

Tankless *Yeah Buts*

Need-to-Knows About Buying A Tankless Water Heater

Go TANKLESS & Avoid Expensive Frustrations

- ▶ Enjoy endless hot water without endless hassles!
- ▶ Learn where other buyers went wrong!
- ▶ Discover what's NOT SAID in sales & marketing hype
- ▶ Understand why "tankless" is not a simple choice even though it's a worthwhile alternative
- ▶ Guarantee "tankless" is a welcome UPGRADE!



Is going tankless as liberating as it sounds?

Is owning a tankless water heater a solid indication that you're saving money and the environment while enjoying endless hot water?

Why is the answer to these questions, "MAYBE"?

Tankless Yeah Buts

Need-to-Knows About Buying a Tankless Water Heater

Catapult Publishing's Official Yeah But ebook Series

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Tankless Yeah Buts

Need-to-Knows About Buying a Tankless Water Heater

Table of Contents

	Page
1. Tankless In Context	1
Tankless Water Heaters Make Sense / 1	
Do Tankless Water Heaters Deliver? / 1	
What Does <i>Tankless Yeah Buts</i> Deliver? / 2	
2. What Is a Water Heater?	2
How a Conventional Hot Water Heater Fails / 3	
How a Tankless Hot Water Heater Is an Improvement /3	
3. Your Home: From Scratch to Retrofit	4
Which Category Best Describes Your Situation? / 4	
4. Where Is The Water Heater?	5
5. Tankless Yeah Buts	6
5a Increased power demand / 6	
5b Net result may not be a gain / 7	
5c Billing disappointment / 7	
5d Pay back calculation / 7	
5e Water intake upgrade / 8	
5f Adequate fuel supply / 8	
5g Venting and noise / 8	
5h Hot water delivery delay / 9	
5i Heating range and capacity / 9	
5j Temperature control / 10	
5k Minimum flow limits and use patterns / 10	
5l Power outages / 11	
5m Maintenance matters / 11	
5n Contract clarity / 11	
6. Set Realistic Expectations	12

7. Shop for Value and Hassle-Free Ownership	13
7a. Which product features indicate quality and value? / 13	
7b. Cost involves more than the price tag. / 13	
7c. What is your insurance company's policy? / 14	
7d. What are the most common tankless problems? / 14	
7e. Are there any grants or rebates? / 15	
7f. What do new owners like and dislike? / 15	
8. What Is Next?	15
9. Government Resources and Information Sources	16
10. Next Edition of <i>Tankless Yeah Buts</i>	17
What more do you need to know? / 17	
In my experience... / 17	
11. New <i>Yeah Buts</i> Topics...Thanks to YOU!	17
12. Glossary	18
13. Catapult Publishing Presents...	19

Tankless Yeah Buts

Need-to-Knows About Buying a Tankless Water Heater

1. Tankless In Context

- ***Is going "tankless" as liberating as it sounds?***
- ***Is owning a tankless water heater a solid indication that you are saving money while reducing environmental damage?***

Tankless Water Heaters Make Sense

They do seem the common-sense approach to hot water: heat the water you use, not gallons of water stored 24/7 waiting to be used. This simple logic makes tankless an attractive hot-water delivery option.

- Conventional water heaters continually heat and reheat a tank of stored water, even when there is no demand, to ensure a fixed amount of hot water is always available for use.
- Tankless units are heaters which quickly and continuously heat water on demand, within the specifications of the unit, as water flows through the device. When flow stops, heating stops.

Technical and cost considerations require decisions beyond selecting this hot-water alternative in a desire to save energy or to help the environment. These two outcomes are not automatic results of tankless installation. The information provided in *Tankless Yeah Buts* and the issues raised here should help you:

- Achieve the savings and environmental goals you set, and
- Reduce the possibility of suffering an inappropriate, unnecessary, or overly-expensive installation.

Do Tankless Water Heaters Deliver?

Tankless do not always deliver on promised savings or even always deliver enough hot water when and where you want it.

If you make sure that your expectations match the hot-water capacity of the chosen unit and the delivery potential of the entire home system, you should receive the savings and hot water you planned on, however:

- The wrong tankless model or over-inflated expectations may lead to disappointment and inconvenience without the desired net savings.
- Unquestioning acceptance of information or advice from a salesperson, installer, or tankless professional may be more expensive than asking a lot of "what if...?" and "why...?" questions and evaluating the answers.

It is up to you to make the difference that counts.

What Does *Tankless Yeah Buts* Deliver?

Tankless Yeah Buts **will**:

1. Help you establish realistic hot-water expectations and understand how to cut through marketing hype to learn the facts about the tankless models available in your area.
2. Guide you in clarifying which product features may be relevant to your situation and needs. This will prepare you to make model evaluations and cost comparisons to determine value from your perspective.

Tankless Yeah Buts **will not**:

1. Tell you which unit to buy since everyone's needs and expectations are different, and choices vary with location.
2. List manufacturers and models available in your neighbourhood. (Manufacturers, retailers, and installers want to be found so they advertise where they think potential buyers would search—that's why the internet and local publications like newspapers, websites, blogs, telephone directories, and renovation guides are valuable. Also check with plumbing supply outlets.)

***Tankless Yeah Buts* offers a clear, common-sense, non-sales view of tankless water heaters to counterbalance the marketing and sales information provided by manufacturers, retailers, and installers. This is not an anti-tankless perspective, but a "buyer be aware" clarification for property owners who want to make an informed decision to buy or not to buy a tankless water heater.**

2. What Is a Hot Water Heater?

Hot water is essential to modern living. Domestic or residential hot water appliances heat potable or potentially-drinkable water (*Do you drink your municipal or well water?*) for domestic use and functions, including cooking, bathing, laundering, and cleaning:

- The two main types are conventional (tank-style) water heaters, and tankless units. A variety of designs and product types are available around the world. Fewer choices exist in Canada than in the United States.
- Heaters are most commonly powered by electricity, natural gas, or oil. Conventional units may also be powered by propane, solar energy, geothermal heating, and other alternative energy sources. These options will become increasingly common for tankless devices.
- High-efficiency models are available for both types of water heaters.

How a Conventional Hot Water Heater Fails

Conventional water heaters consist of a cylindrical tank, usually 40 U.S. gallons (151 litres) or more, standing vertically on end. A heating element, like a natural gas or oil burner, heats cold water and then keeps the water hot. Venting of combustion gases and water vapour to the outside is necessary for units fuelled by natural gas or oil. Energy efficiency varies with manufacturer, model, tank age, insulation, volume, fuel type, and maintenance.

1. Heat loss from the tank requires further energy to reheat the standing water, so that it is ready for use 24/7.
2. Once the tank is emptied by demand, there is a delay while the cold water, which refills the tank, is heated. Often there is only enough hot water for one or two uses at a time. One solution is to rent or buy a larger tank which costs more and uses more energy to keep the larger volume hot between uses.
3. High-efficiency models like power-vented appliances convert up to 98% of fuel energy, but they still keep reheating stored hot water, even when there is no demand, and may be noisier.

How a Tankless Hot Water Heater Is an Improvement

Tankless water heaters are not new, just relatively new to Canadians. These instantaneous or continuous water heating appliances are known by a variety of names around the world. In the United States, tankless units are available in a greater selection of product types and price ranges than in Canada.

Tankless water heaters continuously heat required amounts of water flowing through a heat exchanger. Within the flow rate specified for a model, the supply of hot water is often described as “endless.” When demand stops, the unit stops heating and no further energy is used until the next demand.

A central tankless unit may be used alone or supplemented with small units located in remote bathrooms or near high demand. A tankless water heater consists of:

- A heat exchanger
- Attachment to a water source (intake pipe) and to a fuel source, i.e. natural gas line, electrical connection
- A venting system to safely remove combustion fumes (not on electrical units) from the home.

Tankless problems and complaints usually arise when:

- Expectations are not realistic.
- The wrong model is selected.
- Installation is flawed.
- Upgrades in related appliances and systems are not made to support the modern tankless system.

Costs vary with model and feature, but they are consistently higher than those for conventional tank-style heaters. The range of prices for tankless units is approximately C\$1200 to C\$2000 plus taxes and installation costs, which varies in the manner described in the following Section.

3. Your Home: From Scratch to Retrofit

Your success at ensuring the move to tankless carries valuable benefits to offset the initial cost and installation depends on:

- Good buying decisions, and
- Your home

Which Category Best Describes Your Situation?

From Scratch: Incorporate during the planning stage

Starting from scratch and incorporating energy-efficient, environmentally-friendly systems in the planning stage is always easier, and usually less expensive, than making changes during construction. If your tankless water heating system is designed into the home from the start, then matching manufacturer specifications to achieve the best cost-benefit results should be straightforward.

If your research indicates a conventional water heater will be the best approach for now, consider having tankless water heater capacity “roughed in” to the design to keep your options open and make a future installation easier and less expensive.

Add on: In the works

If your home is currently under construction, changes can be expensive depending on how far work has progressed. The sooner you decide to add a tankless system, the lower the cost of changes should be. Your choice of system will be balanced against the cost of plumbing modifications and other changes required to accommodate the tankless system.

Convert: Replace in a recently-built home

The costs and benefits of tankless water heaters in newer homes can make the conversion to tankless a feasible, if not preferred, alternative to continuing with a conventional tank-style heater. New home construction standards are normally higher than those that existed for homes built in the last century or earlier. New plumbing, electrical, sound-proofing, and other systems can allow optimum installation and operation of tankless water heaters and other modern technologies.

Retrofit: Renovate a decades-old structure

Retrofitting, or adding a modern system to an existing or an older home, can be complicated depending on the construction standards involved, the

budget, and the expectations of property owners. Careful consideration of all costs and compromises is essential to be sure that, if a tankless unit can be installed, it will meet all financial and lifestyle needs.

In retrofit situations, tankless units may not always be practical, cost-effective, or feasible. Retrofitting an existing older home that has outdated plumbing, electrical, and other systems is the most complicated type of application for tankless units.

If you own or want to buy an older property, your commitment to reducing “your footprint” and saving energy may not be enough to make tankless water heaters the right way to achieve your environmental and financial goals. Keep an eye out as new designs and models appear on the market. The ideal unit for your home may just not be available yet.

One of the most important lessons to learn about the current rush toward “green” is that there are just as many inappropriate applications of good ideas and over-sold environmental or energy-efficient solutions as there are “right fits.”

***TIP:** You can still have an energy-efficient, “green” home with a conventional water heater, but you will just have to go about it differently.*

4. Where Is the Water Heater?

Conventional water heaters are usually “put somewhere” in an otherwise unused corner of the basement where they fit without being too visible. That is often in the furnace or laundry room, or in a specially-designed closet, and quite far from second- and third-floor bathrooms.

Tankless water heaters offer more flexibility:

- Tankless water heaters are smaller units without storage tanks and may be wall mounted. These units can be located closer to or in the room with the greatest hot water demand. This reduces the distance hot water must travel to the desired tap or shower head, so it also decreases the wait-time for hot water. When you turn off the tap, the pipes are filled with hot water—shorter pipes mean less money wasted heating water that is not used.
- Central tankless units can be supplemented by one or two small individual tankless water heaters, located in the kitchen, bathrooms, or laundry room, or anywhere hot water is needed.
- Central units are often installed where the original conventional water heater was located:
 - ◇ To reduce plumbing and energy-source installation costs, or
 - ◇ Because the homeowner has not even considered another location.

- Powered by either electricity, natural gas, or oil, the units are connected to their fuel source and the water intake pipe. The latter two fuel types require venting to the outside, either through a chimney or directly. Intake pipe locations and venting requirements may dictate where the unit can be installed.
- Without a storage tank, there is no threat of water damage from a tank rupture, so possible locations increase. However, water pipes do continue to offer leak and rupture threats, so caution is wise.

5. Tankless Yeah Buts

Yeah Buts Perspective: We are pro tankless when the fit is right, but caution property owners because there are many factors that must be “right” to achieve a perfect fit.

In this section, tankless features and issues will reflect the retrofit perspective since this is usually the most expensive and complicated installation situation. Most comments and observations are also relevant to incorporating a tankless system at the home design phase, adding a unit during construction, or converting to tankless in a recently-built house. In this context, our examination of tankless water heaters reveals the majority of buying factors to take into account to achieve the “right fit.”

5a. Increased power demand

Tankless water heaters draw large amounts of energy in comparison to conventional units. The size of the heater is measured in British Thermal Units or B.T.U.s.

Ideally, tankless units are more energy efficient since only immediately and continuously flowing cold water is heated. These “on demand” water heaters require less energy than conventional units which heat and repeatedly reheat a tank of standing water 24/7 every day, whether it is used or not.

Different tankless models have different energy efficiencies and design weaknesses. Ask questions of everyone, including competing manufacturers and installers, so that pros and cons emerge for the models available to you.

Higher efficiency means a higher flow at a given temperature increase and flow rate. High-efficiency condensing units offer greater savings potential, but make sure you understand how your installation and usage differ from that for the manufacturer’s quoted energy-efficiency results. Merely, buying the same unit does not guarantee the same results. Local fuel costs can also cancel out energy savings.

The following items in this list represent many facets of the issues involved in 5a and in the overall decision of whether tankless is the right solution for you and your current property right now.

5b. Net result may not be a gain

“Part of the problem, or part of the solution, is that tank heaters lose their heat to the house....So, even though a conventional water heater does lose heat, it is seen to be heating your house and that is an asset for two thirds of the year,” said Don Fugler, Senior Researcher in Policy and Research for Canada Mortgage and Housing Corporation (CMHC), the national housing agency (www.cmhc.ca). “In Canada, which is more a heating than a cooling climate, tankless is only going to have a third of the advantage that it may have in a cooling climate.”

Fugler reported that expected savings from converting to tankless may not materialize because, while fuel consumption by the water heater may go down, fuel consumption to replace heat to the house may increase. This has been the case for shifts to high-efficiency furnace fans and CFL light bulbs.

Fugler is currently managing CMHC’s initial tankless field project involving homes in two Canadian cities. The research is designed to determine actual savings gained in converting from a well-functioning conventional water heater to a tankless unit. The results will be made public through the website: <http://www.cmhc.ca>

5c. Billing disappointment

Advertisements for tankless water heaters announce savings of 20% to more than 50% of the cost of heating water with a conventional water heater. The quoted percent of savings should be applied to the portion of the gas or electric bill represented by the water heater, not to the entire bill. That may seem obvious, but marketing pitches can confuse the issue. Clarify exactly what stated percentages and numbers refer to when they are quoted to you or appear in sales literature and online.

Do you know how much it costs you each month or year to heat water in your home? With all the charges that are piled confusingly on a gas bill, an absolute savings may not be visible.

Fugler: “It’s not illegal, it’s just expectations. You have to know what your bill is to know if it is going down.” If you expect to save the significant amounts quoted in marketing material, you may be disappointed. Ask for figures relevant to your situation for true comparison and accurate goal setting.

Elevated peak-hour electricity billing rates may eliminate savings for electric tankless units when hot-water demand falls within these deliberately more expensive hours, particularly since tankless units have high energy demands.

5d. Pay back calculation

For the reasons stated above in items 5a to 5c, the quoted pay-back time may be hard to verify for your situation. Installation costs and other factors may increase the *pay back period*, the time period over which tankless savings add up to cover the initial costs involved in switching from a conventional water heater.

Sales representations, promotional websites, and marketing materials normally include best-case scenarios when they quote pay back periods. When hot water bills are high, savings could be more noticeable. With low or conservationist usage, conversion to tankless may make relative savings small and the pay back much longer.

The cost of using borrowed money to go tankless should also be factored into calculations. Interest charges and administrative costs on a home equity loan or mortgage should be included in pay-back calculations. Costs may be more complicated to determine when they are amortized over the life of a mortgage, perhaps over 25 years. Your mortgage broker or lender can assist you, using the computer programs they have at their disposal. Tax credits or deductions may represent cost offsets.

TIP: *It is not essential to undertake this depth of detail in pay-back calculations unless you really want to understand how well your money is working for you. However, considering the additional costs involved in borrowing to buy is a good habit to get into.*

5e. Water intake upgrade

Available water pressure must be sufficient for optimum operation of the tankless unit. To achieve maximum desired flow, particularly to allow two or more simultaneous uses with lots of hot water for each shower, dishwasher load etc., intake pipes may have to be increased to 3/4 inch from the conventional 1/2 inch. In large, high-usage homes, more than one tankless hot water unit may be involved.

Owners of homes with central hot-water heating systems may not find tankless installation cost-effective or feasible.

5f. Adequate fuel supply

Natural gas supply input may need increasing to 3/4 inch pipe to provide adequate pressure and volume to fuel heating of the desired hot water flow. Installations made with smaller pipe may later cause inconsistencies and inconveniences for users.

A comparable cost may be required to upgrade to a larger service panel and add dedicated wiring for installation of an electric tankless unit.

If units powered by other energy sources are available in your area, similar supply issues will have to be addressed in each case.

5g. Venting and noise

Exhaust gases and moisture from natural gas-powered tankless water heaters usually require venting directly outside, not into a chimney. Local by-laws and installation codes dictate these and related details. Improper venting can cause malfunctions and inconsistencies for users.

Proximity to neighbouring homes may cause complaints about noise and condensation, even at allowable distances. Some buildings may be so close to each other, particularly in urban settings, that venting, and, therefore, installation is impossible for some or all types of tankless water heaters. Front and backyard decks and patios may also restrict venting options.

More expensive and higher-efficiency condensing units may offer more venting flexibility, but installation costs and noise levels may increase.

If venting is not possible or cost-effective, an electric unit may be the only tankless alternative available.

□ **5h. Hot water delivery delay**

How long will it take hot water to arrive at your tap? Since water heaters are usually located in the basement, second-floor and higher bathrooms may be a long way off. The water in the pipes is not hot and must be flushed through an open tap before hot water can arrive. Having to run water as long as 5 minutes in a large home before hot water arrives may result in wasted water.

In low-flow and intermittent-use situations, the seconds of delay between the time that flow begins and the point at which flow reaches the unit's threshold and activates heating can be a delivery factor. For dishwashers, washing machines, and other appliance applications this should not cause problems, but if you are impatient when waiting for hot water, you may be frustrated until you get used to the difference.

Low-flow shower heads can increase delivery time. Anti-scald valves like those required in new homes may also interfere with availability of hot water.

TIP: *Recirculation systems, designed to reduce deliver delays, may not be compatible with some tankless units, so check carefully to ensure a retrofit to tankless will not cause more problems than it solves.*

□ **5i. Heating range and capacity**

Tankless units raise water temperature over a range of degrees, or a *heating range*, to transform cold input water into hot water at a desired temperature. The smaller the heating range, the greater the flow of hot water. When the heating range increases, flow decreases.

During winter months, municipal or well water intake temperatures may be very low (less than 10°C). In these situations, quoted heating capacities and the "endless supply of hot water" touted for tankless models may not be consistently achievable.

How long does the low-temperature-intake period, i.e. winter, last in your area? When the intake temperature is lower, the heating range is greater and the capacity of a tankless unit to deliver desired hot-water flow in this situation becomes an important factor in tankless practicality and feasibility.

- When provided with figures on a specific model's heating capacities, ask what the intake temperature was for quoted flow data. Establish achievable expectations for reliable hot-water delivery during cold months.
- If your intake temperature remains low for prolonged periods, select a tankless model which can consistently and reliably service your hot-water demand, even when output is compromised by high heating range. In many areas, intake water temperatures may be low in fall and spring. To achieve adequate year-round hot water availability, local climate realities must be factored into model selection.
Bonus: During warmer months, flow will be higher.
- Your usage pattern may match the quoted maximum and minimum flow for one-at-a-time demand. However, the heating range typical during winters in your area may make selection of a more powerful, two-uses-at-a-time model more appropriate. Cost-benefit analysis and pay-back calculations on this model will make the value of the project clear.
- In your home, what is the typical maximum number of appliances and usages which will demand hot water at the same time? The total of their flow rates must not exceed the flow of hot water available within optimum hot-water delivery for the unit, or water temperature will drop.
- *Drain water heat recovery installations* recycle hot wastewater to warm incoming water and reduce the heating gap. Wastewater piping is spiralled around the cold-water intake pipe. However, this approach may be practical only for those who regularly take long, hot showers, not baths.

5j. Temperature control

During a shower, and other times when constant water temperature is important, how does the tankless model achieve this? Fluctuations in temperature or water pressure during a shower can be frustrating, if not dangerous.

Theoretically, a flow control valve and temperature sensors, or *thermistors*, can maintain stable temperatures, but how effective is the tankless design you are considering? When there are complaints about tankless water heaters, inconsistent shower temperatures are often at the centre of the issues.

5k. Minimum flow limits and use patterns

Tankless heaters have minimum flow limits, so they may not heat water for small draws like rinsing your hands or selecting warmed but not hot water. The latter can be a problem when showering since if flow drops and the heater goes off, cold water will arrive at the shower head.

- What are the minimum flow limits of the models you are considering and how would each affect your usage?
- What can you live with? Some users reportedly turn on a second tap to reach the flow threshold for hot water at the tap where they want low hot-water flow. This is the type of water-waste pattern and other use changes that are of interest in CMHC's current research project.

□ **5l. Power outages**

- Electric tankless hot water heaters will not produce hot water if there is a power outage and may be affected by brown-outs.
- Gas-powered units often have electrical requirements for their controls, so unless the unit has battery back-up, it will not work in a black out.
- What safety precautions are there regarding the gas supply in an outage, particularly a prolonged one?
- How are units reset after a power failure? Is a service visit necessary? If so, what is the typical charge?

□ **5m. Maintenance matters**

What annual maintenance is involved in tankless ownership? Could you do it, or does maintenance require professional expertise and a service charge?

Ask what major problems and related costs are typical over the life of that model. This will help you calculate whether extended warranty is useful. What is covered by warranties and for how long?

□ **5n. Contract clarity**

Read the contract, which may be an order form or a more involved, multi-page agreement. Then, have the salesperson read over the contract with you, explaining in plain language what each clause means. The salesperson is usually not present at installation, so make sure the paperwork clearly describes the work to be done and how it is to be done. This is your proof of exactly what you are paying for.

Do not let anyone make you feel uncomfortable about being very specific. Make no excuses for your thoroughness. Unscrupulous salespeople count on embarrassment and intimidation to get a signature on their order. If you are not sure, insist on clarification. This is your money, your home, and it will be your tankless system for the next decade or more. This is the time to get the details right and set the tone for installation.

Make sure the description of “the work” includes every detail you have discussed, negotiated, and agreed on. Clarify all costs, fees, and payments. The paper you sign is not the contract, but evidence that a contract exists.

Anything you have arranged separately and have not included in writing, may or may not be done—that’s when unpleasantness may begin. Once again, to prevent misunderstandings, hassles, and disagreements later, ensure every detail is clearly explained in writing *before* you sign.

Ideally, also have the other party sign and date their signature. Make sure you have an original copy and keep it safe.

TIP: *Make a few clear photocopies to refer to during installation.*

Tankless Yeah Buts In Summary

Which of the factors outlined in 5a to 5n in the list above seem most significant in your situation and from your point of view?

Review these issues relative to different manufacturers and models of tankless water heaters. Prioritize them. Information is provided here to make it easier for you to ask questions and to question the answers while shopping for a tankless unit. Remember, there are no stupid questions. Manufacturers, salespeople, installers, and tankless professionals are the experts, not you. If any one of them cannot completely and thoroughly answer your questions and concerns, *why not?*

Beware of assumptions. Too many times, it is the questions you do not ask that leave problems for you to discover and live with later.

6. Set Realistic Expectations

What do you expect from a tankless hot water heater?

The Typical Hot Water Goal:

- Hot water *when* I/we want it
- Hot water *where* I/we want it, and
- As much* hot water as I/we want.

Quantify and qualify this goal to describe your specific needs and you will have an easier time finding the right fit for your needs, budget, and expectations. The questions below may assist in clarification:

- For a typical week, how much hot water does your household use and when?**
 - How many people and uses place demands on your hot water heater? Will that change in the near future? For instance, cold-water laundry use is replacing hot to save energy and reduce damage to clothing.
 - How often are demands simultaneous? Would you expect to run the dishwasher, have a long hot shower, and have hot water at any tap in the house all at the same time?
 - How does your household's use change with the seasons?
 - What possible increased use may arise in the future?

TIP: Keep a notepad and pencil beside each appliance and tap for a week and record the time and duration of hot water use. You may be surprised at the results. Experienced plumbers and tankless installers may also offer suggestions to determine the correct model match for your hot-water usage and expectations, taking all the other factors into account.

How much do you expect to save on energy costs?

- How did you arrive at this percentage or figure?
- Why do you feel this figure is realistic?

What pay back period is realistic?

A *pay back period* is the length of time it takes for savings to add up to the original cost of the tankless installation, i.e. for the unit to pay for itself through savings gained.

- What length of time makes sense in view of your current financial situation and the number of years you expect to own the property?

Work backwards from this time. What annual and monthly energy savings would be required to achieve this pay back period? Working the pay back out like this can open up a productive line of discussion with the manufacturer, salesperson, or installer. You already know what your current energy costs are.

This should help you establish a reasonable pay back period for a specific model installed in your home, with your usage pattern. Then you can decide if this is adequate to meet your needs.

- If the pay back period were much longer than you expect, how would that affect your decision?

These are your goals and expectations, so as long as you are satisfied, that is what matters.

7. Shop for Value and Hassle-Free Ownership

Apply the following savvy approaches when purchasing a tankless water heater and you will minimize disappointments and maximize returns on acquired knowledge:

7a. Which product features indicate quality and value?

As a manufacturer's model price increases, which of the added features represent true value from your point of view, and which have little significance for you or seem like marketing hype?

Clarify your short and long-term goals before you shop. Carry your written goals and questions with you, so you can accurately and consistently evaluate product features.

7b. Cost involves more than the price tag.

- What costs must be added to the price of the main tankless unit?
- Can the cost be negotiated or optional features added at no or low cost?
- What will installation (i.e. wiring, plumbing, ventilation) cost and who will carry it out?

- How soon after the contract is signed will installation take place?
- Will there be additional charges to insure sufficient natural gas or electricity supply?
- Who will inspect all work to ensure appropriate standards are met?
- When will payment be required?
- [Add questions which are unique to your needs and situation.]

TIP: *Do the math...If you rented a conventional water heater for ten or fifteen years, i.e. the life of the unit, that would approximately represent the cost of buying a new tankless water heater. So...?*

7c. What is your insurance company's policy?

Your insurance company's policy on the age and warranty life of water heaters may be more significant than the actual life of a conventional or tankless unit:

- Even when a system or appliance continues to function effectively, after a period of time, your insurance company can require replacement. Tankless hot water heaters reportedly last longer than conventional units. What is the track record for the model you selected?
- If you do not install a new unit when told to, the insurance company may limit coverage or cancel your policy. This is particularly true for conventional water heaters as an aging tank carries rupture risks.
- If you file a claim for damage in the area of the house where the offending unit is located, your claim may be reduced or denied under the excuse that the damage may have been caused by that equipment's failure.

Verify which criteria, if any, your insurer uses to determine replacement timing for tankless water heaters. Request the insurance company's ruling in writing—it may not help against an insurance edict, but it could provide negotiation leverage.

7d. What are the most common tankless problems?

- What are the most common breakages, failures, or failings for this system or the main unit? Service departments and repair professionals can be useful contacts as is the internet.
- If you have an older model washing machine or dishwasher, will a tankless hot water source affect it's function or life span?
- When you know which repairs are common, when they usually occur, and how much they cost, you can refine your definition of value. For instance, how often is descaling or removal of mineral deposits necessary to maintain optimum operation?
- Are extended warranty programs worthwhile?

- How could your maintenance approach lengthen operational life and improve efficiency?

□ **7e. Are there any grants or rebates?**

Advertisements and promotions for tankless water heaters often refer to grants or rebates. Make sure you are eligible for the bonus they refer to before you get swept up in the process. If you do qualify, do not let this government or manufacturer benefit take the place of negotiating a good price with the tankless seller.

Are there any government programs or manufacturer specials that the seller does not mention? See *Government Resources and Information Sources* (9) below for ongoing research, government program details, and other information on tankless water heaters.

TIP: Read "Government Programs Worth the Effort But Check Details" for ideas on dealing with eligibility for government programs.

□ **7f. What do new owners like and dislike?**

What do new owners like and dislike about their tankless purchase once they have lived with it a while? The internet can help with your search for real-life feedback. Tankless manufacturers, retailers, and installers can provide you with satisfied customers to talk to. Be prepared with your questions when you do have an opportunity to talk to a seasoned tankless user. For instance:

- Did projections of hot water availability differ from real delivery?
- You lived with a conventional unit for a decade or so. Is the tankless water heater noticeably noisier?

Invest in knowledge in advance of a purchase, or regret in hindsight... your choice. Learn enough to know when a salesperson or installer has genuine experience and knowledge to share with you. Do not rely on salespeople or installers to make decisions for you.

Buyer beware is the law.

Buyer be aware is the solution.

8. What Is Next?

- *Is going "tankless" as liberating as it sounds?*
- *Is owning a tankless water heater a solid indication that you are saving money while reducing environmental damage?*

The answer to these two questions, originally asked on page 1, is: "Yes, it should be if you achieve the right fit between all your needs and tankless capacity."

Tankless water heaters, still relatively new to Canadians, are currently expensive to purchase and install in Canada. Over time, these and other issues will be resolved through technological advances and government regulation. New designs will eliminate short-comings and expand applications. The selection of types and models of tankless water heaters will increase and this competition will bring prices down. Property owners will learn how to successfully buy and maintain tankless systems.

Over the decades ahead, high-efficiency tankless water heaters will replace conventional tank-style water heaters and become “the new normal” when it comes to hot water.

9. Government Resources and Information Sources

- **Canada Mortgage and Housing Corporation (CMHC)**

<http://www.cmhc.ca>

Don Fugler, Senior Researcher in Policy and Research at CMHC:

“Basically, what we hear is that tankless water heaters do save energy in a lot of cases, but what is not necessarily established so far, is what people should expect. It is probably different from the theoretical savings—that you just calculate based on efficiencies. What house usage is unlikely to get significant savings? The fact [is] that water heater usage or homeowner draws on hot water are a lot different in reality than they are modelled in standards. This makes a difference because the way they are modelled in standards actually benefits tankless water heaters. I don’t think they set it up this way, it just does.”

- **National Research Council (NRC)**

<http://www.nrc-cnrc.gc.ca>

“NRC helps Canadian companies take new technologies to market. Through research collaborations and partnerships, community innovation, industry support and commercialization opportunities, Canadian firms benefit from our expertise and technologies while increasing their own innovation potential.” NRC offers a comprehensive suite of research, technology testing, and business support services: <http://www.nrc-cnrc.gc.ca/eng/business/index.html>

- **National Resources Canada (NRCan)**

<http://www.nrcan-rncan.gc.ca/com>

“Natural Resources Canada connects you with the latest information about smarter energy use, market analysis and energy policy.” Energy is a major focus for NRCan and its involvement includes Energy Efficiency, Energy Sources, Renewable Energy, and related policy areas. The NRCan Office of Energy Efficiency (<http://oee.nrcan.gc.ca/residential/personal/index.cfm>) shares money-saving tips, energy consumption guides, details on Energy Star standards, detailed how-to publications, and news about grants and incentives.

10. Next Edition of *Tankless Yeah Buts*

- **What more do you need to know?**

Send us a question, complaint, or suggestion about buying or owning a tankless water heater system. If it is included in the next edition of *Tankless Yeah Buts*, we'll send you a free copy of the next edition or of another *Yeah Buts* ebook. Names will be withheld or included depending on your submission request:

Priority@CatapultPublishing.com

- **In my experience...**

Please share your tankless success story or your tankless horror saga with us so other property owners can benefit. If your contribution is included in the next edition of *Tankless Yeah Buts*, we'll send you a free copy of that next edition or another *Yeah Buts* ebook. Names will be withheld or included depending on your submission request:

Priority@CatapultPublishing.com

11. New *Yeah Buts* Topics...Thanks to YOU!

What About...?

- What products or services have you stumped when it is time to buy or sign up? We would like to give you the inside track...
- We are looking for new relevant topics for the next *Yeah Buts* ebooks in this consumer-friendly, low-cost/high-value ebook Series!
- What recent purchase has left you dissatisfied because you are learning the hard way that you did not understand all the issues when you bought? If there had only been a *Yeah Buts* ebook on...

If you found this *Yeah Buts* ebook helpful, do you have a suggestion for another product or service that needs the *Yeah Buts* insider-for-outsiders treatment to level the shopping-field for consumers?

Please tell us what you think... *Priority@CatapultPublishing.com*

Be the first one to suggest a topic which becomes a *Yeah Buts* and we will dedicate it to you and send you a free copy!

12. Glossary

Ampere or amp — an electrical unit of current representing electricity flow.

B.T.U. or British Thermal Unit — the energy required to raise the temperature by one degree Fahrenheit (F°) for one pound of water. The U.S. standardized heating unit is a *therm* which is equal to 100,000 B.T.U.

Conventional water heaters — a cylindrical tank, usually 40 U.S. gallons (151 litres) or more, standing vertically on end. A heating element, like a natural gas or oil burner, heats cold water and then keeps the water hot. Venting of combustion gases and water vapour to the outside is necessary for units fuelled by natural gas or oil. Energy efficiency varies with manufacturer, model, tank age, insulation, volume, fuel type, and maintenance.

Cost-benefit analysis — either a formal method of appraising a project or proposal, or an informal approach to decision making. In both cases, total calculated costs are weighed against total projected benefits to choose the best approach or product.

Delta-T — the change (indicated by the greek symbol delta Δ) in water temperature. There is a theoretical maximum capacity of any heat exchanger, based on the delta-T and flow rates of the fluids on each side of it.

Drain water heat recovery installations — these plumbing systems recycle hot wastewater to warm up incoming water and reduce the heating gap. Wastewater piping is spiralled around the cold-water intake pipe.

Heat exchanger — a device that exchanges heat from one heat-conducting medium to another whether they are in contact or not, depending on the design and function of the device.

Heating range — range of water temperature degrees over which tankless units heat water to transform cold input water into hot water at a desired temperature. The smaller the heating range, the greater the flow of hot water.

Pay back period — the length of time it takes for savings to add up to the original cost of the tankless installation, i.e. for the unit to pay for itself through the savings gained.

Retrofitting — adding a modern system or systems to an existing or an older home, cottage or other building.

Tankless water heaters — appliances which continuously heat required amounts of water flowing through a heat exchanger. Within the flow rate specified for a model, the supply of hot water is often described as “endless.” When demand stops, the unit stops heating and no further energy is used until the next demand.

Thermistors — temperature sensors

U.S. gallon — approximately 3.8 litres (3.7854 litres)

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Success with your "tankless" research and decisions!

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