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- Energy Performance
- Design & Planning
- Additions
- Kitchens
- Bathrooms
- Landscape
- Masonry
- Decks

(we also offer philosophy  
& psychology upon request)

## What about windows?

*Written by Paul Eldrenkamp, Byggmeister*

Is this a good time to replace your windows? The short answer is “probably not”, at least not as your first energy improvement measure, or possibly even your second or third.

Damaged or rotten windows should be replaced if they can't reasonably be tuned up, of course, and steel-framed windows are also usually good candidates for replacement. But before you decide to get rid of older wood windows that are in good shape, remember that the difference in performance between an old window with a storm and a new double-pane replacement window with low-e glass and argon infill is relatively small, and the cost per square foot is high.

I'm not saying that older windows don't lose a lot of heat (it can be as much as 20% of the total heat loss of an older home)—I'm saying that what passes for a good replacement window in the US also loses a lot of

heat. Window manufacturers in the US mostly sell double-glazed windows with a low-e coating and uninsulated frames. They take a one-size-fits-all approach—they sell the same window in cooling climates (think Florida) as they do in heating climates (think Massachusetts). This doesn't make a whole lot of sense, needless to say.

The best choice for window replacement in a heating climate is a triple-glazed sash with two low-e coatings and insulated frames. Even better is to specify a higher heat gain coefficient for south-facing windows as for north-facing windows, so that some of your windows can be net energy producers on many cold winter days.

To be honest, these high-performance windows are very expensive in the US. But they likely will go down in price as demand increases. In much of northern Europe, triple glazing is code-required, and the cost of high-performance windows is much lower than in the US as a result. The builder of an extremely high performance house on Martha's Vineyard (built to Passive House standards, in fact) was able to import his windows from Germany for less than he would have had to pay for similar windows built in North America.

If you're not ready to replace your windows with super high-performance units (and I don't blame you), there are ways to get more from what you have. Often old, wood-framed, double-hung windows can be “tuned-up” to perform quite well. Ryan Pirro at [www.restorationwindows.com](http://www.restorationwindows.com) does a great



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# Small projects. Big Impact.

*As Byggmeister lead carpenter, Nick Sabella brings an experienced eye for detail to client projects. Here he gives his insightful take on ways in which small remodels and even maintenance work can have a big impact on a home. He also shares a little bit about his own brand of CSI-inspired work – gadgets included....*



Nick Sabella, Lead Carpenter



Josh Menard, Carpenter



## **Q: Budgets are tight these days. Is that evident in the types of jobs you are doing now?**

Nick: I think there's a preconceived notion that Byggmeister only does large design and renovation jobs, because clients ask us if we could recommend someone to do this or that bit of repair or maintenance. They are surprised when we say we do that kind of work, and we are doing a lot of that for past clients right now. We are also helping some clients who are rethinking big projects due to budget constraints, like a renovation or an addition that we will now scale back to perhaps a kitchen and bath remodel.

## **Q: Are there certain projects that homeowners can do on a smaller budget that can have a big impact on their homes?**

Nick: Absolutely. We did a job last year where we opened up an entryway between kitchen and living room and added built ins to create a family-room environment. What a dramatic change. It totally transformed the way the clients live in the house and use

## **Lead Carpenter, Nick Sabella, suggests budget friendly ways to upgrade your home.**

the space. It opened up this whole room for them and it was relatively inexpensive when you consider that it was just creating an opening and adding cabinetry for the television. It was completed in just a few weeks.

A project like that, we can come in and make small changes that have a big impact, with minimal invasion into the house and then they end up with a whole new living space.

## **Q: What about something like adding or replacing windows?**

Nick: Paul talks about replacement windows for energy savings elsewhere in this newsletter. From a space planning or architectural point of view, though, putting in a bay window with a seat and shelving can add a whole new dimension to a space. It is something a client could consider doing as part of a window replacement project. But, you might think twice before replacing those old double-hung windows because an industry professional we know did a window test and found that a double hung window in good repair with a quality storm window performs about as well as a new replacement window. So, you might want to have us come install storms instead, and we'll check all the sills and frames for rot in case some of them need work. That's

more along the lines of what we call, 'Forensic Remodeling.'

## **'Q: "Forensic Remodeling?"**

Nick: I know, it kind of sounds like I watch too much CSI, right? But, at Byggmeister it means that when we do any kind of repair or maintenance work, we take the original part of the house apart slowly and methodically so we can identify what might be causing a problem, like rot or an ice dam. There have been many occasions where if we had just gone in to make repairs based on our initial assumptions, we would not have solved the problem.

Maintenance projects like that can end up having a big impact because it saves the homeowner money in the long run, either because they won't have to deal with the issue again five years later, or because we made the house more energy efficient.



## **Q: What kind of situation requires "Forensic Remodeling?"**

Nick: Ice dams are a good example. It can be very tricky at first to figure out how water might be traveling once an ice dam is formed. We have actually found water seemingly defying gravity by going up and seeping into the home. When you think about a mound of ice in the gutter that extends to the roof and then rain on top of that with gutters that aren't working properly, that can actually happen. Water follows the path of least resistance.

We have lots of ways to examine something like that. Just like those CSI guys, we have gadgets, like moisture meters and infrared cameras, that help us make a diagnosis and give tangible evidence to a client. The infrared camera is something that we use for energy audits, but it also tells you where the wood is wet because it will be colder than the dry wood. Some people assume that ice dams form because the sun melts snow, but we usually find that the cause is heat escaping from the home. Then we have to figure out why that is happening.



## **Q: So, if you had \$5,000 you could spend on your own home, what project would you do right now? Would it be maintenance or remodeling?**

Nick: Both, really: I had a structural problem on my house, but I fixed it by remodeling a bathroom, and I see a big return on that already. It had one of those Rebath enclosures in it and I didn't feel comfortable with what it might be covering up because often those installations are hiding problems. There were lots of hidden conditions, including rot in an exterior wall, and bad framing. I replaced bad wiring, put in tile, a new vanity, a new toilet and light fixtures. It is beautiful now. I enjoy it everyday and it has a great overall return on the investment.



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job with these window tune-ups, in my opinion—we often recommend him to our clients. Additionally, new storm windows with low-e glass rather than standard glass can have a pretty quick payback. The low-e coating

does impart a slight bluish tint to the glass, you should know up front, but slight quirk is well worth the improved performance. Harvey Industries makes a great storm window with low-e glass.

**This past winter Paul Eldrenkamp became a certified Passive House consultant, the first in New England ([www.passivehouse.us](http://www.passivehouse.us)). After taking a rigorous, 3-part training program in Urbana IL over the course of the summer and fall of 2008, he took the 3-day exam in February and passed by the skin of his teeth (somewhat reminiscent of his college career). Passive House represents a dramatically different design and construction philosophy compared with conventional residential building. One of its most striking aspects is the requirement to design and build to an extremely low energy budget—less than 15% of the energy usage of an average new home in the US. The Passive House Planning Package (PHPP) is an Excel spreadsheet broken up into 35 different worksheets, each modeling a different aspect of a house. It's easy to get lost in all the details, but a fascinating challenge and an important change from business as usual.**



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