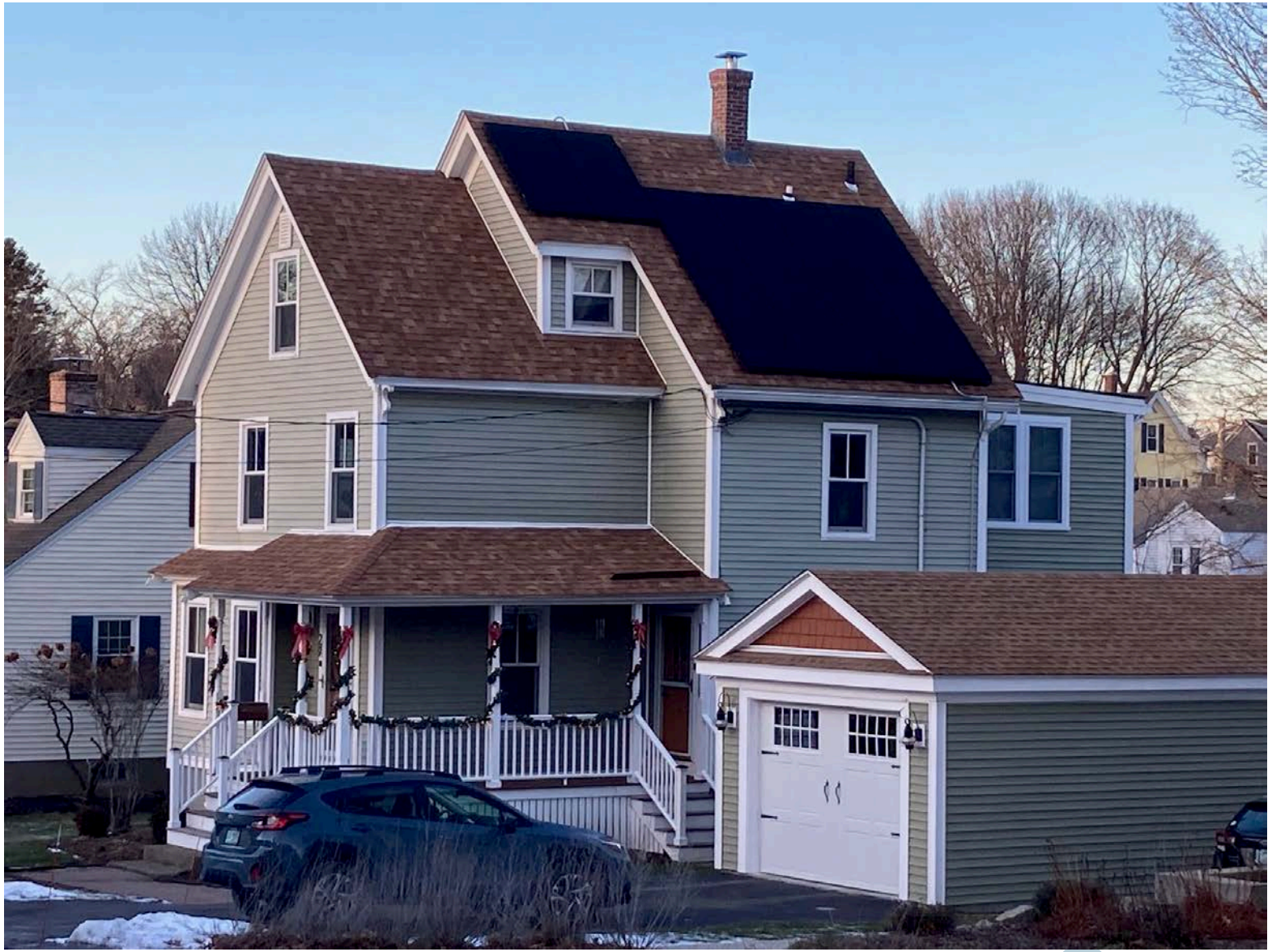
Pine Street-Not visible-2



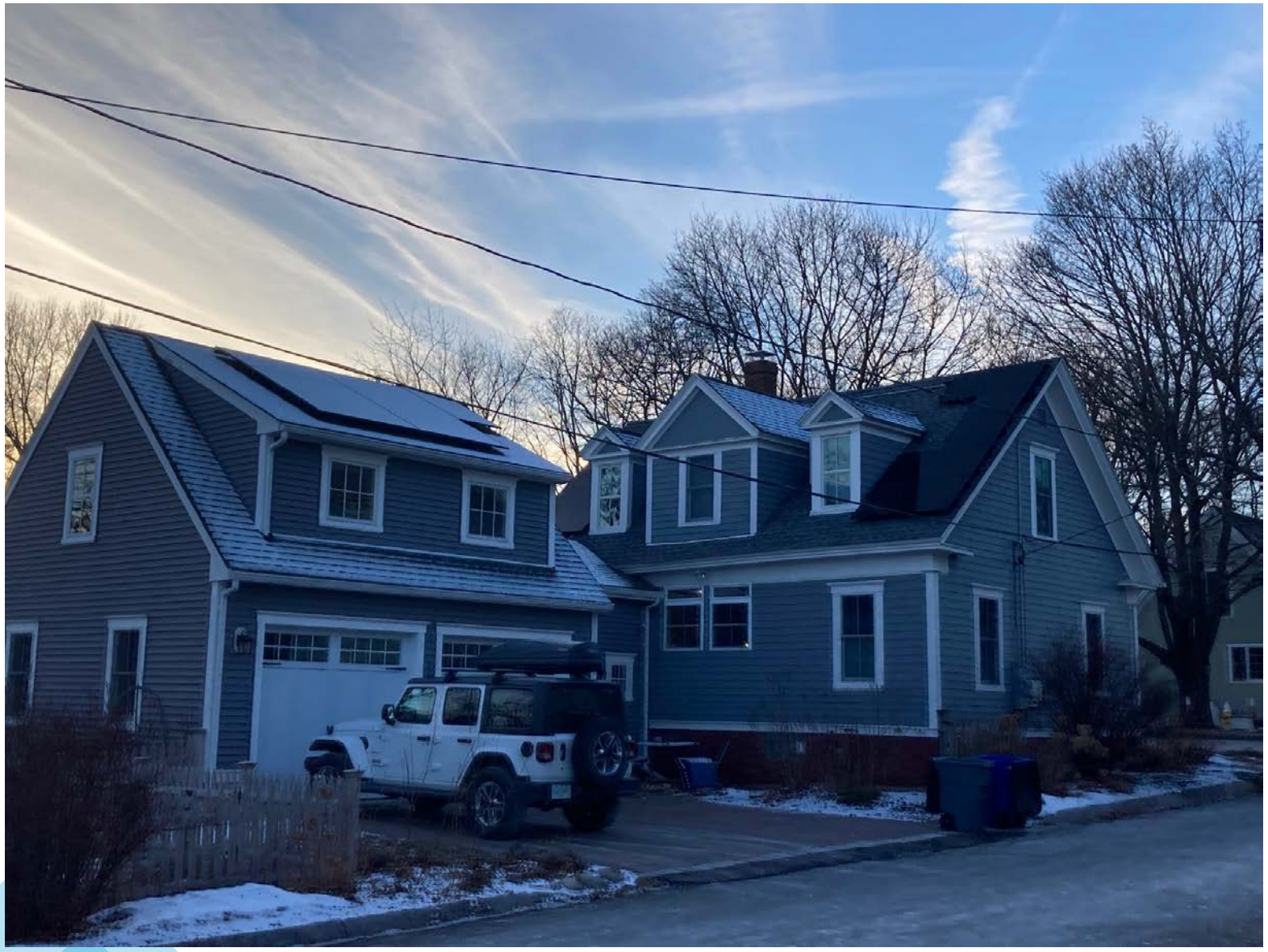
Clinton Street-Visible-1



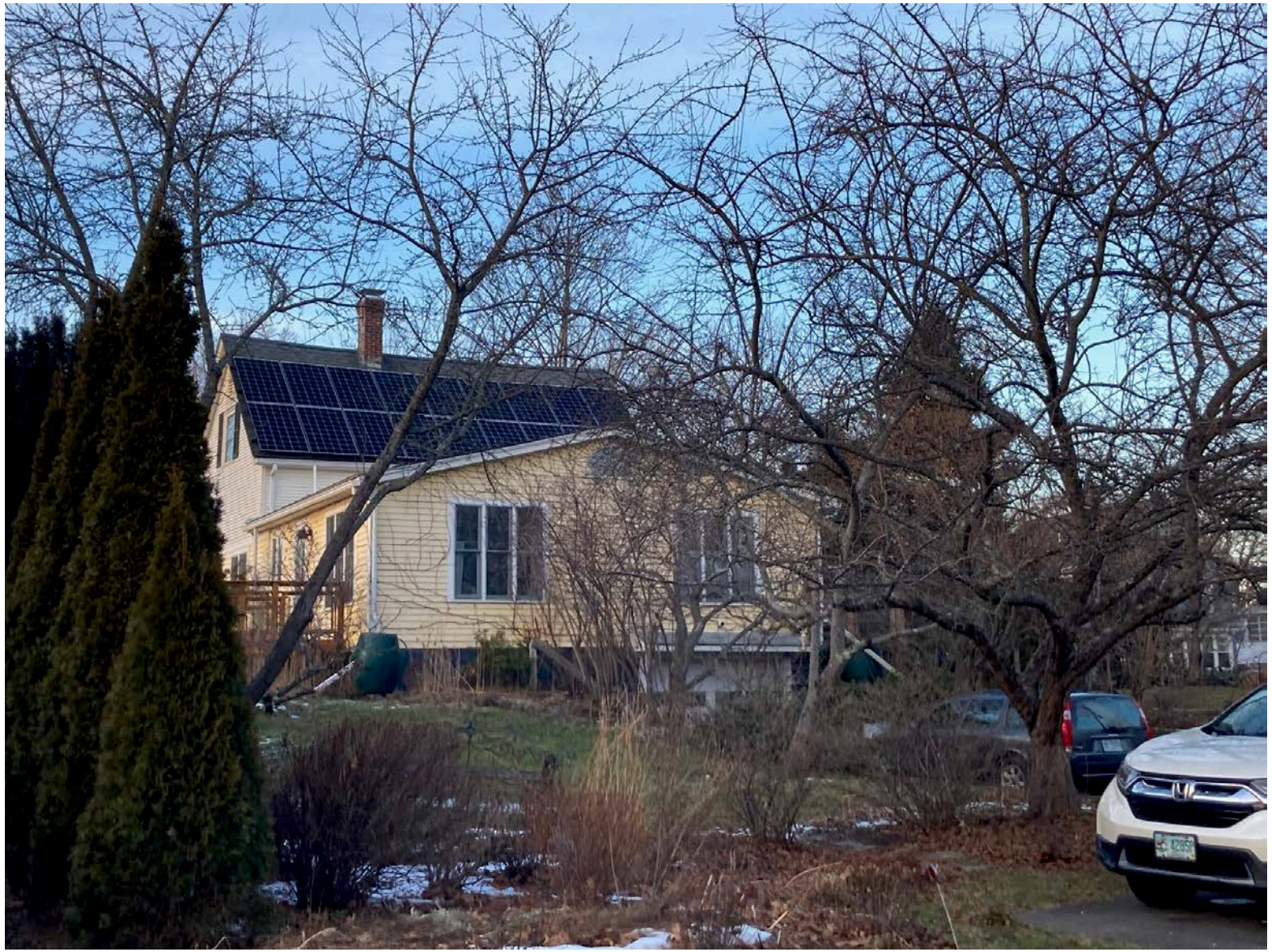
Clinton Street-Visible-2



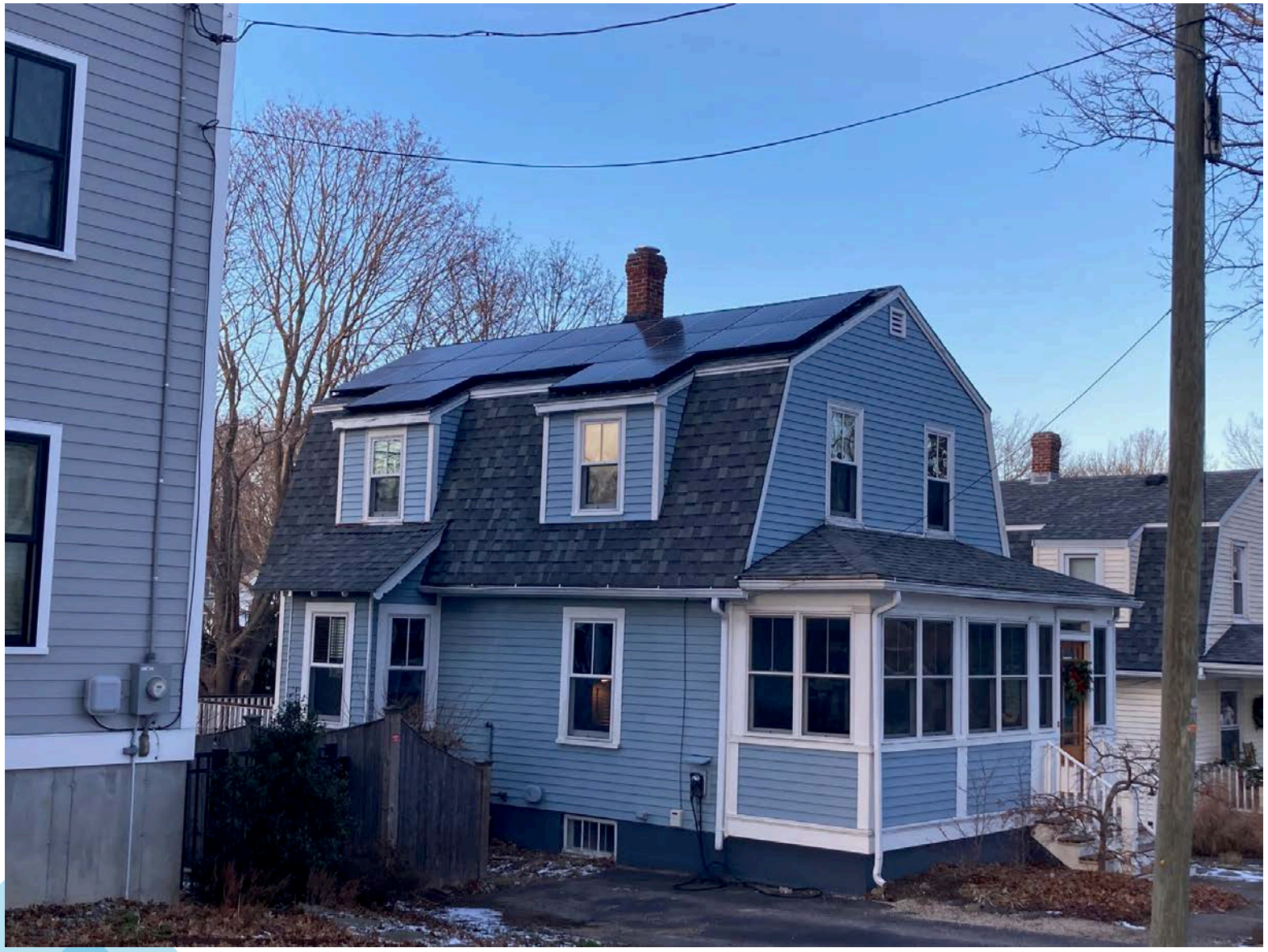
Burkitt Street-Visible-3



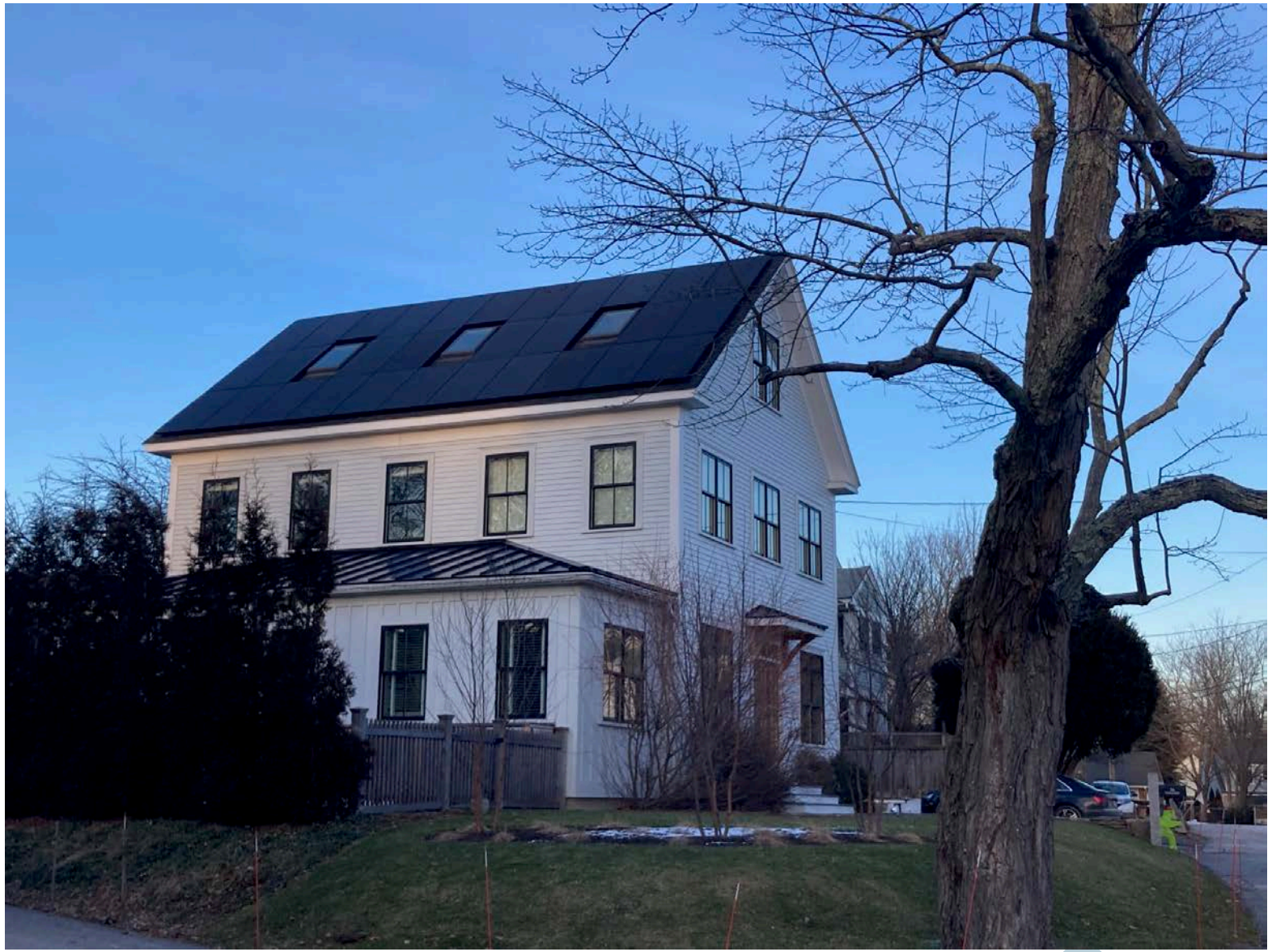
Pine and Stark Streets-Visible 4



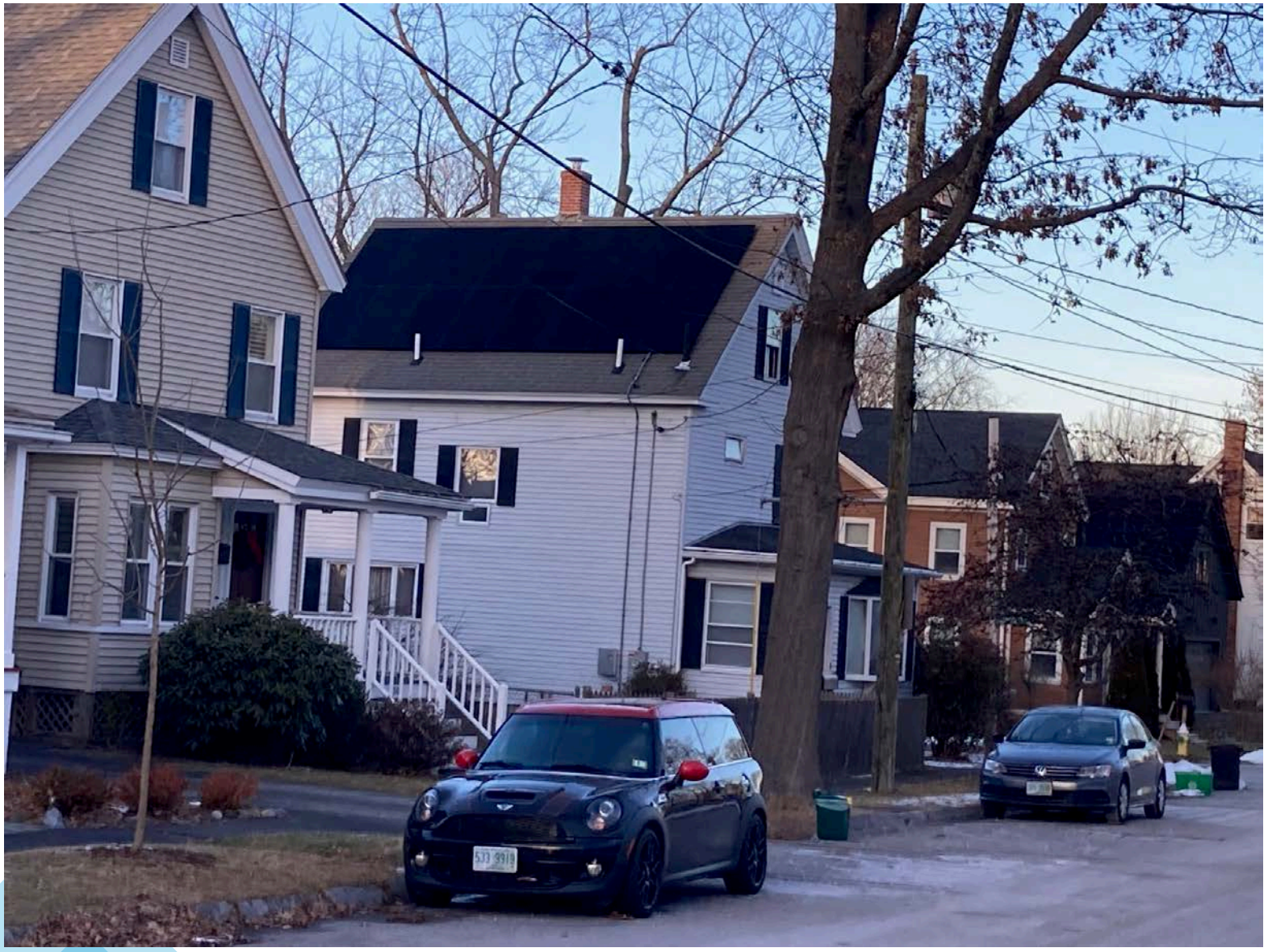
Thornton Street-Visible 5



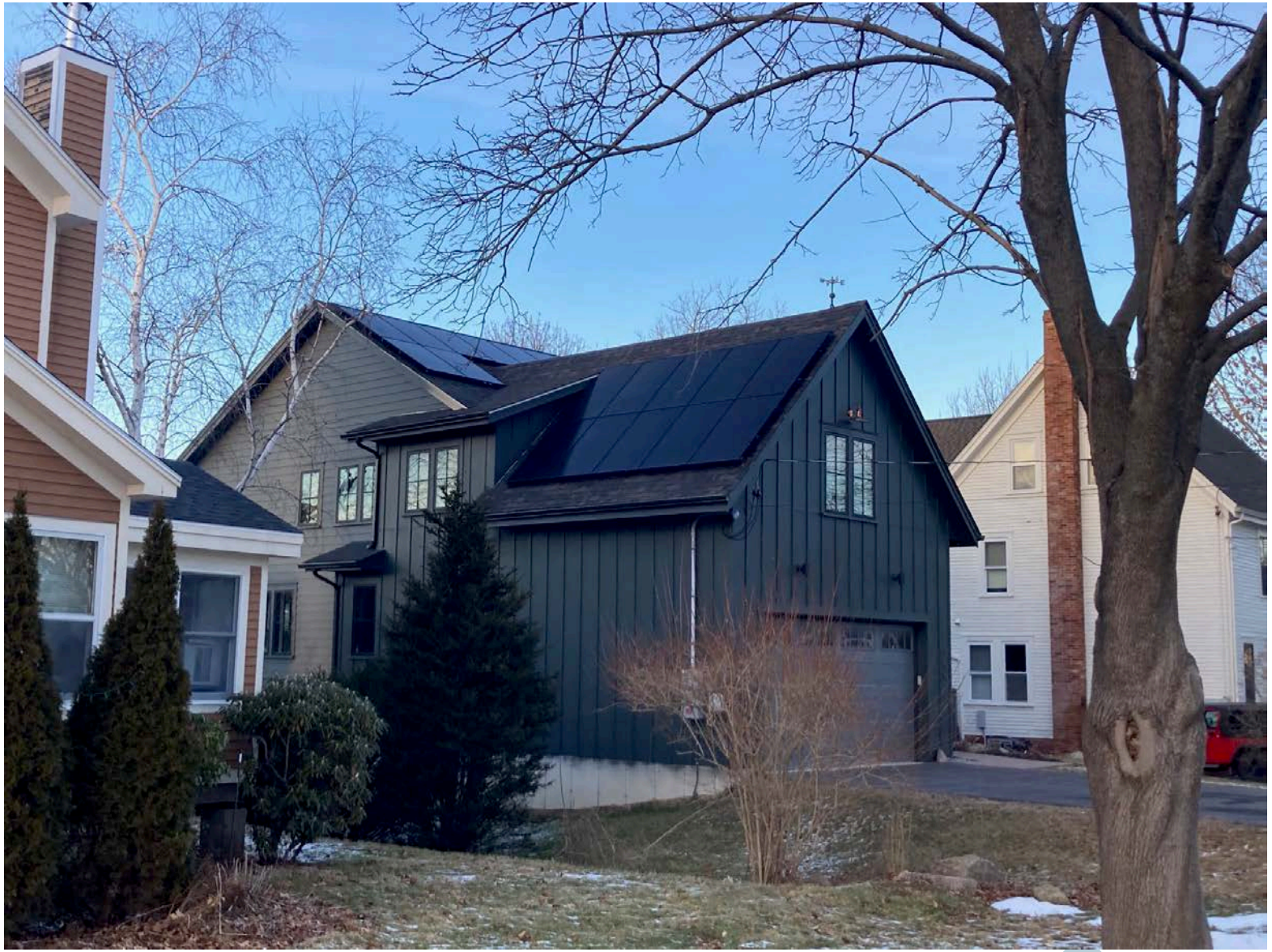
Thornton Street-Visible 6



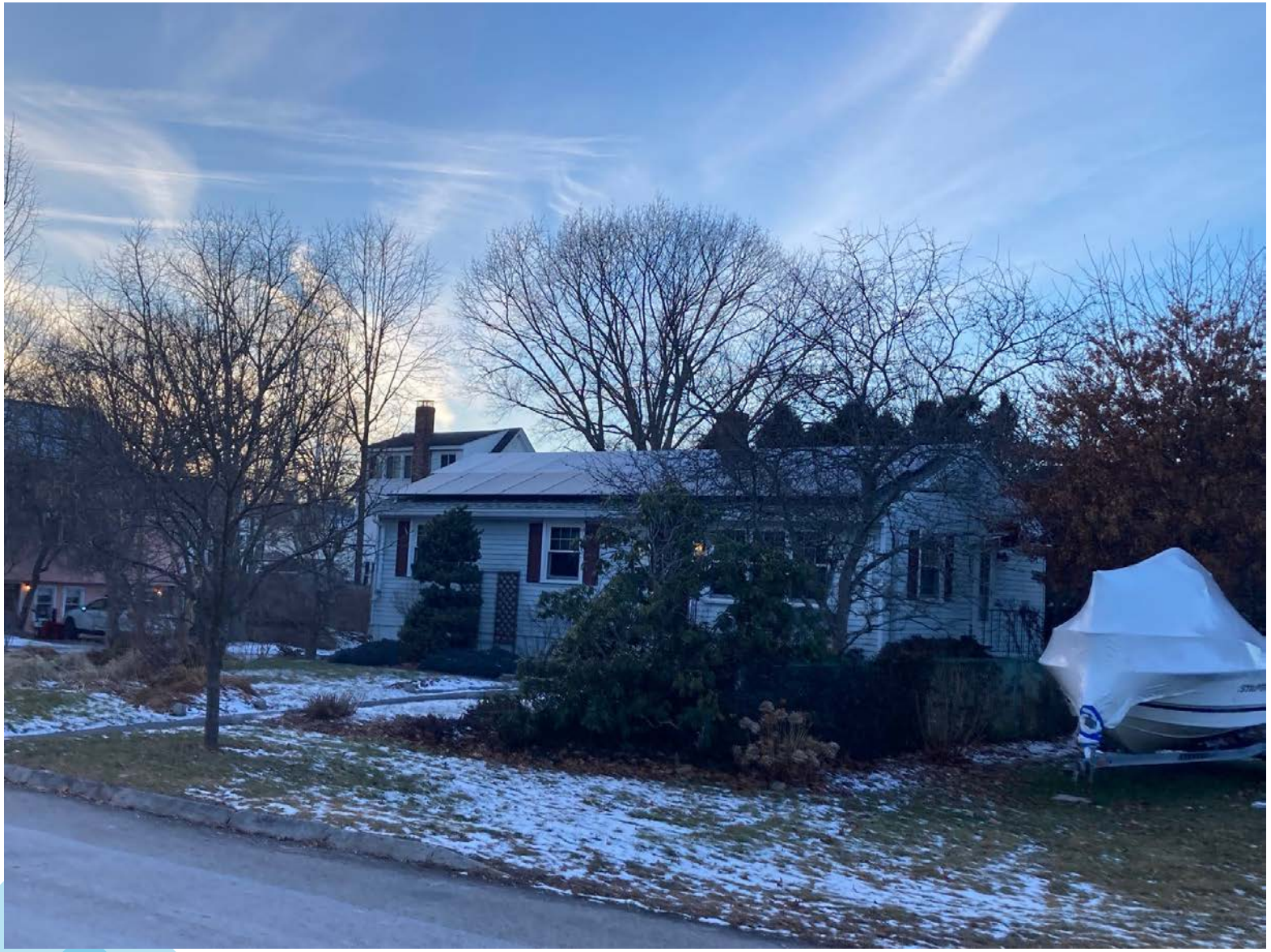
Thornton and Thornton Extension-Visible 7



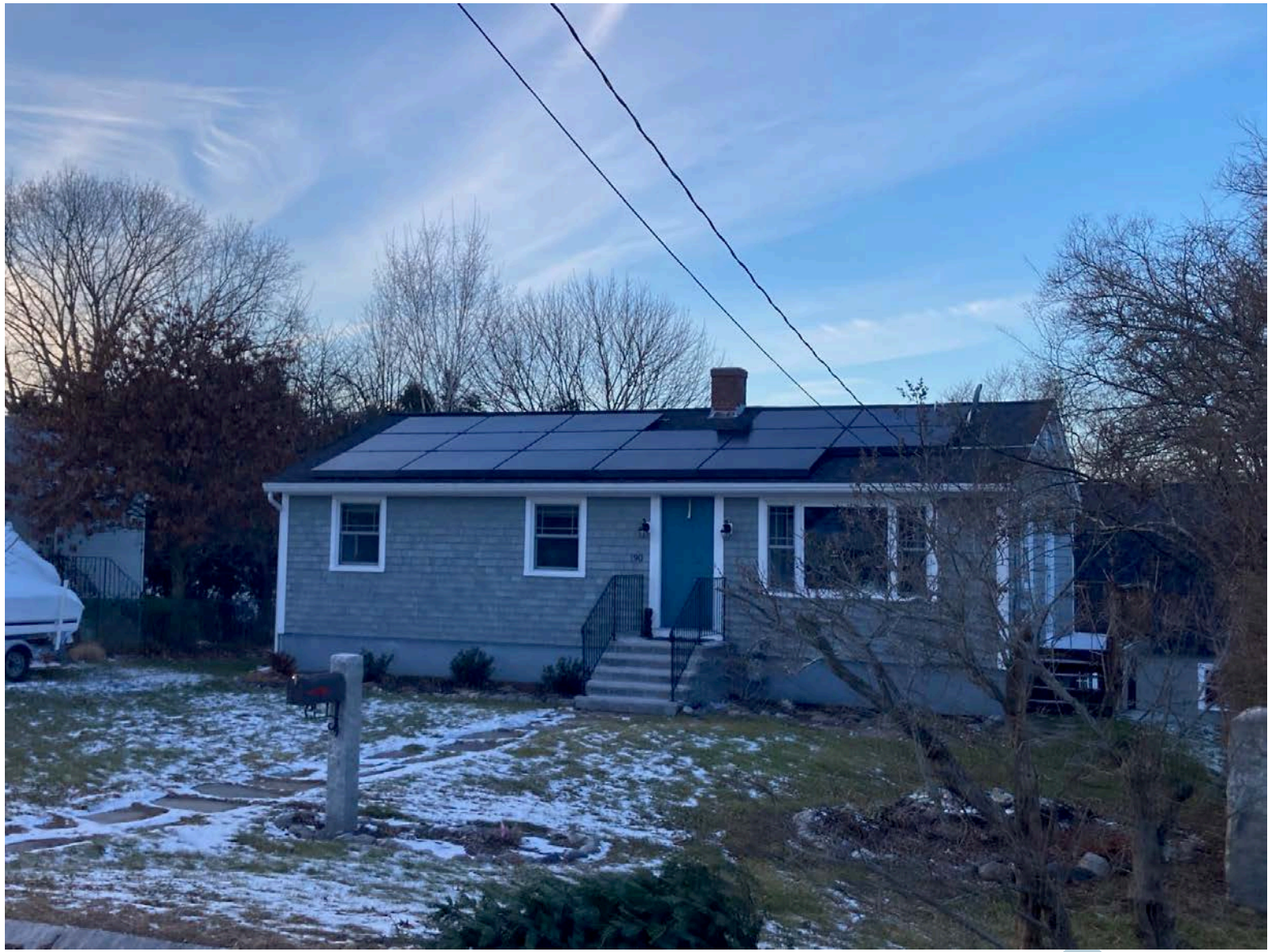
Thornton Street-Visible 8



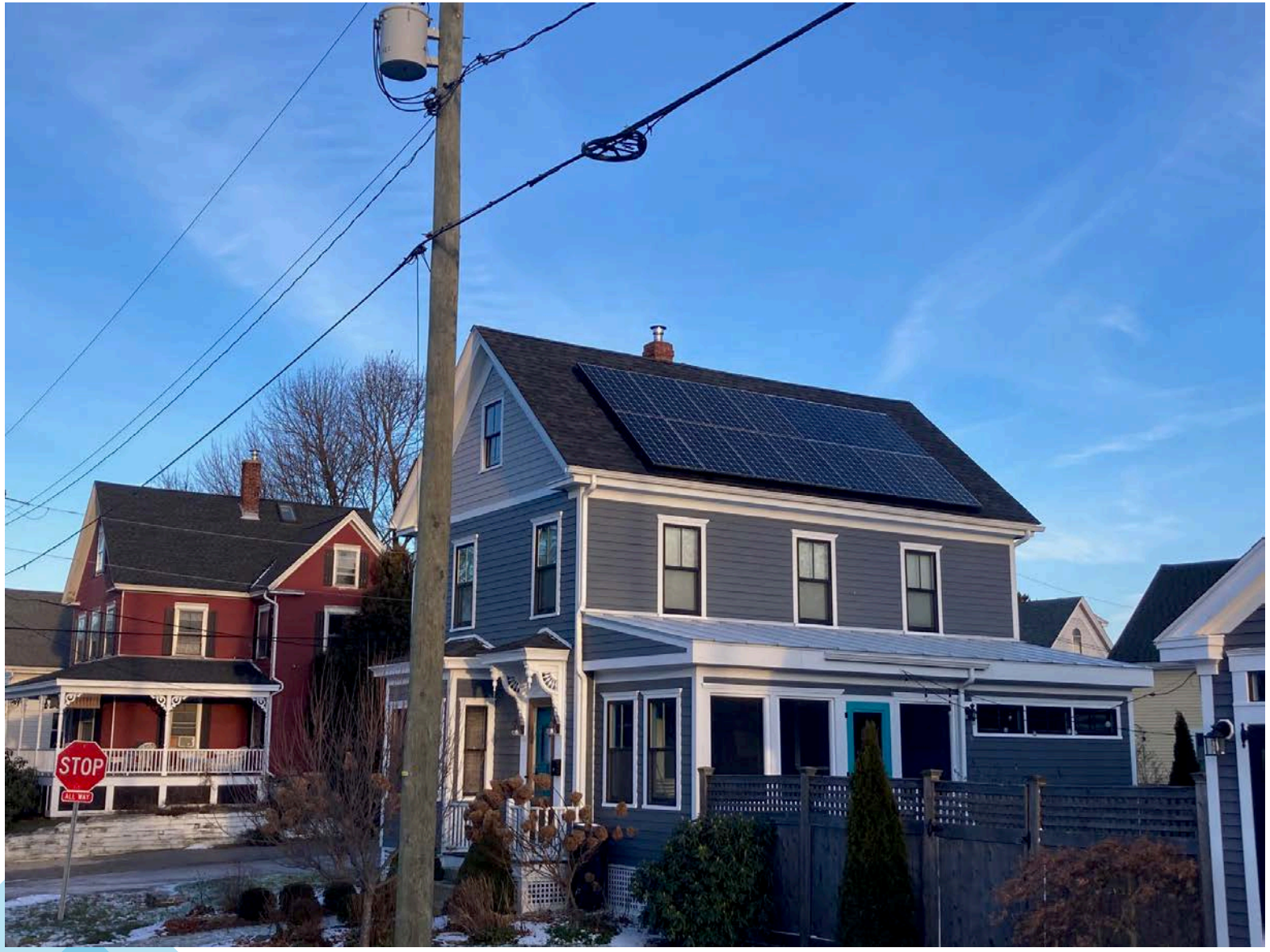
Thornton Street-Visible 9



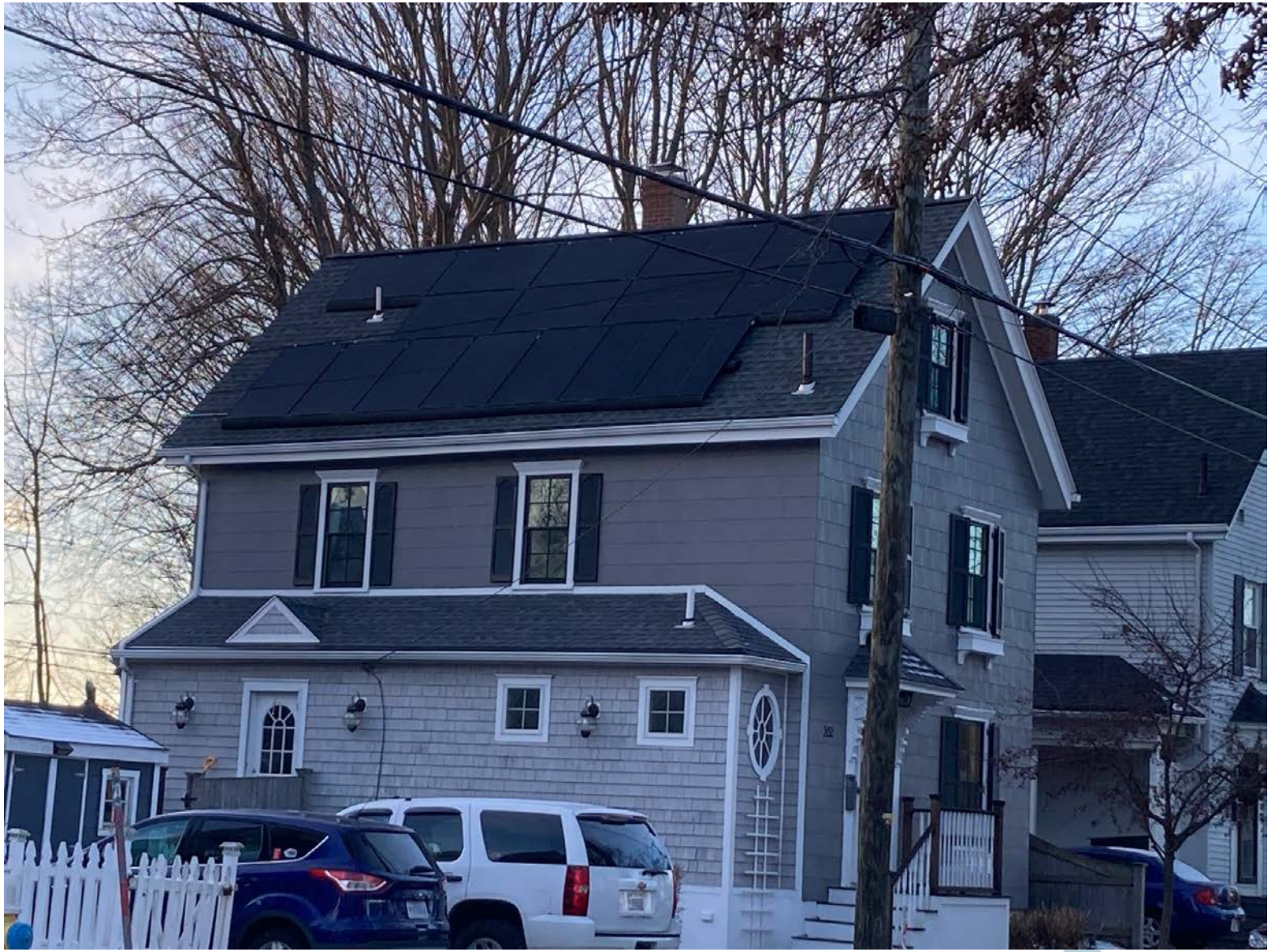
Thornton Street-Visible 10



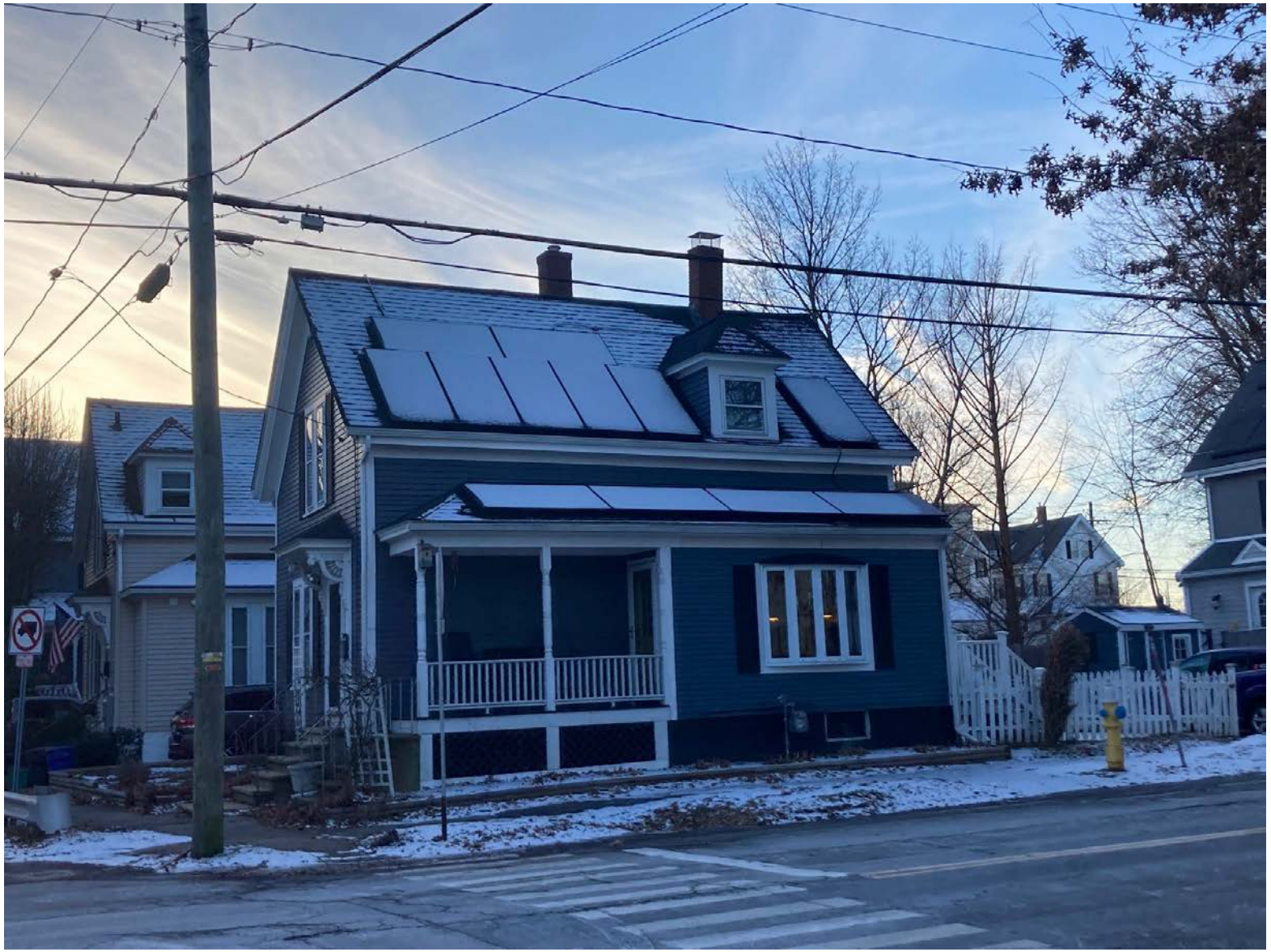
Thornton Street-Visible 11



Thornton And Burkitt Streets-Visible 12



Bartlett Street-Visible 13



Bartlett and Thornton Streets-Visible 14

1/24/24

City of Portsmouth
City Council
Attn: Deaglan McEachern, Mayor and Councilors
1 Junkins Avenue
Portsmouth, NH 03801

Re: Community Based Power: Does Opting Up reduce CO2 emissions?

Dear Mayor and Councilors,

Does Opting Up with Community Based Power to the Clean 100 power option reduce CO2 emissions? The Council is currently considering a proposal to exempt solar power from HDC jurisdiction. A statement was made at the last meeting that one can "opt-up" and achieve essentially the same benefits as installing solar power. We can evaluate this by evaluating the reductions in CO2 emissions.

The average residential customer will pay an extra $28/month more for opting-up to Clean-100. Consumer Power uses those funds to purchase Renwable Energy Certificates (REC's), which provide a subsidy to clean power providers. One REC per megawatt. For example, for the solar power system on our house we receive $216 per year in REC payments.

There are no published estimates of reductions of CO2 emissions from opting-up. I think we need to find a way to quantify CO2 emissions to the best of our ability. The following is an analysis using three different approaches: Present, Future by Incentives and Future by Funding.

Below are the outcomes of these analyses. The section following describes these approaches in detail.

SUMMARY OF ANALYSES

APPROACH #1: THE PRESENT: There is no reduction in CO2 emissions. The electricity used by the customer is not generated from 100% renewables. It is generated by the same mix of fuels supplied to the power grid. There is only one set of wires and one stream of electricity.

APPROACH #2: THE FUTURE: INCENTIVES: The incentive amounts to about 1% of the cost of the system per year, using my solar power system as an example. The effectiveness of the incentive is unclear due to the small size of the incentive.

APPROACH #3: THE FUTURE: PROPORTIONAL FUNDING: The REC's that are purchased with the extra funds paid by the customer can be credited with between 11.7% and 18.2% of the reduction of CO2 emissions resulting from direct investment in solar power.

SOME BACKGROUND INFORMATION

Opting-up to the Clean 100 power option adds $28/month to the bill for an average residential customer. How are these extra funds used?

Attached is a copy of question 23 in the FAQ section from the Community Power of NH website. It answers the question directly. It explains that the extra funds are used to purchase REC's (Renewable Energy Certificates) from clean power generators.

The following is an excerpt from the attachment that explains this:
"To meet state law, and to verify the increased renewable content for customers who "opt-up" the Coalition purchases Renewable Energy Certificates (RECs).

New Hampshire's Renewable Portfolio Standard (RPS) requires all electricity providers to acquire specific percentages of RECs sourced from five different categories of renewable resources: Class I (new renewable resources), Class I thermal (useful thermal energy), Class II (new solar), Class III (existing biomass / methane), and Class IV (existing small hydroelectric)."

REC's are paid by the New England power pool to clean power producers to provide a subsidy for clean energy. For example, the solar power system on our house generates REC payments to us of $216 per year.

APPROACH #1: THE PRESENT: Does Opting Up to the Clean 100 power option reduce CO2 emissions in the present?

When I first heard about this program, I had the impression that the electricity coming through the wires to a customer was somehow different than the power provided by choosing the default option or Eversource. I think this impression stemmed from the use of terms such as "Clean 100" and "100% Renewable Content" in the Consumer Power literature. Digging a little deeper it is clear that there is only one set of wires and only one stream of electricity flowing through those wires.

If a residential customer opts-up to clean 100 and pays the extra $28 per month, does the mix of fuel sources that generated that electricity change? No. There is only one set of wires and one stream of electricity.

No matter whether it is purchased from Eversouce or Community Power, and what power option is chosen, the electricity was generated by the same mix of power generation that is currently supplying the grid. The REC payments do not increase the percentage of clean power in the mix in any immediate way, so there is no present reduction of CO2 emissions.

APPROACH #2: THE FUTURE: INCENTIVES: Does Opting Up to the Clean 100 power option reduce CO2 emissions in the future by way of incentives?

The REC program provides a subsidy for clean power generation and therefore an incentive to those considering installing clean power systems. But it is unclear that it is large enough to be an effective motivator.

Every system is different, but the numbers from one system are helpful in framing the issues. Using the solar system on our house as an example, the system cost was $22,971. Our savings on our 2023 power bill was $2,477. The REC payments in 2023 were $216. The REC subsidy amounts to about 1% of the installation cost per year and 9% of the savings on the power bill. Because the REC subsidy is so small, it played no part in our decision to install the system.

Do the REC subsidies cause clean energy producers to increase production or invest in additional systems? They seem to be too small to be effective. The effectiveness of the subsidy is unclear. So any reduction in CO2 emissions under this analysis approach is unclear.

APPROACH #3: THE FUTURE: PROPORTIONAL FUNDING: Does Opting Up to the Clean 100 power option reduce CO2 emissions in the future by way of Proportional Funding?

One can calculate the present value of a projected income stream. That present value can be used to analyze the proportional funding of a clean energy system. This approach results in a quantifiable reduction in CO2 emissions.

Again, using the solar system on our house as an example, we can calculate the present value of the projected subsidy of $216 per year over an expected 20 year system life. The present value calculates to $2,691, assuming a 5% inflation rate.

This can be characterized as a one-time subsidy for installing the clean power system. In the case of our system, $2,691 amounts to 11.7% of the cost of the system. The REC payments can be credited with an 11.7% reduction of CO2 emissions. In the case of our system, 11.7% of 15,000 pounds, or a reduction in CO2 emissions of 1,755 pounds per year.

This number improves if the calculation is scaled up to the full amount of the customer's extra payment of $28/month, which equals $336 per year. Based on the ratio of the customers REC payments of $336 and our systems receipt of $216 per month, the extra customer payments can be credited with an 18.2% reduction of CO2 emissions: 2,730 pounds per year.

In the future Community Power may use the extra $28/month to directly purchase clean power instead of purchasing REC's. The amount of reduction of CO2 emissions under that scenario will depend on whether the directly purchased clean power newly added to the grid or is already supplying the grid. It will also be necessarily limited by the ratio of the extra $28 to the total bill of $91, or about 30%

SUMMARY

The average residential customer will pay an extra $28/month for opting-up to Clean-100. Consumer Power uses those funds to purchase REC's, which provide a subsidy to clean power providers. One REC per megawatt.

Three approaches have been employed to attempt to quantify the reductions in C02 emissions.

APPROACH #1: THE PRESENT: There is no reduction in CO2 emissions. The electricity used by the customer is not generated from 100% renewables. It is generated by the same mix of fuels supplied to the power-grid

APPROACH #2: THE FUTURE: INCENTIVES: The incentive amounts to about 1% of the cost of the system per year. The effectiveness of the incentive is unclear due to its small size.

APPROACH #3: THE FUTURE: PROPORTIONAL FUNDING: The REC's that are purchased with the extra funds paid by the customer can be credited with between 11.7% and 18.2% of the reduction of CO2 emissions resulting from a direct investment in solar power.

I want to be clear that Community Power is an excellent step forward in the renewable energy transition. Opting up with community power is a great way to support/ fund existing clean energy generators. The benefits are NOT equal to solar power, but people who are unable to go solar (renters, condo owners, homeowners with shaded roofs, etc.) can still support the renewable energy industry by opting up.

This letter is offered to help the Council, Planning Board, and HDC have a conversation and make a decision on the solar power question. Thank you for your work on this issue.

Sincerely,

Joe Caldarola

From:	Kerry Vautrot
To:	Planning Info
Cc:	Emma Stratton; Portsmouth Advocates
Subject:	1/18 Planning Board Meeting: Public Comment re: Proposed HDC Ordinance Change Exempting Solar Panels
Date:	Thursday, January 18, 2024 4:46:54 PM

Dear Planning Board Members,

It has long been recognized that historic preservation and sustainability are intrinsically linked and can successfully coexist. Portsmouth Advocates is the historic preservation advocacy arm of the Portsmouth Historical Society and we are writing tonight to note that there is ample guidance for how to integrate renewables and energy efficiency improvements while maintaining the historic integrity of the built environment. The National Park Service (NPS) is the technical authority on historic preservation in the US. In their publication, Secretary of the Interior's Standards for Rehabilitation: Guidelines for Sustainability, the NPS provides clear direction for how to successfully install photovoltaic systems on historic buildings.

As the 2023 host for the National Conference, Keeping History Above Water, Portsmouth should strive to model how to successfully integrate innovative sustainability practices while preserving the historic character that serves as an economic engine for the City.

The initially proposed amendment language that simply removes solar panels from the purview of HDC is too broad a "solution." There are many other ways to adjust the ordinance language to assist both applicants, the HDC members, and the City as a whole in order to meet sustainability goals.

We respectfully request that the Planning Board follow the Council and Deputy City Attorney's recommendation to refer the proposed language to the HDC for their input. The HDC is composed of preservation professionals, architects, and other technical experts who volunteer untold hours to uphold the objectives of the Historic District as outlined in the ordinance. Their familiarity with resources and guidance documents, like the Guidelines for Sustainability referenced above, will help ensure Portsmouth can meet both non-exclusive goals: preserving our historic character and integrating sustainability practices. Providing the HDC an opportunity to review and comment on the language is not only a professional courtesy, but it shows that the Planning Board values the expertise present on their sister land use boards.

Portsmouth Advocates looks forward to continuing to provide comment on this matter as it progresses.

Sincerely,

Emma Stratton, Executive Director, Portsmouth Historical Society
Kerry Vautrot, Portsmouth Advocates

Solar panels reduce carbon pollution and lower energy costs

Mr. Forbes argument against solar panels in Portsmouth's historic district (January 25 op-ed) would be interesting if it reflected even a basic understanding of the New England electrical grid, but it doesn't. To understand why solar panels on buildings in Portsmouth and across New England are critical for helping drive the transition to a low carbon economy and addressing the climate crisis, one needs to understand the system that provides electricity for New England.

The New England electrical grid is operated by a not-for-profit independent system operator – ISO New England. They are responsible for keeping electricity flowing.

The electricity generated at Seabrook nuclear power plant does not power Portsmouth directly. Rather, those electrons flow onto a regional electrical grid that, along with many other generating sources, power New England. Two nuclear power stations (Seabrook and Millstone) supplied 26% of the total electricity generated in New England in 2022, an important baseload.

Natural gas power plants provided 52% of the total electricity generated in New England in 2022. Unlike nuclear, modern natural gas plants are regularly fired up quickly (some in less than an hour) to meet electricity demand. These are flexible sources. ISO New England operates a "Day-Ahead Energy Market" and "Real-Time Energy Markets" (iso-ne.com). These markets allow electrical generators across the region to sell wholesale electricity one day before the operating day and during the course of the operating day.

So where do solar photovoltaic panels come in? New England's demand for electricity is 20% greater in summer compared to winter. Conveniently, we get far more sunshine in summer. Low-cost, carbon-free solar electricity produced during the summer competes in a marketplace with expensive, carbon polluting electricity produced by burning natural gas. Current 24- hour weather forecasts are good enough to provide an accurate estimate of how much solar energy we can expect a day in advance. Solar as a flexible source of energy wins in this marketplace every time, especially when solar energy currently accounts for only 3% of the New England total.

More solar panels means less use of natural gas, especially during the spring, summer and fall. Solar panels also save money for their owners. Solar panels on buildings, including those in historic districts, represents a win-win for advancing clean energy and lowering electricity prices.

Cameron Wake, Kittery, Maine
603-498-9486
January 28, 2024