REQUEST FOR IDEAS TRACK I
CO-CREATING BOSTON'S FUTURE-DECKER

To: future-decker@boston.gov

1 August 2021

1. **Introduce yourself: What's your name and what would you like us to know about you?**

New England Solar Hot Water, Inc. (NESHW) is a local company of 15 employees with warehouse facilities located in Canton, MA. Founded in 2008 by President and Engineer Bruce Dike and his wife Liz Hiles of Milton, MA, NESHW is the leading installer of Solar Hot Water systems in Massachusetts with a large portfolio of over 700 systems, large and small, that document the success of this technology. We have accomplished this high market penetration by offering the best value and highest performing systems – leading the Massachusetts market in affordable pricing, experience, and system quality.

We pride ourselves in designing and installing the best system solution for our customers. Our unpressurized "drain-back" solar systems are immune to overheating, freezing, and over pressurization, and we use locally produced "lifetime warranty" stainless steel tanks. With minimal maintenance, our robust systems will produce hot water via renewable energy from the sun for 20+ years.

Besides traditional solar thermal systems, we also offer Solar Assisted Heat Pump water heaters (**SAHPs**). SAHPS are a great alternative to traditional integrated heat pump water heaters, offering several advantages including:
1) Split system with evaporator panel mounted outside the building envelope- usually on an exterior wall- so no "stealing" heat from the interior.
2) Impressive energy savings with UEF at 3.06.
3) No fans, filters, or drains- thus simplifying installation and maintenance.
4) 25-year warranty stainless steel storage tank.
5) Affordable cost due to SRCC rating and availability of the federal solar tax credit.

Our customer feedback has been excellent as demonstrated by the success of our primary marketing tool: referrals. We have participated in several community-wide programs including MassCEC's *HeatSmart* program for Melrose and the, *Solarize Plus Northshore* program for Salem, Swampscott and Nahant in 2020, the *HeatSmart* program for Arlington/Winchester in 2019, and the *Solarize Plus* program for Lincoln/Sudbury/Wayland in 2017-18. All of these programs were very successful with hundreds of efficient renewable solar thermal systems sold and installed.

For more information, please see our website: **www.neshw.com.**

2. **Tell us your idea: What input or ideas for a future-decker or other housing types would you like to share?**

In order to reduce future CO2 emissions, authorities are pointing toward electrification of buildings. We assume electrification is a goal for Boston's Future-Deckers. For the domestic hot water load in small multi-family buildings, we offer two proven robust renewable energy options: Solar Hot Water (SHW) and Solar Assisted Heat Pumps (SAHPs.) Both of these technologies can be installed as separate systems serving individual units or designed as a common system serving all units in a building. Due to economies of scale, common systems are generally much less expensive, but individual metering/billing is a challenge.

Solar Hot Water (SHW):

We have installed many traditional Solar Hot Water systems serving 2-3 family buildings. Solar thermal collectors on the roof are utilized to heat up a solar storage tank with electric resistance installed as backup for periods of less sun (mainly in wintertime.) **These systems can provide 80% of the domestic hot water energy load via renewable energy from the sun.** Because of the efficiency of the collectors, they require little roof space and so are a good alternative for triple-deckers on tight urban sites. Solar thermal collectors will produce 3-4 times the energy of an equivalent sized PV panel, and so are a better use of roof space, but if the roof allows, both SHW collectors and PV panels can be installed.

For more information see:
https://goclean.masscec.com/wp-content/uploads/2021/01/MassCEC_SHW_GUIDE.pdf

Solar Assisted Heat Pumps (SAHPs):

For a more affordable alternative, or when roof space is not available, Solar Assisted Heat Pumps are a good solution. **These systems can provide 50-60% of the domestic hot water energy load via renewable energy from outside ambient air heated by the sun.** SAHPS offer advantages over common heat pump water heaters including:

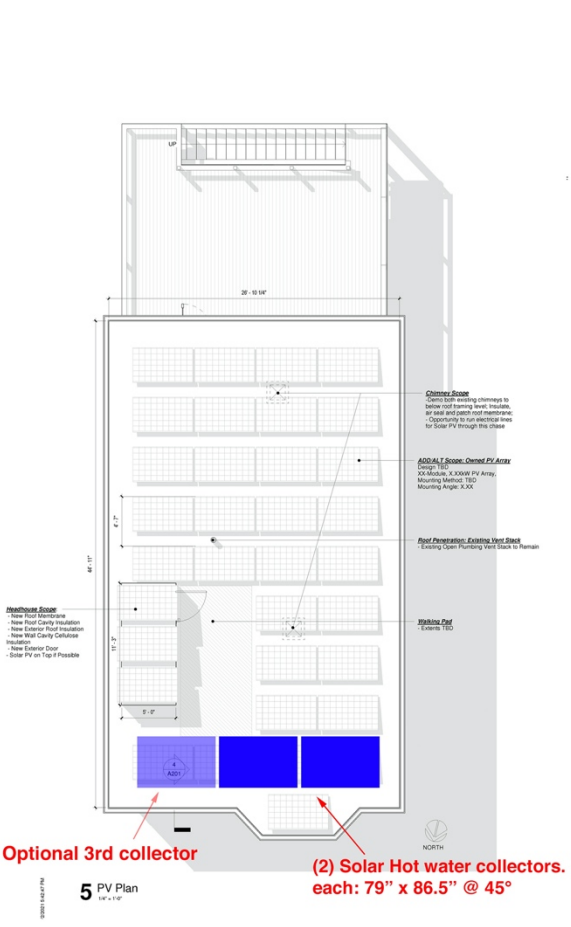
1) Split system with evaporator panel mounted outside the building envelope- typically on an exterior wall- so no "stealing" heat from the interior.
2) Impressive energy savings with UEF at 3.06.
3) No fans, filters, or drains- thus simplifying installation and maintenance.
4) 25-year warranty stainless steel storage tank.
5) Affordable cost due to SRCC rating and availability of the solar tax credit.

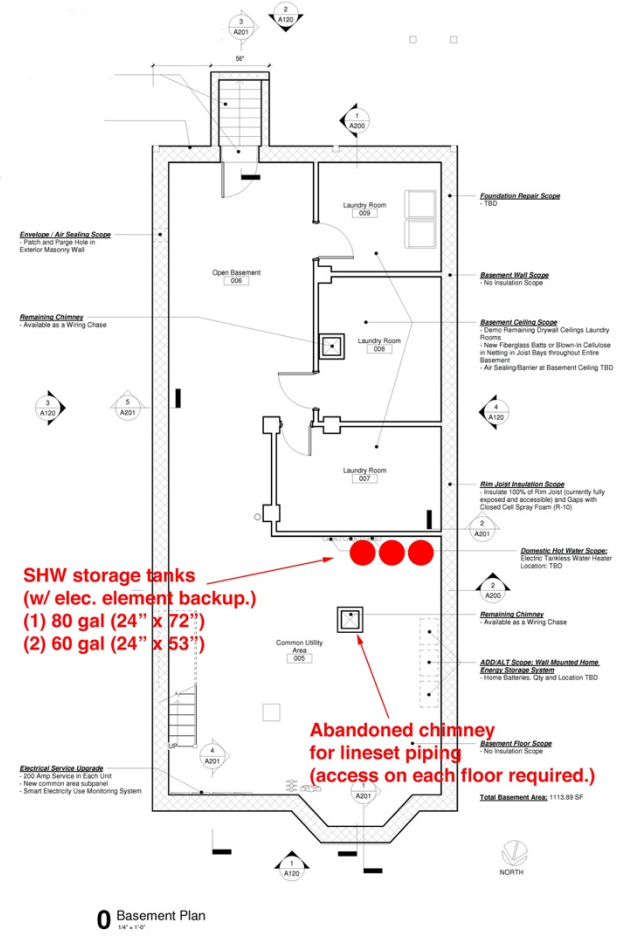
For more information see:
https://www.neshw.com/residential/sahp/

Thanks to generous local and federal incentives, both of these technologies are affordable and can cut energy use dramatically. They also consist of robust hardware built to last 20 or more years, unlike common water heaters typically needing replacement every 7-10 years.

3. **Other: Is there anything else you would like to share?**

See below a few example photos of small multi-family installations of both technologies:



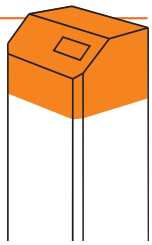



Marathon

SAHP

ZEDpod

zed factory



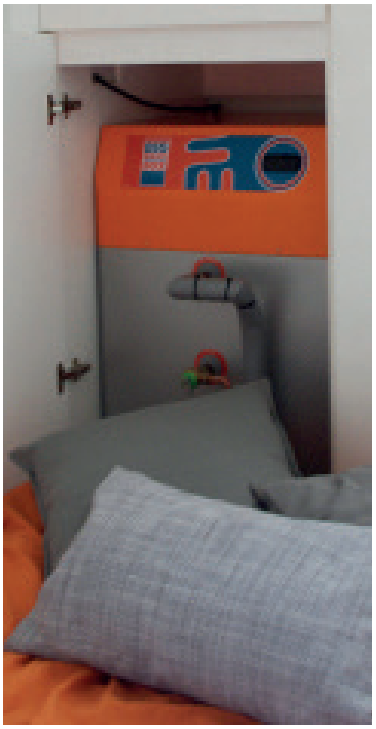
BMTB 130
Domestic
2017
UK

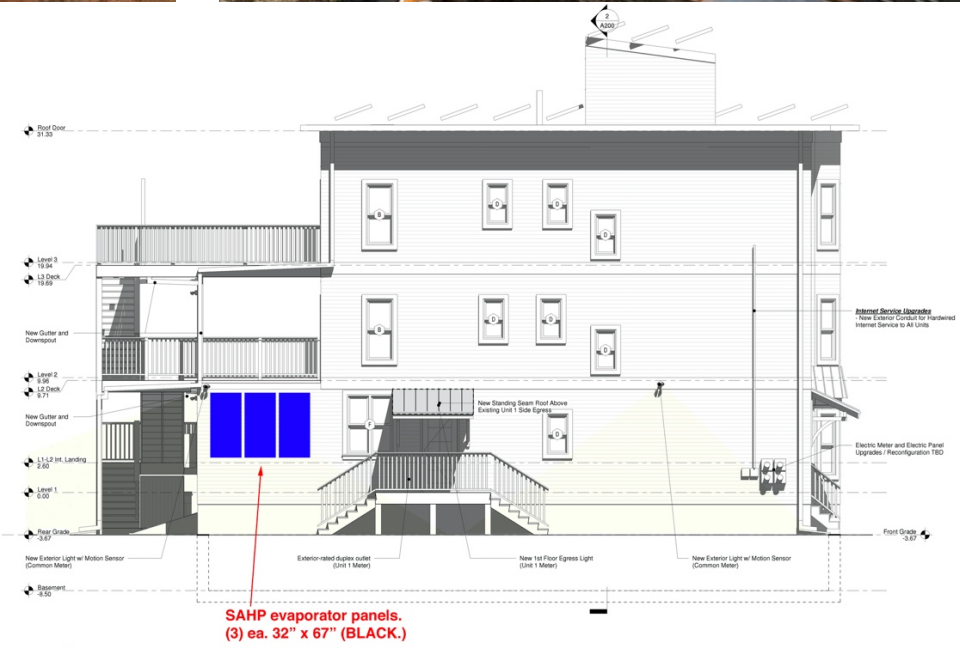
SETTING THE SCENE

OUR second collaboration with Zed Factory sees them utilise our BMTB to not only generate the hot water across their ZEDpods but also made use of the auxiliary coil found within all BMTBs, to heat the 1.5 kWh radiator found in each pod.

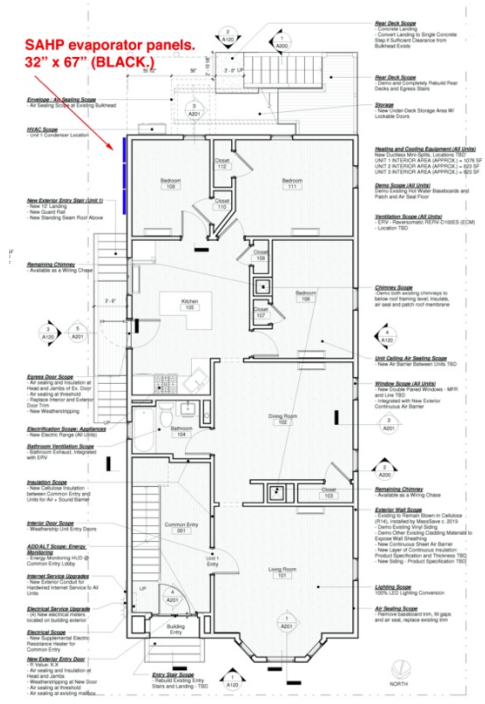
These innovative living spaces offer a low cost, prefabricated, super energy-efficient micro home that maximises land held by a landowner making it multi-functional. ZEDpod provides a clever solution to the challenges of building affordable city homes where land is scarce or expensive. Powered by solar panels, battery storage and our BMTB, the running cost of the home and grid energy demand is minimised.

The way our BMTBs have been built means that they are the perfect solution for these compact homes. Running at only 41 dB has allowed Zed Factory to confidently place them directly behind the sleeping area.

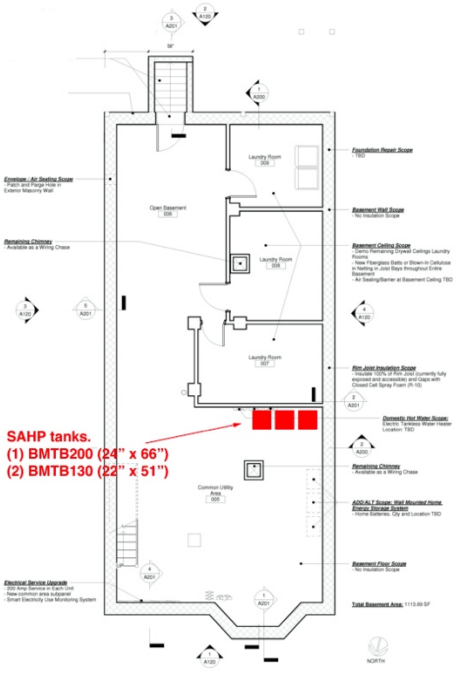




3 Elevation - Left
1/4" = 1'-0"

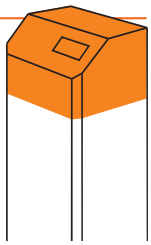


1 Level 1 Plan
1/4" = 1'-0"



0 Basement Plan
1/4" = 1'-0"

USA - New York State



BMTB 200
Domestic family home
2019
USA

SETTING THE SCENE

WE have worked with a number of distributors as we enter the US market, one of our major partners - The Radiant Store - has used our solar assisted heat pump within a new renewable solution to help a homeowner replace their existing fossil fuel heating system with a state of the art, zero emissions heating system using the latest heat pump technologies integrated with systems with solar energy.

The team have partnered a number of technologies, with our SAHP heating the home's water to offer the home a complete zero emission solution

The packaged solution includes radiant heating, domestic water heating and pool heating. The patented technology of the solar assisted heat pump, developed in the UK for water heating adds a significant efficiency boost to an otherwise efficient system, optimising the ratio of heating coming from zero emission renewable sources.