CLEAN CITIES RESEARCH

Working in the Same Direction

Perspectives on Building Electrification

Conversations with Practitioners in Mechanical Engineering, HVAC Installation and Supply, and Property Management in Greater Victoria



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EcoAnalytics

A project of MakeWay

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COVER PHOTO: AERIAL OF VICTORIA, BC BY DIANE BENTLEY RAYMOND, ISTOCK

Executive Summary

Background

Between June and September 2026, the Clean Cities Research Project interviewed building sector practitioners across Greater Victoria and southern Vancouver Island. The goal was to gather candid perspectives on building electrification, assess sector readiness, and identify practical and systemic barriers to decarbonization policy implementation. These interviews and analysis build on EcoAnalytics' Clean Cities Research Project (2025–26), expanding on the interviews conducted with building contractors and developers in British Columbia's Lower Mainland.

This study gathered insights from 11 key practitioners in Victoria and southern Vancouver Island across four core industry sectors:

- **Mechanical Engineering:** four participants (including one written submission) representing consulting firms, commercial projects, institutional buildings, and heritage retrofits.
- **HVAC Contracting & Gas Fitting:** four contractors ranging from dedicated heat pump installers to hydronic gas fitters and full mechanical firms.
- **HVAC Supply & Distribution:** one province-wide equipment distributor.
- **Property Management:** two firms managing purpose-built market rental housing stock.

Key Findings

The professionals interviewed were not opposed to electrification per se. Most accepted the goal and appreciated the aspiration to decarbonize buildings. Not surprisingly, HVAC installers who specialized in electric heat pumps were particularly enthusiastic about it. What elicited more controversial and complex responses was delivery: the cost and uncertainty of getting electrical capacity, the stop-start pattern of rebates, the quality of the workforce, the difficulty of retrofitting older rental buildings, and the gap between government messaging and what happens on a job site.

Key findings include:

- **Erratic rebate policies have damaged the market** they were once meant to build.
- **Older rental and strata buildings face multiple cost and logistical barriers** that current programs do not address.
- **Electrical capacity is where projects often stall**, and BC Hydro is widely experienced as a gatekeeper or an obstacle rather than a partner or facilitator.
- **Practitioners are divided over the role of natural gas**, with their viewpoints

apparently heavily influenced by their business models, views on cold-weather performance, and by information and incentives offered by FortisBC.

- **Installation quality, inadequate training and inspections and customer satisfaction are a leading concern** for established heat pump contractors.
- **FortisBC is widely seen as winning the communications battle**, and practitioners trust peers, suppliers and associations far more than the government.
- **Significant opportunities may lie beyond the single building**, in district energy, waste heat and coordinated load management.

Key Takeaways

Three themes ran through most of the interviews:

- **Predictability:** Contractors described a market whipsawed by rebates that arrived quickly and ended abruptly, and owners described rules and targets they were not confident would stay in place.
- **Gap between the single building and the system around it:** Electrical capacity, the cost of service upgrades and the experience of dealing with BC Hydro were recurring barriers. Engineers argued that many building-level problems — space, noise, capacity, backup heat — could be addressed more efficiently at a larger scale, through district energy, waste heat recovery or coordinated management of peak loads.
- **Trust:** Practitioners rely on suppliers, peers and associations far more than on governments or utilities, and several felt that their feedback to government is not sought, not valued, and not heeded. FortisBC's active presence with contractors and clients, set against BC Hydro's more passive posture, is shaping how parts of the trade understand issues such as grid capacity, the need for gas backup in residential settings and the reality of renewable natural gas. Installation quality also relates to trust in the long term: established contractors worry that poor installs, enabled by light certification and little inspection, will damage the technology's reputation with the public.

These findings come from a small sample, but they offer some direction, and some insight into where policy attention could be most useful:

- Incentives designed for the long term rather than in bursts
- BC Hydro treating building electrification as business it wants;
- Higher certification and inspection standards for residential installs;
- Practical support for small rental and strata owners facing a single, unfamiliar decision; and
- Closer alignment between levels of government and the agencies that deliver programs.

Introduction: About this Research

EcoAnalytics is a non-profit market research project on the shared platform of MakeWay. Its Clean Cities Project brings together diverse municipal perspectives in BC and Ontario to better understand how local actors can mobilize public support in aid of better municipal climate policies. The project has a special emphasis on building decarbonization. As such, interviews were conducted by James Glave in 2025 with 20 building developers and contractors in the Lower Mainland and Okanagan and in 2026 with building owners and operators in Ontario. In the summer of 2026, Tyee Bridge conducted 11 interviews with building stakeholders (HVAC suppliers and installers, mechanical engineers and property managers) in Victoria to expand on the insights gleaned in these earlier interviews. Together these three reports shed light on the network of stakeholders in the housing industry. They reveal perspectives, challenges and opportunities that many advocating for municipal climate policies have not always been aware of, but can be mindful of and incorporate into future advocacy, communications and mobilization work.

What We Asked

Some of the areas we asked participants to share included:

- How they read the mood in their sector toward building electrification, and where they stand personally on it, including how they would react to being required to replace end-of-life gas equipment with electric.
- What stands in the way: capital and operating costs, electrical capacity in the building and on the grid, space and design, and who would gain or lose if governments moved more firmly away from natural gas.
- How electrification rules could be made more workable, through phasing, avoiding both a patchwork and a one-size-fits-all approach, and fixing the barriers they see as most important.
- How prepared they feel they are to install and run all-electric systems, and which non-financial supports and financing options would help.
- Where they get their information, who they trust for a reality check, and what governments most often get wrong.

Interviews followed a common guide but were adapted to each respondent's role, so not every respondent addressed every point.

Who We Interviewed

Code	Sector	Description
ENG-1	Mechanical engineering	Principal of a Victoria consulting firm; multifamily and commercial
ENG-2	Mechanical engineering	Consulting engineer; institutional, public and heritage buildings
ENG-3	Mechanical engineering	Mechanical project manager; schools and institutional projects
ENG-4	Mechanical engineering	Semi-retired engineer (brief written submission)
HVAC-1	HVAC / gas fitting	Owner of a small hydronic and gas-fitting contractor
HVAC-2	HVAC installer	Long-established residential heat pump installer
HVAC-3	HVAC installer	Large residential and commercial contractor
HVAC-4	HVAC / mechanical	Full mechanical contractor; residential, multifamily, commercial
SUP-1	HVAC supply	Equipment distributor working province-wide
PM-1	Rental property management	Victoria rental property management firm (two participants)
PM-2	Rental property management	Rental property management

All responses are anonymized and identified by a sector code as above (e.g. ENG-1 or HVAC-3). The report follows the five themes of the interview guide: Foundational Perspectives, Operational and Economic Impact, Barriers and Solutions, Supports and Readiness, and Communication and Trust. Responses from mechanical engineers and HVAC installers naturally tended toward the technical realities of implementing electrification at the home or building level. We have included some of this "reality check" material in the body text, as it may be useful or foundational to engaging with these sectors. (A good deal more of it is available in the Appendix under Technical Considerations and Recommendations.)

As noted above, these are findings from a small sample of respondents who nevertheless generally have deep sector expertise as well as experience in the Greater Victoria area. Given the general difficulty encountered in setting up conversations with practitioners in these sectors, and the relative rarity of opportunities to ask them questions of this nature — in conversations that lasted from 35 to 90 minutes — we have erred on the side of giving their direct quotations a considerable amount of room.

How to Use This Report

The report is tiered, so readers can scan for an overview or read practitioners' perspectives in their own words. The section and sector summaries combine overarching themes with specific points raised by respondents, while the quotations drawn from conversations offer more specificity, nuance and impact. This means there is some inevitable repetition between summary sections and the quoted material.

- **Section summaries.** Each of the five main sections opens with a short summary of what we heard across all sectors. The five sections are: Foundational Perspectives, Operational and Economic Impact, Barriers and Solutions, Supports and Readiness and Communications and Trust.
- **Sector summaries.** Within each section, a few paragraphs for each sector (mechanical engineering, HVAC, supply and property management) give more detail on that sector's views.
- **Quotations.** Selected quotations follow each sector summary. They give respondents' views in their own words, and the most specific detail.
- **Appendix: Additional Perspectives by Topic.** The Appendix collects further quotations and is intended as a reference. Due to the large amount of input collected across 10 interviews and one written submission, not all points raised in the summaries are backed up by quotations. The Appendix organizes this supplementary material by topic and subtopic, so readers can scan for diverse subjects ranging from technical matters to policy, such as views on water heating or rebate administration.

1. Foundational Perspectives

On a scale of 1 (negative) to 5 (positive), what number would you give to sum up the feeling in your sector about the push toward building electrification? And where does it land for you personally, in terms of your take on it?

The interviews opened with a broad orientation question, and the answers set the tone for much of what follows. Support for the goal of electrification was present even among respondents who placed their own industry on the negative side of the spectrum; but on the flip side, heat pump installers who rated their sector highest still had serious complaints about how the transition is being managed. What divided respondents was not whether buildings should move away from gas, but how fast, at whose expense, and with what infrastructure behind it.

Attitudes mainly tracked business models and who pays. Contractors who have built their businesses around heat pumps were enthusiastic; those whose revenue depends to some significant degree on gas, and building owners who would carry the capital cost, were not. Several respondents explained their colleagues' views in exactly these terms, rather than in terms of beliefs or assumptions about the urgency of responding to climate change.

As noted, those who opposed mandates (some of them vehemently) still said they supported the direction. Most seemed to agree that electrification was a reasonable goal in theory based on the need for decarbonization, but the "how it gets done" aspect was contentious. The strongest reactions came from the hypothetical end-of-life replacement requirement, with objections centring on cost, electrical capacity, the limitations inherent in existing buildings, and the absence of funding to match the requirement.

Even engineers strongly committed to electrification doubted that a blanket mandate on existing buildings could work. The alternatives respondents raised — a firm standard for new construction, staged pathways for existing buildings, and district-scale infrastructure — are explored in the sections that follow.

Ratings at a Glance

Code	Sector mood (1–5)	Own position (1–5)
ENG-1	3.5 to 4.5	4
ENG-2	"Depends": people supplying & installing electrical are positive, people paying for it are more negative	3
ENG-3	3.5	4
ENG-4	—	—
HVAC-1	1	3
HVAC-2	4	5
HVAC-3	4	5
HVAC-4	4	3
SUP-1	3	3
PM-1	1 to 2	"Supportive of direction, not implementation"
PM-2	3	The need: 5; regulation as the means: "negative 100"

From the Mechanical Engineering Sector

Engineers were the most consistently positive group, placing their field between 3 and 4.5 out of 5, and all four support the goal. But their enthusiasm comes with a professional caveat: electrification is harder engineering.

- **Precision, not forgiveness**. A gas system forgives oversizing, while an electric system has to be sized precisely, and mistakes are expensive. That, more than ideology, seems to explain the generational split ENG-1 describes: younger engineers are energized by the design challenge, while some senior practitioners stay with what they know.
- **Clients lean toward gas.** Clients pull in the same direction as the senior practitioners, because gas is still cheaper to install.
- **Different routes.** ENG-1 sees new construction as the decisive arena, because the servicing choices made at the start lock a building in for its whole life. ENG-2 and ENG-3 frame the question as financial and site-specific: the goal is right, but current policy does not fit the realities of many existing buildings.
- **Political will.** ENG-4, writing from outside day-to-day practice, worries less about technique than about whether political will can last long enough for any of it to matter.

ENG-1 estimated his sector at 3.5 to 4.5, and stressed that this is not an average, but rather reflects a polarized field in which a small group resists and most are keen.

> It's a tough one, because there's a spread, right? It's not really a uniform opinion... I think the majority are quite pro-electrification, and then there's probably the more senior, legacy folks who've been in the industry, and they either struggle with looking at new technologies, or they're comfortable with gas. I mean, gas is very easy to design. You can provide something that's 10 times oversized, and no one bats an eye at it. Electrification requires more precise engineering calculation, higher risk. So I think some people are more uncomfortable with it.
>
> A lot of clients, obviously, would prefer gas. It's cheaper to install so there's less friction on the consulting side to go with it. As a result, you get a few people who are happy to stick with gas, because it's the easy path, and then the majority, especially the younger engineers, are motivated for electrification. They find it exciting — new technologies, sustainable design, emission-free buildings. — ENG-1

He also sees early signs of demand shifting, and credited the province's emissions-level standard for new buildings[1] with giving the industry a clear target.

> I've talked to a developer, and at first he's like, "I want gas this, gas that." But then we talk later and he says to me, "Well, I went to a council or a public hearing, and the residents are saying they don't want gas, they want an electrified building." And so, I don't know if it's quite at the point where people who are buying condos are looking at the emissions from that condo, but when we talk to them about it, there's becoming more awareness of that. — ENG-1

His own position was unambiguous, and he drew a sharp line between new construction and retrofits.

> Oh, yeah, I'd love to see everything electrified. It's a no-brainer, as far as I'm concerned. There's free power from the sun, wind, these are renewable resources... even nuclear. — ENG-1

> Retrofits are great in theory, but new construction is where it's at. As soon as you put in the servicing — electric and gas — you're kind of almost married to that. It's really tough to go the other way. You've made your bed in many ways. So for these new buildings, keep them off of gas, get a good electrical service in, and then for the 80 years or whatever it's standing, they're going to stay that way. — ENG-1

ENG-2 was more measured, rating his own position a 3, "neutral, but leaning positive." He felt that electrification is the right goal but that execution is not yet calibrated to practical realities. His framing was less about personal enthusiasm than about the gap between policy ambition and what can actually be delivered on a given site, and he saw attitudes in his field as a function of who pays.

> I would say a 3. Neutral, but leaning positive... because I know that's a good — it's a good idea. I think the execution could be better.
>
> Once you get to the guys that have to pay for the things, they're definitely in the negative side. People selling equipment are going to be on the positive side.... overall, the general public thinks that [electrification] is a good practice to kind of combat global warming. Everyone knows that it's a good environmental reason. That doesn't necessarily mean that people are going to love having to spend more money to do that. — ENG-2

His main objection was to any requirement that treats the transition as all-or-nothing.

> What you don't want to have is some regulation come out that's kind of an all-or-nothing approach, where most logical people are going to know that this transition is not going to be something that's going to happen overnight... Each scenario has to use the goal of electrification, but maybe move toward that, not do it all at once. Because it's not... at least on the mechanical side, it's not something that can be done easily in one piece often. — ENG-2

ENG-3 described sustainability as the reason he entered the field:

> One of the whole reasons I got into this field is the sustainability angle... it's something I've always been adamant about and interested in. — ENG-3

He put the sector at 3 to 4, and framed the question as financial rather than technical. He has electrified his own home, but found an end-of-life mandate unrealistic for many existing buildings, particularly public buildings in older neighbourhoods.

> From a technical perspective, though, I laugh at the idea of simply mandating a switch because there are major infrastructural problems with doing that. One of the best examples is your average elementary school. It's in a residential neighbourhood, and residential neighbourhoods tend to only have single-phase power, which caps you at, I think it's 800 amps, which isn't enough to heat an elementary school, so they've got boilers for that. — ENG-3

> The problem is, if they say "You've got to change it," now that's several hundred thousand dollars, because you can't go any bigger than that — you'd need three-phase power, which means a new power station, which means new substations. That's one of the big challenges, is that so many projects would require fundamental changes in the architecture. These are grid-level changes, not a change at the level of a pole or a panel or "Oh, we're just running a new wire" — no, this is from the substation back. — ENG-3

ENG-4, a semi-retired engineer who sent a brief written message, strongly supports zero-carbon requirements for buildings but is deeply concerned about whether political will in Canada can sustain them. He described a long pattern of climate progress being reversed by electoral change.

> In certain cities and urban areas, the burning of gas in homes and businesses accounts for more than 50% of local emissions.[2] I understand that Zero Carbon mandates are coming for buildings and that Victoria requires the highest ZCSC level. This is excellent, but here's what concerns me: I have witnessed the pendulum swing from Joe Clark promoting a gas tax; Stéphane Dion making climate the centre of his bid to be Prime Minister, and Gordon Campbell's extraordinary success with a Carbon Tax, to a decade where the son of an Exxon exec was Prime Minister; Pierre Poilievre being 30 points ahead in polls prior to Trump tariffs, and BC going full-in on LNG.
>
> To date, there is no practical way to stopping global warming that does not involve Net Zero Emissions. Fossil fuels cannot remain the perceived foundation of our economy. I hope your work supports electrification, and that it helps educate. — ENG-4

He also cited polling showing declining public concern about climate change, including among young Canadians.

> The portion of Canadians who rank climate and the environment among the top three issues is dropping. Only half of Canadians (and dropping) think that climate change is driven by human activity.[3] — ENG-4

From the HVAC Sector

HVAC respondents produced the widest spread of views. Several explained the pattern themselves: tradespeople trained on gas find it easier to stay with what they know.

- **Heat pump specialists placed their trade at 4 and themselves at 5.** Their reservations were not about whether to electrify, but about whether the trade is doing it well and whether government is committed to it. That concern about installation quality runs through later sections of this report.
- **Gas fitters and full mechanical contractors diverged.** The gas-fitting side of the trade sat at 1, and full mechanical contractors who install both gas and electric equipment held more conditional views. Their recurring reservation, shared by HVAC-1, was the grid: HVAC-1 and HVAC-4 both asked where the electricity will come from.

HVAC-1's firm specializes in hydronic heating, mostly with gas boilers. Its furnace work has been displaced by heat pumps, and its interest in electrification centres on air-to-water systems. He placed his trade at a highly negative 1 and himself in the middle at 3, and attributed his trade's view directly to what it hears from FortisBC about grid capacity.

> "I've been to a lot of FortisBC seminars on this, and the vibes from FortisBC are... I mean, they're willing to work with Hydro on electrification and on rebate programs and things like that, but they certainly will be the first to point out how there's not enough electricity to completely switch everyone over 100 percent away from natural gas and other fuel sources. So I would say within the industry, it's probably a 1. Me, personally, in my business, we're more like a 3. We're always willing to work on new technology and stuff. — HVAC-1

His reaction to an end-of-life requirement was blunt, and he proposed a hybrid model instead.

> "Quite honestly — are we talking out of both sides of our mouth right now? We're going put more data centres across this province, across the country. Our main leadership at the top of our entire country right now is talking about bringing in AI and attracting data centres. Well, what do they use up? They use up electricity — a ton of electricity. And we just built Site C, and it's not going to meet capacity.[4] So my feelings toward it are: good luck. But that's a terrible idea for the energy landscape of our province.
>
> So I think — I've been saying this for years — every home should be like a hybrid vehicle, where you use electricity until you can't, and then you have gas as a backup. Don't completely electrify and force everyone to rely on the grid. Who knows? Maybe we'll see rolling blackouts eventually because we don't have the electricity capacity to meet the needs we're forcing on the grid... It's a nice idea for sure, a really nice idea. I consider myself personally environmentally conscious, even though I'm a gas fitter. But I think we have to be realistic. — HVAC-1

He rejected the common characterization of gas fitters as opponents of electrification.

> "I think they think that, as a gas fitter, we all are not open to new technology, or that we want to keep everyone on natural gas because it's good for business. But that's not my mindset at all. I just have a realistic and practical mindset about it. And even FortisBC, I think they've been pretty cooperative with CleanBC and BC Hydro with how they've designed rebate programs for combination systems that use heat pumps and gas furnaces. — HVAC-1

> I think the gas-fitting industry gets kind of a bad rap for being dinosaurs who want to keep everyone in the dark ages of using fossil fuels and being against electrification — which is not the case. I'm not against it at all. I have children. I know the energy landscape future of this province is not looking great for their generation unless we increase and diversify our grid. — HVAC-1

Heat pump specialists were far more positive. HVAC-2, a long-established residential installer, put his trade at "a strong 4" and himself at 5. He explained the remaining resistance in terms of training, and in the same breath raised the quality concern that runs through his interview.

> A lot of folks in plumbing and heating, their expertise is more in natural gas heating as opposed to heat pump systems... that's basically what they know. Now there's a bunch of people entering the sector on the heat pump side that aren't totally familiar with the equipment and the process, and they don't necessarily know how to properly set it up, start it up, and size it. They just say, I have a box here and a box there, run a couple of pipes between them, and it'll work — well, yeah, it does, but it might not work properly. — HVAC-2

His frustration was not with the goal but with what he sees as government backing away from it under pressure from the gas utility.

> It's kind of funny what happened — there was a mandate to move totally away from natural gas and fossil fuels by the year 2030, or reduce it by 30 percent by 2030.[5] Well, they weren't on track, not even close. But then Fortis grows a stink, because their business is going down. And now, all of a sudden, Fortis is giving rebates to have dual-fuel systems. So it's kind of like, on one hand, the direction by government was to go totally electrification, and then we get one fuel producer like Fortis saying, hey, what about our sales? And now they're reintroducing dual fuel. We don't promote dual fuel at all — people have got to ask for it, because I personally don't think, here on the island, we need dual fuel. — HVAC-2

HVAC-3, who runs a large residential and commercial contractor, also gave his trade a 4 and himself a 5. He argued that the case for heat pumps in the local climate has strengthened as the equipment has improved.

> I think electrification is great. I think natural gas is a backup source. If we're talking residentially, in people's homes, electrification with heat pumps makes the most sense in our climate here in BC, and it's the right thing to do with all the hydroelectric power we produce in BC. That obviously changes in some demographics across Canada, but if we're talking about Victoria, BC, that's my view on it... You get a lot of people who still love gas, and gas is great, it definitely has its purpose in a lot of places. — HVAC-3

> I think it's getting far better. People didn't like heat pumps previously, call it 10 years ago, when you had to have backup heaters on everything, that didn't make as much sense, why not just go gas at that point. Whereas now we've got low-ambient heating units that will heat all the way down to minus 20 degrees, where you're not going to need any backup source at all in Victoria. It makes so much sense. And the product's getting better always — better warranties, better longevity, heat pumps are evolving the further along we go. So I think it's going to make more sense long term, for everybody in Victoria to have heat pumps. — HVAC-3

HVAC-4, a mechanical contractor who works in a wide variety of building types — residential, multifamily and commercial buildings — rated himself a 3 and described his peers as "leaning positive" (recorded as a 4 in the chart). His reservation was about the source of the power, and he opposed a replacement mandate for large buildings unless the infrastructure to support it exists, and the sources of energy are clean as well.

> Where's the electricity all coming from?... Going to electrification only works so far, you've got to look at the source, where that power's coming from... I don't know offhand the numbers on grid production for all of North America — how much of what's coming from natural gas and oil, fossil fuel, versus green, you could say, or nuclear, wherever that lands... If you want to actually go electric, you've got to get the whole continent to do it.[6] — HVAC-4

> We do a lot of commercial buildings, full mechanical systems, installation, service, maintenance, everything, and just the sheer capacity we need for, say, domestic hot water systems... So for the capacity, it just comes back to the electricity. Where is that electricity coming from?... And also the space you need for that many air-to-water heat pumps.
>
> I think with district energy — if you could have a district energy system, then you could go all-electric everything, you could have heat transfer through the whole city. That's what I think. But it doesn't make sense to go legislating an electrification shift like that, where you've got to swap out if you don't have a source that makes sense. Unless there's big infrastructure for large district energy systems — then heat pumps become by far the best method of heating. — HVAC-4

From the Supply Sector

Suppliers have a unique vantage point, as they are consistently in touch with contractors across the province. SUP-1 put the trade at "about a 3."

- **Attitudes follow business models.** Like several contractors, he said heat pump specialists want the transition to go faster, while full mechanical firms with large gas businesses want it slowed.
- **The customer's view.** Many homeowners simply want to keep their furnace and add air conditioning, he said, and some builders report that gas bans in select municipalities have driven up costs where more electrical capacity has to be brought in.
- **Where policy lands.** He credits BC's incentives with making it a national leader in heat pump sales, but expects a replacement mandate to fail in older apartment buildings, where BC Hydro upgrade costs would be passed on in rents.

SUP-1 was the most positive respondent about what BC has already achieved, crediting incentives with putting the province well ahead of others.

> "I would say a lot of the guys—and with my current role, I travel all through BC—I'd say it's about a 3. Not terrible, but not great. There's still heavy areas that rely on natural gas, and a lot of homeowners just want to keep their furnace and add an AC coil with an outdoor unit.
>
> Same thing for some of the builders. They've shared that being forced not to use natural gas in brand-new builds in select municipalities has kind of tied their hands, because it drives up costs, depending on where they are, to bring more Hydro capacity in. — SUP-1

> "But then the full-heat-pump guys say it can't happen fast enough. So it depends who you talk to. If a guy's built his business around being fully electric and heat pumps, he's like, bring it on. The full mechanical guys who do both heat pumps and gas work are more like, slow the gas phase-out down a little—it's a huge portion of our business, and it sucks to go into a homeowner's house when there's nothing wrong with the furnace and say, "There's no rebate on this side, but if you buy a brand-new heat pump, we can do this." So I'd say it's both. — SUP-1

> "BC did such a great job getting thousands of people to have high-efficiency heat pumps over the last probably six-plus years. It's been amazing to see. We have guys in Alberta, Manitoba, Saskatchewan, and they're not even close to selling anywhere near the volume of heat pumps that BC does. Yes, it was incentivized, but on the flip side, we're market miles ahead of those other provinces for being a cleaner province. — SUP-1

Asked about an end-of-life replacement requirement, he pointed to older apartment buildings.

> I think it would be hard. One of the markets we've tried to really monitor is the older apartments with natural gas that want to move to a rooftop RTU — a heat pump version — instead of gas. And the cost from BC Hydro to upgrade the power to the building, they've just said, "We can't do it." So if we're forced to do it, we're going to have to raise rent by hundreds of dollars per resident.
>
> We've even seen, in certain areas around BC, panels that are still 70-amp, and to go to a heat pump, the cost from BC Hydro to upgrade the whole line to the street is dramatic. So it's also forcing some people not to do it. I think there needs to be a real kid-glove approach with BC Hydro and each municipality on what works best for them. I don't think one-size-fits-all would really work. — SUP-1

From the Property Management Sector

Property management respondents gave the lowest sector ratings outside the gas-fitting trade, but they also drew the clearest line between the goal and the means. Neither opposed electrification as a goal, but both saw profound issues facing implementation.

- **Regulation ahead of funding.** What those in property management opposed was regulation that arrives before funding, in a sector that operates under rent control, faces rising taxes and insurance, and manages an older building stock that is expensive to change.
- **"Big stick, small carrot."** Requirements are escalating, and the financial and operational supports needed to meet them are not keeping pace.
- **Who the owners are.** PM-2, whose answers often described the rental sector as a whole, characterized owners as conservative, often older, busy, and in most cases small operators who may only ever do one retrofit.
- **Stretched, whatever their views.** Owners range from keen to firmly opposed, PM-2 said, but nearly all face rising costs, heavy workloads and limited capacity. In his view, regulation will push them away rather than bring them along.

PM-1 (two participants from a single company, treated as one respondent) placed the sector at 1 to 2: supportive of the direction, but overwhelmed by implementation.

> 1, maybe 2, because I'm supportive of the movement, but the administrative and the fiscal costs of it are a tall order, with kind of the whole 'big stick, small carrot' being the current incentive route for all of these things... it's a nice idea. And I think we're all moving collectively in that direction. But it's not practical the way that it's being implemented. It's actually really punitive. And impractical. It's not going to lead to good building management. — PM-1

PM-2 gave a "solid 3."

> Well, I think you're dealing with a pretty conservative sector as it is, and I tend to lean that direction myself. Some of the owners are older. The sector has high workloads, so they don't have time to be digging into new technology. And if you're dealing with something more complicated, that changes how they're doing things—it's barrier after barrier after barrier.
>
> Some of them are very keen, though, and looking at the technology. I think this is true of any sector: some are running into the barriers and they're like, "Hell no." Some are running into the barriers, but they're still looking at the opportunities that technology like AI might bring. But no matter where it comes down, we're dealing with a sector with rising operating costs, high workloads, capacity constraints, knowledge constraints. We're asking them to do a lot. — PM-2

He drew a sharp distinction between the need for retrofits and the use of regulation to force them.

> I guess there's two things, right? There's, do we need to do it? Yes, definitely. If you're saying, do we need to do these retrofits, I'd say we're dealing with a five. Do we need regulation to make it happen? I'd say negative 100.
>
> The regulations are just going to push people away from this. It's a numbers game for me, too, right? Say I've got a building with a boiler. I go like-for-like, I take out the boilers and put in new boilers, that's 50K. I electrify that, that's 500, 600K. Plus I don't know how to operate those. Plus it's probably going to run into electrical capacity issues, which is going to cost me another million dollars. So regulating it is the wrong approach. — PM-2

> I think you're dealing with two groups that are constrained, right? Owners and tenants. The reality is this sector is housing two-thirds of our low-income households. So we can't raise rents. Well—we can... But the reality is the owners and tenants are struggling, so we need to find different ways to do things. And I think that's where the City of Victoria's leadership really shines, right? The property tax exemption program.[7] If we can layer that on with selling carbon, layer that on with federal programs, with utility incentive programs... We tend to zoom in and focus on electrifying gas, or adding cooling, but I think there's a process to getting where we want to go. — PM-2

2. Operational and Economic Impact

Looking beyond equipment cost, what other issues need to be worked out? What negative consequences could electric-only systems cause in the buildings you work with? And who would benefit, and who would be disadvantaged, if regulators moved more assertively away from natural gas?

When discussion turned to the operational and economic realities of building electrification, the common thread was that the economics of electrification are complicated — much more complicated than they tend to appear in public communications — with significant hidden costs that are not properly acknowledged.

The cost picture depends on the building. In new construction and single-family homes, the cost gap between electric and gas is narrowing, and contractors described heat pumps as close to cost-competitive, especially once a household also wants cooling. In existing multi-unit buildings, and above all in older multi-unit residential buildings (MURBs) with central hot water heating, the costs pile up: equipment, electrical service upgrades, conversion of heating distribution systems to lower temperatures, and other factors. Respondents' examples put electrification of a central system at four to ten times the cost of a like-for-like boiler replacement, before any electrical upgrade.

In rental housing, the "split incentive" between owners and tenants means that costs and savings often land on different people: the owner who pays for an efficiency upgrade to heat pumps or other HVAC technology will not see any upside from lowered tenant utility bills. A related, opposing issue is that converting from central to in-suite heating can shift heating costs from owners to tenants. Unlike landlords in Alberta, Saskatchewan and Newfoundland, landlords in British Columbia are constrained in how much they can raise rents in order to recoup costs for renovations and upgrades.[8]

Respondents' disagreements in this section were mostly about specific equipment and about resilience in outages, not about the size of the challenge. Taken together, their input suggests that electrification policy designed around the easiest building cases will fail in the hardest ones — and that the hardest cases make up a large share of the region's existing building stock.

From the Mechanical Engineering Sector

Engineers gave the most detailed account of where the costs actually come from.

- **Strata boiler replacements.** Electrifying a central gas boiler costs four to five times as much as replacing it like for like. Operating costs can favour a heat pump over time, but the payback is far longer than the planning horizon of a volunteer strata council, and without financing to bridge the gap the case is very hard to make (ENG-1).
- **Hydronic conversions.** Many older buildings distribute heat through hot water at temperatures heat pumps cannot efficiently reach. Converting them means lowering the temperature of the whole system, which can mean replacing every radiator and, in older MURBs, moving tenants out for asbestos remediation (ENG-2, ENG-3).
- **Space, weight and noise.** Electrified hydronic systems often need larger storage tanks, more space, stronger structure and more attention to noise (ENG-2).
- **Budgets and hybrids.** In the public sector, annual budgets that cannot be combined across years force projects to be cut down to fit. A hybrid approach, with a heat pump as the primary source and modest gas backup and trim, can contain costs in new buildings and retrofits; ENG-2 argued it may cut more emissions overall than all-or-nothing rules that lead owners to abandon electrification. Section 3 returns to this.
- **Code and running costs.** The way the electrical code calculates loads can favour in-suite systems over central ones, and simple electric options can be cheap to install but expensive to run; whether that matters depends on who pays the bills (ENG-1).
- **Heat pumps versus boilers.** Heat pumps roughly match gas on operating cost but cost more up front. The economics break down in buildings that need high-temperature water (ENG-3).

ENG-1 described the capital cost problem facing strata councils, where a motivated few must convince everyone else.

> “Strata councils come in, and they want to do it, and that’s great… a few people in the strata council propose it to everybody else, and it’s like, “Well, it’s $100,000 to replace our gas boiler, or it’s $400,000 or $500,000 to put in an electrified system, and it potentially is less reliable, or requires more maintenance.” So it’s tough. There’s a lot of cons there…. Operating-cost-wise it might be cheaper. But the capital costs are substantial to do this well. It’s not really a good business decision for them. It’s hard to really tell them there are many benefits other than the GHG reduction. So it’s tough to see widespread implementation of it without a financial benefit or something like that. — ENG-1

ENG-2 framed the overall cost question as a conflict between government goals.

> Air conditioning and electrification is making everything more expensive. I guess the point I made before was you have kind of fighting agendas here with the government. You have affordability as a concern and issue, and then you have this move for buildings to be more resilient toward climate change, whether that's reduction of greenhouse gas or setting them up for dealing with storms, redundancy, dealing with overheating conditions, extreme climate. That stuff's not free. — ENG-2

Asked who would win and lose if regulators moved more assertively away from gas, he argued that the likeliest loser is the emissions goal itself, if requirements make projects too expensive to proceed.

> My stance has always been, I don't think you can really go all or nothing, necessarily... The best way to look at it is going to be suited to the project and actually doing engineering versus doing politics... If we had some more flexibility there, it would actually greenlight a lot more projects to go forward.
>
> If the goal is to reduce carbon emissions, is it a benefit to take a building and then make it so expensive for that person to do it that they never do it, and they run that building on gas for the rest of its life, because they can just replace like-for-like? Very often, that ends up how it goes. They say, "Oh, I don't have the money to do that, so I'm just going to do like-for-like replacements." — ENG-2

From the HVAC Sector

HVAC contractors spoke mostly at the scale of individual homes, where the cost gap between gas and electric is smaller and decisions are made one household at a time.

- **Cooling changes the math.** Once a homeowner also wants cooling, a heat pump costs about the same as a gas furnace and air conditioner together (HVAC-3).
- **Specific obstacles.** Contractors pointed to limited panel space and service capacity in older houses, equipment they don't trust, and rebate rules that shape what gets installed.
- **Heat pump water heaters.** Two installers steer customers away from them, despite their place in electrification programs, because of cost, tank life and performance indoors.[9]
- **Backup heat.** Rebate-driven conversions that remove working gas furnaces leave households with a single heat source that can fail in winter while a part is on order (HVAC-4). HVAC-2 countered the argument that gas protects against outages: a gas furnace also needs electricity to run.

HVAC-3 said that in a single-family home the cost comparison depends on whether the owner also wants cooling, and that gas still has a place in large buildings and big open spaces.

> If you're talking about just a residential gas furnace being swapped for a heat pump, the heat pump's going to be slightly more expensive. But if you have a gas furnace and need cooling too, you're going with a gas furnace plus an air conditioner, or a heat pump — then those two choices are basically fairly even. The gas side's actually probably more expensive. — HVAC-3

> If you've got a large building with a hundred people living in it, trying to do all the domestic hot water on electric, that's probably not going to make sense... And say you've got a big industrial warehouse shop. You get in there first thing, you're working, you just want to heat it up, then shut it off for the rest of the night. That makes more sense for a gas application. You've got a big warehouse with a lot of volume, you want to get that warm right away, right now, gas is just faster... I don't love the electrical service you'd need to heat a big massive space electrically. — HVAC-3

He described a public-sector electrification project in which the client stopped removal of the gas piping partway through.

> In the scope of the plans was to remove all the natural gas piping within the building, which we started to do, and we got stopped halfway through. We were told to leave that gas piping in, just in case they wanted to switch back... I think it's to do with the fact that they're worried it's going to be more expensive on electricity than on gas. — HVAC-3

Asked who would win and lose as gas is replaced by electricity, HVAC-4 argued that in the end governments will foot the bill, one way or another.

> There'd be two groups. There'd be the group that has no way to afford any of it — so then the government would just have to pay for the whole thing, that'd be one group. And the other group would be the ones who could afford to pay for the upgrades, and they'd probably figure out ways to work it out with carbon reductions and rebate paperwork. I think at the end of the day, government's paying the bill. If they come in and say, "Hey everyone, you've got to go off this," no one's really going to do it unless it's, "Okay, we'll pay for the whole thing too, because we want you to be electric." — HVAC-4

HVAC-1 also argued that income-tested rebates exclude the very homeowners who might convert older hydronic systems.[10]

> There are a lot of houses in Greater Victoria that are on old gas or old oil boiler systems with those big cast-iron radiators. A lot of the heritage homes around here have those. There is technology, an air-to-water heat pump, that can do hydronics. Maybe incentivize some of those people to move to air-to-water systems. There are rebates available for that technology, but you have to be income-qualifying. Once you make $100,000 a year, you basically don't qualify. And I don't know anyone that owns a house in Victoria that doesn't make more than $100,000 a year, because you can't afford to own a house if you don't. — HVAC-1

From the Supply Sector

SUP-1 saw two groups as most exposed if gas were phased out.

- **Owners of boiler-heated homes and buildings.** They would face much higher running costs with electric boilers.
- **Buyers of new homes.** All-electric designs push up electrical service sizes and costs.

In SUP-1's view the only clear winner of a move toward electrification would be BC Hydro.

> I think the people who'd feel it the most would be the homeowner forced off gas. If you had to take out your gas boiler and put in an electric boiler, your Hydro costs would absolutely quadruple to run it versus a gas boiler. The winner would be BC Hydro. More people are putting in electric car chargers, on top of wanting to change to electric boilers and go to heat pumps, on top of all-electric appliances like induction stoves — chatting with some builders, they're saying some panels just can't handle it. So new houses are looking at very steep electrical costs on the installation side, which drives up the cost of the build. — SUP-1

His concern about homes heated with hot water echoes a point ENG-3 made about larger buildings: swapping a gas boiler for an electric boiler is the simplest electric replacement, but it is also by far the most expensive to run.[11]

> So new construction costs would rise, but homeowners' bills would rise too, if they're heating their in-floor with an electric boiler versus gas. There are some scary thoughts there for some people — especially the Lower Mainland, there are a lot of boilers there, and a lot that aren't ready to be replaced anytime soon... If it's not broken, they don't fix it. And then to have to switch to an electric boiler just because of code or municipal changes, that cost is astronomical. Then to see that first hydro bill come in over the winter, heating your house through in-floor heat — it's drastic. — SUP-1

From the Property Management Sector

For the property management respondents, the economic case for electrification retrofits is very hard to make in older MURBs from the 1970s and 1980s, which make up much of the region's rental stock.

- **Compounding costs.** Abatement, capital cost gaps, undersized electrical service, rent control and income-qualified rebate programs combine to make voluntary retrofitting a non-starter.
- **Scale and lead time.** PM-1 called building-wide electrification of their existing stock "virtually untenable," with a year of administrative and engineering work before any construction.
- **Abatement with tenants in place.** Any work that opens walls, floors or ceilings in buildings of that era triggers hazardous-materials abatement, unit by unit, which can disrupt tenancy.
- **No financial buffer.** Rent increases are capped[12] while property taxes, insurance and water costs are rising steeply.

PM-1 described retrofits to existing rental buildings as close to impossible under current conditions.

> It just depends on the scale. If it's, like, building-wide and every single unit is then required, then it's virtually untenable. The building can no longer really exist. It would just not be feasible. And even if we were to then receive massive incentive packages to kind of lighten the load fiscally, it's still going to be a great overhaul. There'll be just so much administrative engineering and administrative load. Even before bringing a project of that magnitude to fruition, it would take at least a year. — PM-1

> If we're dealing with hazardous materials, we're then dealing with abatement situations on a unit-to-unit level, which could then impact tenancy. You're really ripping apart the guts of a building. A building that was built during a time when vermiculite and asbestos was used in construction... If you think about the majority of our older building stock, it was all built in the 1970s MURB program. So we're talking about the same building technology across our region anyway... Every piece of construction needs to be abated. When you get into the guts of the building, the electrical, you're ripping apart a wall, tearing up a floor or ceilings, you're abating. — PM-1

> We're very restricted in our industry as well with rent control. So, you know, we have property taxes and insurance going up gangbusters year over year, and we're limited to this year to a 2.3 percent increase... It's not landlords really that are running away scot-free with all this rent. Most of it goes to costs that we have no control over. And no ability to recoup... And then utility costs, like, whether it's water, gas, and electric. Water has been incredibly punitive. — PM-1

In new construction, PM-1 said an all-electric requirement had cost tenants space and raised their utility bills, pushed the firm toward in-suite equipment they consider unproven, and removed the backup systems they prefer. Their understanding is that code does not allow a gas or diesel backup generator in an all-electric building.[13]

> We would have been able to give them a lot more space, and their utility costs would have been a lot lower if we'd been able to bring gas to the building. — PM-1

> From our property management philosophy, we like to have multiple backup systems in order to be able to deal with, like, a major building system going down, and we do not have that with an electrical, all-electric building... If there's a power outage, you know, everything stops. Because traditionally speaking, you would at least be allowed to have, say, a gas backup or a diesel backup generator in the case of a failed power outage, which we are not actually able to do. — PM-1

PM-2 described a step-by-step path that starts with reducing the heat a building generates or absorbs, so that a smaller and cheaper heat pump will do.

> So within a building, we have the lighting producing a ton of heat that's not necessary. We have heat traces running year-round. We have domestic hot water systems on a 24-hour-a-day loop. There are so many things running all day just dumping heat into our buildings, 24 hours a day, seven days a week, 365 days a year. So one of the lowest-hanging fruits is just to deal with those.
>
> They do a simple retrofit, they get it, they save money, then they're like, "What's next?" And next doesn't have to be heat pumps. Next could be window shades... The beauty of that is now you need a smaller heat pump. And heat pumps, the cost increases are exponential. As the size goes up, the cost increases exponentially. So if you can pull the size down by reducing your load, all of a sudden the cost-benefit for the heat pump gets better and better. — PM-2

PM-2 went on to explain how converting central heating to in-suite heat pumps shifts costs from owner to tenant.

> Depending on how you do it, you can go from a central space heating system to distributed, where you put heat pumps in all the suites. If you're doing that, you need to adjust everyone's rent. Because now, in situation one, rent is paying for the central heating. If you just distribute the pumps to all the tenants, their rent needs to be reduced, because they're paying for their own heating... It's just headache after headache, in some ways.

Dealing with these challenges is made more difficult in a system where municipal bylaws and tenancy law do not line up, said PM-2.

> Right now, if you just get rid of your central system and go to heat pumps, the owner would benefit and the tenants wouldn't. So when we're dealing with the regulations, we need all of the levels of government on the same page, each saying, "This is my lever to pull." The Ministry of Housing needs to look at the Residential Tenancy Branch and the Residential Tenancy Act (RTA) and say, "This is the process to adjust rents." The municipalities need to say, "This is how the regulation triggers, so that this whole thing works." The federal government needs to do their pieces around property tax, investment tax credits, things like that. Right now we've got this patchwork of municipalities implementing thermal regulation bylaws... But those bylaws don't work with the RTA. So the two regulators are doing totally different things, and the sector is stuck in the middle as the big loser. And ultimately, the biggest loser, of course, is the tenant. — PM-2

3. Barriers and Solutions

How much of an issue is electrical capacity, in the building and on the wider grid? What other barriers stand out, and how could they be reduced? How can regulators avoid both a patchwork and a one-size-fits-all approach, and what would make electrification requirements more palatable?

Asked what stands in the way of electrification, respondents most often pointed to the cost and uncertainty of getting more power into a building. For engineers, the supplier and the rental sector, this was the most common deal-breaker. A building's electrical service grows in steps, and at some point a step becomes a cliff, such as the jump from a pad-mounted transformer to a substation.

BC Hydro was widely described as slow, rigid and reactive in these situations, and its relative passivity was repeatedly contrasted with FortisBC's active cultivation of gas customers. Several respondents saw this cultural and operational difference between the two utilities as a systemic barrier, with real consequences for which energy source building owners choose.

The second major barrier was the incentive system. HVAC respondents and the supplier described several years of generous rebates that built the residential heat pump market, followed by an abrupt narrowing to income-qualified households that cut sales, stranded new entrants and left established firms competing on price. Paperwork, delayed payments and frequent rule changes added to the frustration, though larger and smaller firms experienced these very differently. In the rental sector, the problem was framed less as a lack of funding than as a tangled situation where programs do not work together.

Solutions generally revolved around flexibility over all-or-nothing rules. Engineers made the case for hybrid systems, in which a heat pump carries most of the load and a small gas boiler covers the coldest days, as a way to shrink equipment, electrical service and cost. In their view this may achieve more emissions reduction overall than requirements that lead owners to give up and replace their equipment like-for-like.

Others proposed incentives on a sliding scale, assessments done building by building or area by area, multi-year plans for high-emitting buildings, and a stable long-term pathway of the kind the Step Code provided for new construction. But not everyone wanted a lighter touch. One engineer argued that the provincial emissions standard for new buildings has worked precisely because it is mandatory. Several also proposed system-level solutions: district energy, waste heat from data centres, generator-based peak shaving, time-of-use pricing, and reducing a building's heat load before sizing a heat pump.

From the Mechanical Engineering Sector

Engineers described electrical capacity as a constraint that shapes design decisions, and one that is growing: the 2024 BC Building Code's requirement that new dwelling units have at least one room that can be kept cool has added to the load.[14]

- **Hybrid design.** ENG-2 described sizing a heat pump to carry most of the year, with a small gas boiler for the coldest days. This shrinks both the heat pump and the electrical service, and adds redundancy. He favours it in new buildings as well as retrofits, and noted that FortisBC rebates support it.
- **A utility that is hard to work with.** ENG-1 called BC Hydro "a major roadblock in development" and contrasted it with FortisBC, which he said makes getting gas easy and actively sells it. A change in the utility's attitude to customer service, and to facilitating building-level electrification, was a strong theme.
- **Other recommendations.** A firm provincial emissions standard (ENG-1); sliding-scale incentives and staged, building-specific plans (ENG-2); and district-scale solutions that would address many building-level problems at once (ENG-2, ENG-3).

ENG-2 described the point at which electrical upgrades stop a project.

> "Even though you want to electrify the building, it doesn't mean that you can... It just becomes not financially possible to do. It more or less kills the job, making it not viable to go forward... There's a certain point in a building where you jump between a pad-mounted transformer and needing a substation. And that is something developers definitely want to avoid, if they can help it, if they're on that limit. — ENG-2

ENG-3 gave an example from a current project where the size of the electrical service decided the design.

> "If we use natural gas boilers as backup — even though they'd only be used a couple percent of the year — it's about a $300,000 difference, because one option needs just a pad-mounted transformer and the other needs a substation. So going one way versus the other is $300,000 — and if you ask any school district, would you rather have a bigger metal box outside your school, or good seats for your gym? Especially when the difference is between a 91% emissions reduction and a 93% reduction, the choice in those cases is to go with the backup gas. — ENG-3

ENG-2 made the fullest case for hybrid systems.

> A lot of the negatives that come along with electrification can be reduced significantly by incorporating some level of gas... And I'm not saying that that's going to be your primary solution, but I would say that you prioritize your electric in whatever way the building, or site, or budget, can handle. If you've got unlimited budget, then maybe you can just go for it. But oftentimes there's restrictions, so what allows us to move the scale between fully gas and fully electric... it's basically using a hybrid.... But that just allows, like, cutting 30% off the plant size. If I had it my way, I would probably do that all the time — ENG-2

ENG-1 described BC Hydro as a major obstacle in development.

> One huge hurdle is BC Hydro. And I know they have different departments but my understanding is working with them on developments is very difficult. They're very particular—and I get it, they have their standards—but I don't get the impression that they're super collaborative. So you kind of get the government saying "Do this, do this, this is what we're promoting," but BC Hydro in general is widely regarded as a major roadblock in development. I'm sure they have the reasons, but you can't bring a second service to a building, or upgrading services are difficult.
>
> You're building a whole building, and all Hydro's doing is connecting to a pole outside, into a small room inside, 100 feet away. And that whole process is the longest and biggest hurdle of the whole project. It's bad. — ENG-1

He contrasted BC Hydro's approach with FortisBC's.

> You call Fortis and you want gas, it's like a $25 install at a house.[15] I don't know what it is for commercial, but they're basically doing it for free. And then you talk to Hydro and it's a nightmare. If Hydro had a retrofit specialist, basically like Fortis does—Fortis has a guy driving around town selling gas to everybody he possibly can, right? You get someone doing that for Hydro, and things change a lot. Like, "Hey, you guys have 400-amp service, your boiler's 20 years old, what are you doing with that? Here are your options." But they don't push anything. You have to pull everything from them.
>
> So if you want to upgrade, first you need to figure out how much more service you need, then you have to hire an electrical engineer, then you have to make it happen, then you have to fight with them about how to make it happen, and then they're like, "We're not going to do it, because X, Y, and Z, and you don't have a pole here, and you already have a service there, and we're maxed out there." There's obviously no motivation on their end to make it work. It's very bureaucratic. You can see the difference between Fortis and Hydro. It's systemic, right? — ENG-1

ENG-3 described BC Hydro's limit on customer generation forcing a net-zero design to be scaled back.[16]

> One challenge we ran into on a recent project is how BC Hydro's structured: they limit you to 100 kilowatts of onsite generation. We designed a [new public-sector building] and needed more than 100 kilowatts of photovoltaic to be completely net zero... BC Hydro says you can put in 100 kilowatts, but anything more than that, you have to go through a different regulatory process that takes several months and costs over a hundred thousand dollars — I think it was $200,000 or so — and after that they may just come back and say no.
>
> So what we did is put in a hundred kilowatts and said, "Okay, fine," even though we could have done more. It was just the bureaucracy that prevented it. Everything was designed for the full capacity, it's all laid out — but with this regulatory issue, we were like, "We don't have six months for them to figure it out." — ENG-3

ENG-2 argued that requirements and incentives should recognize differences between areas.

> It's not a secret that some areas are short on power. Certain regions are going to be more set up to accept electrification, and some areas going to be needing the gas a bit more. I think there needs to be more area-based incentives. I'm pretty sure both downtown Victoria with heritage buildings and Colwood being completely new development, they're under the same regulations... But clearly, engineering-wise, there's a completely different way to approach those two buildings, and one is going to be way more difficult to make a huge jump. — ENG-2

For existing buildings, ENG-2 described a staged approach in which each step prepares for the next, and a planning requirement modelled on the continuing-education plans engineers file each year. ENG-1 took a firmer line on new construction, arguing for a province-wide emissions standard rather than leaving the choice to small municipalities, and for low-cost financing tied to performance.[17]

> We've got a ton of mini-municipalities, and they're so small, they just have difficulty implementing contentious stuff like that. So just mandating the EL3 — just do it, and it'll have a huge impact. If they want to go above and beyond, incentive programs have always been huge... Like the CMHC program, where they provided long-term low-cost financing for rental buildings in exchange for Step 3. That was huge. Developers clamoured all over that... So if you make the hook "Go EL4, and here's cheap money," the government still gets paid that money back, and it's kind of a win-win.[18]

> So when interest rates went up, and CMHC programs got more difficult, we saw a lot of development on our end kind of get put on hold. Very subtle things seem to make a big difference in this industry, especially with the economics being so turbulent. So you get tariffs, then an interest rate increase, then one of these programs gets killed, and all of a sudden a lot of building goes on hold. — **ENG-1**

> The policy method seems to be the most effective. Some people kick and scream, but once they start doing it, they're fine with it. They get used to it. People just don't like change, is what it comes down to. — ENG-1

From the HVAC Sector

For HVAC contractors, the dominant barrier was not electrical capacity but the rebate system, and how they experienced it depended heavily on the size of the firm.

- **A small firm's view.** HVAC-1, who runs a small shop, called the paperwork the single biggest frustration of his work, and argued that rebate income thresholds make them available only to people who do not own homes in Victoria.
- **A large firm's view.** HVAC-3 described the damage done by stop-start funding: rebates drew new entrants into the trade, the money stopped, and established firms were left competing on price against them, now in commercial work as well. He reported a sharp drop in profitability, payments held for months and rebates reduced after the work was done.
- **No rebates at all?** HVAC-2 went further, saying he would not be upset if residential rebates ended, because in his opinion they now pull buyers toward the cheapest equipment.
- **Dual fuel.** Contractors were divided. HVAC-1 and HVAC-4 favour hybrid systems, HVAC-1 for winter peaks and HVAC-4 as the best system available for a home. HVAC-3 supports dual fuel for commercial rooftop units, which perform poorly as heat pumps in cold weather. HVAC-2 regards dual fuel for homes in this climate as unnecessary, and sees the rebates that now favour it as a policy reversal.
- **Capacity in houses and condos.** Older homes often have 100-amp service, and in a condo building one owner's request for a heat pump can require an electrical survey of the whole building. Load-shedding devices can help, but add cost. HVAC-3 suggested starting with buildings that have already completed an electrical planning report and know their capacity.
- **Utilities, financing and refrigerants.** HVAC-4, whose firm does its own electrical work, found BC Hydro good on standard upgrades but slow to connect customer generation, and proposed low-interest financing for building owners and time-of-use pricing. HVAC-3 described a change in refrigerants that has, in his account, stalled VRF systems in multi-unit buildings and pushed some designs back to gas boilers.

HVAC-1 described the rebate system as the main barrier for a small firm.

> If you take anything from this talk, it's that as a contractor, I absolutely hate the system they've implemented. It is brutal to navigate. The hoops you have to jump through to qualify for rebates, to get your customers to have all their information ducks in a row — it's led to nothing but confusion. I had to take courses on it, and I still didn't get it. They force you to take courses to be able to offer rebates to your customers, and it still was convoluted to me.
>
> It's so difficult to figure out what each individual homeowner qualifies for, because there's income qualifications, it depends on what energy you're currently using and what you're replacing it with, the amount of information they need to see... Literally a $10,000 to $15,000 job could end up taking a full day of someone in the office just poring over the paperwork to figure out what equipment you can use, what rebate they qualify for, just everything to do with it. — HVAC-1

He argued that income qualifications have removed the rebates' purpose in an expensive housing market, elaborating on a point made in Section 2, and that the paperwork itself adds cost.

> And separating it out so that it's income-qualifying means that no one's going for the rebated equipment. It means it's either going to be people who are retired and on fixed incomes, or people in lower tax brackets who can't afford it anyways even with a rebate. So no one does it, because no one under the income thresholds owns a house in Victoria, BC or Vancouver or any other expensive city in this province. So why are you making it so the rebates are only available to people who literally just don't even exist?
>
> Just make more equipment qualify. If you really want to incentivize people to do this, don't make them jump through so many hoops and do so much paperwork. It's frustrating.
>
> If I have to hire someone specifically to deal with the rebate program, then sure, you're getting a rebate — but you're actually paying more anyways, because I have to have someone who can handle the rebates. You're adding costs and you don't even realize it. — HVAC-1

HVAC-3 described how stop-start funding has damaged the market.

> Rebates are a tricky one. You hate them and love them at the same time. My biggest problem with the rebates lately is they drive all these newcomer companies into the market, into our industry, and then, bang, the rebates go away. Everybody joins this market, the rebates go away, and now guys like us, the bigger companies, are competing against all these newcomers. The rebates drive everybody in, they leave, and there's all this competition slitting each other's throats to win jobs afterwards.

> When rebates go away, money's tight for people, so the market gets absolutely kicked down to nothing and we're doing installs for no money, no profit. It's absolutely killed the profitability of the jobs, and slowed down the revenue too. We're probably losing probably 30 or 40 percent of our EBITDA from this. — HVAC-3

> I would say, don't just pull the rug out from under our feet with these rebates. If you're going to announce something like this, maybe do it for a longer duration at a lower rate, so at least there's an opportunity for people to still get something to incentivize them, and you're not paying for the whole kit and caboodle... It's the starting and stopping of it, and then learning a new program that is the killer. Do you know what I mean? It's ever-changing all the time. — HVAC-3

HVAC-2 felt that the flip-flops on rebates are attempting to nudge him and his clients to dual-fuel systems that are not needed in their region and not the best option.

> They rolled out the rebate program, saying, "This is what we're going to do, we're going to reduce it by 30% by the year 2030." And they rolled that out, all gung-ho, consulted industry quite a bit—and that was tremendous in preparing industry for an onslaught of business. But then they rolled out the program and realized there's nowhere near enough people to do the job, so they started rolling back... They introduced dual-fuel systems and started giving heavy rebates for dual fuel. Why did you do that? You're not standing behind what you said. I know a lot of our competition, they're following the rebates, not following what's best for the customer. In my mind, right now, dual fuel is not what's best for the customer, not in our climate. Why would I promote that? — HVAC-2

HVAC-1 took an opposing view, arguing that gas is needed for cold spells.[19]

> I just think you have to use what we have—we have natural gas, so why not use it? In my opinion, I think the two could be used together to significantly reduce emissions while also being reliable. Even if you have an electric heat pump with a natural gas backup for a house—in the peak times of winter where it's really cold, especially up north in BC, it's going into natural gas heating mode. It's not using the heat pump at all. So, you're going to completely eliminate the option to have gas even just for the coldest times of the year? It doesn't make a lot of sense to me. — HVAC-1

From the Supply Sector

SUP-1 described the end of broad residential rebates from the distribution side, and was the respondent most focused on the cost of electrical upgrades for older apartment buildings.

- **Boom and bust.** In his account, several years of generous incentives that were not income-tested built a market in which BC far outsold the Prairie provinces, and their abrupt end cut heat pump sales by 20 to 30 percent. Homeowners repaired old furnaces instead, and bought window air conditioners.
- **Sorting buildings by upgrade cost.** The proposed solution was practical: revive the kind of field assessors BC Hydro employed during the rebate years, so buildings could be sorted by what an upgrade would actually cost, and phase requirements in building by building rather than through blanket deadlines.
- **Two gaps in incentives.** Rebates for heat pumps in individual suites of multi-unit buildings exist but are going largely unused, for reasons that were not entirely clear to him. And FortisBC's rebate for dual-fuel rooftop units on commercial buildings has no provincial counterpart for all-electric heat pumps, so the incentive points toward keeping gas.

SUP-1 described the rise and sudden end of broad residential rebates.

> "The rebates really ended last year, but for the prior four-plus years, you were getting, as a residential homeowner, regardless of income, like $16,000 to put in a heat pump. Most companies were charging anywhere from $18,000 to $22,000, so you were getting a brand-new Cadillac system in your house for like six grand. The grant money came in really quickly from the province and the feds.[20]
>
> "When that ended, it really shifted—I know they're focusing on lower-income households right now with the E-CAP program with Fortis and those ones. But it forced a lot of guys to change their business models and plans, and the way it ended so quickly, it really kicked BC's industry in the shin, so to speak. — SUP-1

> "It was about a 20 to 30% drop in sales, with people switching from putting in a heat pump to just repairing their furnace and limping through, figuring it out. Unfortunately, at that point, they'd buy the plug-in room air conditioners, window units—and those things are so inefficient, just sucking power compared to an actual heat pump. We noticed a drop in installs, and then a spike in repair parts. — SUP-1

He argued for phasing requirements in building by building, with BC Hydro assessing what each upgrade would cost.

> On building types, I think they really need to look at it based on what it's going to cost this building to upgrade the power and get off gas, or what it's going to cost this whole street if they all want to get off gas together but they all only have 70-amp panels... I really think building-by-building and municipality-by-municipality would be the better way to phase it in — instead of saying all the downtown Victoria buildings have to be rooftop heat pump or VRF by 2027, where guys would have to sell their building or evict everybody. That would be awful.
>
> And BC Hydro could easily do that. They had all those energy auditors roaming around BC when it was rebate-bonanza time for heat pumps. A lot of those guys either went back to work for heat pump contractors or back to other jobs. You wouldn't need to employ dozens and dozens, but you could have a few in each area who could easily say, "This would cost $300,000 to upgrade this 40-unit apartment, they're out — but this guy over here, it's only going to be a $50,000 upgrade, you can make that move pretty easily." — SUP-1

He identified two gaps in current incentives.

> Fortis has a rebate out right now for dual-fuel rooftop units — gas and electric — so that's pushing guys to still use gas. So if the province were to target commercial buildings with a rebate for moving to heat pump, I think that would be huge.
>
> We're still seeing slow adoption from condos and stratas putting single-zone heat pumps into each unit. We thought by now we'd have seen many more of these buildings come online, and for some reason we're just not seeing it. There is a multi-unit building rebate, but it's just not being taken advantage of. Something's going on between the strata and the installers, that's a bit of a gap. Maybe some homework on why they're not seeing that adoption. — SUP-1

Municipalities, in his experience, have not been a significant barrier.

> The municipalities haven't been much of a hang-up on getting heat pumps in front of guys or holding up install jobs. The only thing now and then was certain municipalities cracking down on their noise bylaw, and everybody's kind of shaking their head. Show me a heat pump that's 30 decibels and I'll find a million dollars in your backyard. — SUP-1

From the Property Management Sector

Both property management respondents described electrical capacity as a barrier in older rental buildings, but they framed solutions very differently.

- **Capacity and the buildings themselves.** For PM-1, the barriers in their older stock are electrical capacity and the buildings themselves, which they described as structurally incompatible with heat pump installs in every unit.
- **What might come next.** Their concern is less about current rules than about where cooling requirements could lead — a mandate for mechanical cooling, for instance, which depending on technology would be "incredibly expensive" in older buildings, if not impossible.[21] They also expect emissions limits on existing buildings, which they understood were anticipated by 2030 according to a recent roadmap.
- **Programs that don't fit together.** PM-2 saw the main barrier as funding programs that do not combine. He listed federal tax credits, accelerated investment incentives, CMHC financing, Canada Infrastructure Bank loans, utility incentives and municipal tax exemptions, and argued that the business case for rental retrofits could work if they were designed to work together.
- **Momentum before regulation.** In his view regulation should follow momentum rather than lead it, and rental owners need a stable, long-term direction of the kind the Step Code gave new construction. Comparing two municipalities' approaches to cooling in rental housing, he credited Victoria with pairing requirements with funding, and said New Westminster had not.

PM-1 named electrical capacity and the structure of older buildings as the main barriers.

> "I would say grid capacity on old stock, especially. If it were to come down the line that there was a requirement for right to cool, and then suddenly we were mandated to have heat pumps in every unit, it would not be even possible. It would just be incredibly expensive. We would have to build different structures to accommodate. The cost would be in the millions... So yeah, I would say that capacity is probably the largest one, and then feasibility being the next. It's a difficult climb. It's incompatible with a lot of building structure. It just doesn't work. — PM-1

PM-2 listed the programs available, and the problem of fitting them together.

> I think the business case is the best motivator. Right now we've got four federal programs: the investment tax credits, accelerated investment incentives, CMHC's MLI Select, and the Canada [Infrastructure] Bank[22] programs. Then we've got the utility programs in the province, and then we've got municipalities adding property tax credits, exemptions, and things like that. None of these programs work together. None of them. Even the four federal programs don't work together. So we've got this sea of funding available that, if we made it work, I think we could really change the business case—especially if you added carbon... The reality is, why isn't this working?
>
> "There are groups that can sit down and coach the sector forward, but the other piece is that the funders need to look at their rules and requirements and line them up. — PM-2

PM-2 argued that momentum should come before regulation, and that the sector is only a few years into building it.

> If we're going to regulate, we need to fund—we need to create that momentum first. Over the past three years, I'd say a lot of effort has gone into creating momentum. But that's just three years. That's hardly any time at all. In the grand scheme of programs, that's a sneeze in the breeze.
>
> It takes a year just to build awareness. In year two, you might get those early adopters who are like, "How does this work?" and they start looking at the programs. In year three, they're like, "None of the programs work together, and this is going to cost me 10 times more, so what do I do?" I think this is kind of the stage we're at. We've got all these great programs. If we can get them to work together, I could see a switch happening in momentum building, without needing regulation. — PM-2

He contrasted two municipal approaches to cooling requirements in rental housing (see also Section 1 on Victoria's tax exemption, and the note on New Westminster's rule above), and asked for the kind of long-term pathway the Step Code provided.

> Victoria is a good example of one of the ways to move forward. They've brought in thermal regulations: owners can't say no to portable air conditioning, and owners must maintain cooling equipment. But they've also brought in their property-tax-exemption program. So they've started to show the direction on the regulation side, but also the direction with funding.

> New Westminster would be the opposite extreme: they brought in a thermal regulation with an additional rule, the 26-degree heat limit, but they haven't provided any funding pathway. Their 26-degree limit doesn't align with the Residential Tenancy Act, and New Westminster is very vague about how people are supposed to meet the rule. In New Westminster's case, they say the owner has to keep the unit below 26 degrees, and the tenant's allowed to bring in an air conditioner. So does the owner come in, if it's not 26 degrees, and say, "Well, get yourself an air conditioner"? The way it's written, maybe you could say that, but maybe not.
>
> Ultimately, building owners are looking at risk. They want certainty. They want a direction. And then they'll factor that risk into how they operate their business. When you look at the Step Code, they laid out the pathway for 10 years or whatever it is. That's the kind of thing rental owners need: provide a direction, keep it stable, and find ways to deal with those other issues: knowledge, capacity, costs. — PM-2

PM-2 also gave an example of costs falling as the retrofit market gains experience.

> I do know of some retrofits in Vancouver, and I went and visited one for a site tour. It was a retrofit of a non-profit building. They electrified their domestic hot water and make-up air systems and added new windows. It was $3.5 million to do it, but the best part was that this owner did another of their buildings. And it was 3.5 million again, but the building was twice the size.
>
> It was risk that was factored into all of the quotes. It was technical capacity on the contractors', engineers', and the whole retrofit ecosystem's side — they understood and knew the process better, so the cost came down. They were factoring in the risk of being an early adopter. — PM-2

4. Supports and Readiness

On a scale of 1 to 5, how prepared are your team or your clients to install all-electric systems? What is the biggest knowledge gap you see? Aside from direct financial rebates, what supports would help, and what is your experience of financing programs?

Asked how ready they are for all-electric systems, engineers and established contractors described themselves as technically prepared. As ENG-2 put it, "The market needs to catch up." The gaps they described lay elsewhere: with tradespeople whose experience is in gas, with new entrants to the heat pump trade, with the maintenance staff and operators who run systems once they are installed, and with building owners (strata councils in particular) making large decisions with little guidance. Few respondents answered the readiness question with a number — most answered by describing the constraints they see.

Installation quality was a concern among established heat pump contractors. HVAC-2 and HVAC-3 described a rebate-era influx of under-qualified installers (see also Section 3, Barriers and Solutions), a certification pathway they consider far too light for residential work, and no inspection of residential heat pump installs. They called for higher certification standards, permits and spot inspections.

Maintenance and operation were described as another weak link. Heat pumps need more regular care than boilers, and engineers said systems are often run below their potential, or switched back to gas, by operators more comfortable with the old equipment.

The supports respondents asked for were mostly practical: plain-language guides for strata councils, energy assessments led by utilities rather than contractors, technical review of public-sector project scopes before they go to tender, and help for small owners making a single, unfamiliar decision. Awareness of specific federal financing programs was low outside the rental sector, though several respondents favoured low-interest financing over grants (see Section 3). Homeowner understanding of heat pumps was described as high in BC's cities and lower in colder regions.

From the Mechanical Engineering Sector

All three practising engineers described their firms as fully able to design all-electric systems. ENG-3 reframed the question of readiness as inseparable from project context, given the power available, the budget and the rebates.

- **Contractors trained on boilers sometimes question electric designs.** ENG-2 acknowledged that engineers sometimes share their doubts, and fall back on "That's the way we had to do it."
- **Owners, operators and maintenance staff may not understand more complex systems.** Some electric equipment, such as CO2 heat pumps, requires a higher class of certified technician. ENG-2 argued that the cheapest emissions reductions often come not from new equipment but from making existing systems run as designed.
- **Clients who need more help.** ENG-1 described strata councils facing a boiler replacement with "no clue," and asked for a short, plain-language guide.
- **Public-sector scoping.** ENG-2 described projects being planned by managers rather than engineers, and funding directed at removing recently installed gas equipment because it was the quickest way to meet an emissions target, while buildings in obvious need of upgrades were ignored.
- **Technical team support.** He proposed a small technical team within government to review projects before they move forward, and an early-design exercise in which the energy modeller and the mechanical and electrical engineers set the electrification target together.
- **Financing.** ENG-1 pointed to government-backed loans for solar panels as a model of support that is neither a grant nor a giveaway.

> "There's no blocker there as far as knowledge goes. On the installer side, especially some of the newer technologies coming in, there's less familiarity with that stuff. You get a contractor that's 60 years old, and all he's installed is boilers, and now you throw a heat pump in front of him, and he's kind of going, "What's this?" We're finding that engineers are having to change the mindset of some of these older individuals that are used to doing it a certain way. But as far as the engineering goes, I think we're basically prepared for it, it's just that the market needs to catch up. — ENG-2

> "The question isn't whether we're ready — it's what we're able to do, and constrained to do, by the context: what kind of power is available where, the budget, and the rebates, or lack of them. To me, the fundamental core of what we do is, if you were in the owner's position, with your knowledge, what would you recommend?" — ENG-3

ENG-1 wanted practical guidance for strata councils.

> Anything you can do to make it easy for people. Like a pamphlet, a booklet out for stratas specifically, about how to implement this, something educational. Give them a 10-pager, in layman's terms. That's one thing we end up doing, right? What are the benefits, what are the costs? Maybe have a couple of case studies, show the steps that are required, so people don't feel so lost. I deal with friends who are trying to put a heat pump in their home, and it couldn't be easier. Then you look at a strata, and they're talking about switching from a gas central boiler plant to air-source heat pump, and they have no clue. — ENG-1

ENG-2 saw operation and maintenance as an overlooked gap and opportunity.

> Where most people know a boiler pretty well and you don't necessarily need an engineer to maintain the building, but sometimes with these newer buildings you have a lot more sophistication in what's happening, and then it needs a bit more of a trained technologist to do the maintenance. The lowest hanging fruit we see for electrification of buildings isn't necessarily installing new equipment, it's just going and making sure the equipment is running how it's supposed to. You'll hear a lot of domestic hot water systems using CO2 heat pump technology, as one example. On paper, it looks really good and it is a really good system, but no one ever notices that it actually requires a higher ticket of trade to be able to deal with that high-pressure system. — ENG-2

ENG-2 described being involved with public-sector projects scoped to meet emissions targets rather than actual needs.

> The scale on which this is being rolled out justifies having some sort of engineering force behind the government. A lot of the difficulties we are having is we don't have very informed people on either side of it, as far as what we're being asked to do. It would definitely make sense to have some sort of small department that actually looks at some of these scope descriptions for buildings in a bit more of an engineering light. I think it would make a huge difference as far as how things are executed.
>
> No one seems to want to be the guy in the meeting that says, "That's not a good idea," but the government, looking at their own money they're about to spend, and what they're spending it on, having a filter there before it goes out to the market would be really nice to see. — ENG-2

From the HVAC Sector

Established contractors that didn't identify primarily as gas fitters described themselves as electrification-ready, and spent more time on the readiness of the trade as a whole.

- **Under-trained installers.** HVAC-2 and HVAC-3, both heat pump specialists, described rebate-era growth in installers who lack refrigeration training, and a system that does not check their work.
- **The certification pathway.** HVAC-2 traced the problem to the certification required for rebate eligibility, which he described as a 40-hour online course, and to a residential exemption from the apprenticeship and permit requirements that apply to commercial refrigeration and to gas work. His proposals were a two-year residential Red Seal ticket alongside the full commercial one, a permit for every heat pump installation drawn by a named journeyperson, and spot inspections.
- **Fixing others' work.** HVAC-3 made a similar case, describing work fixing installs by "non-reputable companies" and the sale of heat pumps to homeowners for self-installation.
- **Reputation and public money.** Both connected poor installs to the technology's reputation, and to public money. HVAC-2 added that a heat pump's economics depend on maintenance that owners often skip.
- **At the leading edge.** HVAC-4 described his firm's commissioning work as putting it at the leading edge of new equipment, "finding out all the things that don't work with it," and suggested that utilities take on the energy assessments that building owners now expect contractors to provide.

HVAC-2 described a residential trade that has been allowed to bypass the standards that apply elsewhere.[23]

> "Commercially, your capacities are such that in order to work toward electrification and work on heat pump systems, you need to be a refrigeration technician — you need your ticket, or be an indentured apprentice. Residentially, they've reduced that: you don't need to be an indentured apprentice at all, or a technician, which is totally wrong... we've got a lot of equipment being installed by people that aren't qualified. And with the new refrigerants coming out, they've got flammability characteristics. You have to know what you're doing. — HVAC-2

> "In order for somebody to receive the federal or provincial rebates that are being offered now, you have to be an HPCN-certified contractor. So that's good — there's a code of ethics, good practices, and everything else. But to become a certified HPCN contractor, all you've got to take is a training program, a series of courses that add up to about 40 hours. It's all online, and there's no way in God's green earth you can learn what needs to be learned in a 40-hour online training program and go out and do a proper installation.

> It's become a game of numbers. How quickly can we install so many? When you look at how many people have come from the window-and-door trade, or the plumbing trade, and gotten certified in this trade — yes, they took a 40-hour course, yes, they're technically certified. But it's a very light certification. — HVAC-2

HVAC-2 described the system he would like to see.

> I'm an advocate of having a two-tier Red Seal ticket. One for commercial, which gives you a ticket to work on any refrigeration equipment you need to. But then, at the same time, for a person to go through a four-year apprenticeship to work on just residential equipment, that's way overkill. Have a two-year Red Seal program for residential heat pumps, residential refrigeration. That would be stellar, and it would keep the chuck-in-a-truck guys out. — HVAC-2

> What I would love to see is that every heat pump installation has got to be permitted. Whoever's taking out the permit, Company XYZ, in order for them to draw a permit, they've got to have a journeyman ticket, somebody who represents and stands for that company, so we know somebody's there. And yes, it'd be great if that journeyman inspected and signed off on their own work, that would raise the bar. But on the other side, we'd also want an inspector who goes out and spot-checks installations, to make sure it's done with good practices. And whoever's name is on that ticket number, they're ultimately responsible. — HVAC-2

HVAC-1 described a market that has already shifted.

> We used to install natural gas furnaces probably up until about three or four years ago. It was something people were still putting in their houses, and now it's just completely dried up, because of heat pumps, which is not a bad thing. — HVAC-1

HVAC-2 said customer understanding has improved, and that rebate eligibility is no longer a barrier for his firm.

> For the longest time, we'd be at a home show and customers would say, what's the fad about heat pumps, why should I get one? They're getting a lot more publicity nowadays, so that's coming up less. — HVAC-2

> We're pretty well dialed in digitally. We can tell a customer exactly what equipment qualifies for rebates and what doesn't, right at the kitchen table. — HVAC-2

From the Supply Sector

In SUP-1's experience, homeowners in the province's cities arrive well informed, sometimes comparing efficiency ratings before a contractor does.

- **Colder regions.** The gaps are in colder regions, where some installers still spend most of their marketing effort persuading customers that a heat pump can replace a furnace.
- **Supplier training.** Suppliers, he said, are the main source of training for installers, through manufacturer-led sessions that have become routine over the past several years.
- **Rebate paperwork.** His account differed from HVAC-1's. He said the process was painful when rebates first arrived, improved year by year, and is now often handled by installers as part of the sale. Smaller firms that skip that step, in his view, lose the word-of-mouth that comes from helping a homeowner through it.

> "I think BC, for example, is very mature in the market — the homeowners really understand heat pumps now, everybody's on their computer. When I worked in the field for a year, I was blown away at the knowledge some homeowners had going in… that they knew what a SEER rating was, and how much that could save them going with a higher-SEER heat pump versus a lower one.
>
> But you get to some of the outer regions — the interior of BC, for example — we have a heat pump company that spends basically all of their marketing dollars trying to get people in Prince George and Terrace to understand that this heat pump can go down to minus 25 and they don't need that gas furnace. It's just those certain colder areas of the province where it takes more to get people over that hump of understanding. — SUP-1

> "When the rebates first came out from the feds and the province, like six-plus years ago, it was painful to do the paperwork. Year after year, they got better and better at it. We'd include helping with the paperwork as part of the sale. So the paperwork became less of an issue as we matured as a market with rebates.
>
> If they'd spend that extra 40 minutes with a homeowner, the word of mouth would be so much better — versus throwing your hands in the air and saying, "You're on your own, here's your final invoice, go deal with your rebate." That's a bad taste to leave a homeowner with, right after you've just charged them $16,000 for a heater. — SUP-1

From the Property Management Sector

The two property management respondents described different gaps: one in the programs on offer, the other in who owns the rental stock.

- **Programs without a business case.** PM-1 said their new all-electric rental building received no grants or credits ("No, no, no. No. Nothing."), and that a retrofit support program they had looked at had not offered a business case. They described such programs, and free consulting from energy firms, as useful for information but unclear in motive, and prefer advice from sources without a stake in the outcome.
- **Small owners.** PM-2 said most rental buildings in BC belong to small owners who may undertake a retrofit only once or twice, so lessons learned on one project rarely carry over to the next, as they do for large owners with many buildings. For that group, the most useful support is a staged path that builds trust through simple, low-risk retrofits first.
- **A decade, maybe, but only with alignment.** He thought the transition could happen within a decade, but only with aligned funding, coaching and education.

> Yeah, I think that the [retrofit support] program in particular is one that will provide you with information, but it's unclear as to their motives. It seems like it's a data capture mechanism, and that we don't know what this data is then going to be used for. We've had a cursory, or just entry-level kind of engagement with them, but it's unclear as to how it would be, I guess, beneficial to us. There definitely hasn't been, like, a business case presented to us to further the engagement. — PM-1

> And still, some people are not going to do this many times, right? You could be dealing with an owner who's doing it once. They have one building, so they're doing the swap once. It's a bit different for a large owner who has a hundred buildings in BC — they do it once, now they're like, "Oh, that worked and was easy," and now they just run through their portfolio. But I forget the exact number: the big players in BC are only like 4 percent of the stock.[24] So the majority of the rental stock in BC is small owners who could be doing this once or twice, and I think it's these smaller owners that are going to be the hardest piece. The rental sector has 16,000 purpose-built rental buildings. So the scope is huge. — PM-2

Asked how long it might realistically take to retrofit BC's rental stock given that it comprises 16,000 purpose-built buildings, PM-2 said the answer depends less on technology than on how quickly funders, support programs and educators line up behind the effort.

> How willing are people to align their funding programs? How much effort do we put into coaching and support services? How much effort into education? It's a huge multiple. But I think it could happen quickly. I think we could do it in 10 years if we're really aggressive and everyone's like, "Let's do this." — PM-2

5. Communication and Trust

How do you stay up to date on policies and regulations that affect your sector? When you hear about a new regulation or technology, where do you turn for a reality check? What do governments, or people outside your industry, consistently get wrong about building electrification?

Asked where they get their information and whom they trust, respondents described a landscape in which practical knowledge flows mainly through suppliers, manufacturers and peers. Engineers and contractors said distributors and manufacturers' representatives are their main source of technical information, followed by colleagues, technical associations and code bulletins. Utilities were described as useful for rebate details rather than perspective. Some in the property management sector said they trust industry associations and independent mechanical engineers, and are wary of government programs, BC Hydro, and consultants whose motives they cannot read. SUP-1 described a generational divide: contractors over 50 still rely on their wholesaler, while younger ones use AI tools to track policy and code changes.

In this landscape, FortisBC is widely seen as an active and effective communicator, whether or not respondents agreed with its message, and BC Hydro as a passive one. FortisBC hosts seminars and lunches, offers rebates for dual-fuel equipment, and is in regular contact with HVAC installers. Two said they attend its seminars or meet its local staff, and one engineer said its message on renewable natural gas reaches his junior staff and clients. FortisBC's messages on grid limits and renewable natural gas reached several respondents directly, and some repeated them. Respondents also disagreed about renewable natural gas: one engineer called it "non-existent" as a supply option, while a contractor whose work is mostly gas and hydronic heating wants it promoted.

ENG-1 wanted BC Hydro to treat electrification as a sales opportunity, and to lead with enthusiasm and a can-do attitude. Government communication in general drew mixed reviews: SUP-1 praised the province's outreach and responsiveness, but others described feedback that disappears, program information scattered across too many places, and outdated rebate claims circulating online.

Asked what governments get wrong, respondents named underestimating the complexity of electrifying existing buildings, reversing direction under pressure, announcing targets the industry does not find credible, and not listening to the people who design, install and own buildings. Practitioners said they want more in the way of practical information, accessible programs, real incentives and proactive engagement, rather than policy declarations.

From the Mechanical Engineering Sector

ENG-1 spoke bluntly about the communications contest between the two utilities, and its consequences.

- **FortisBC's reach.** FortisBC, he said, hosts lunches for engineers, reaches junior staff and clients with its message on renewable natural gas (RNG), and is "winning the PR and sales battle, for sure."
- **BC Hydro's absence.** BC Hydro, by contrast, has no one on the ground selling electrification to developers, strata councils or building owners, and leaves information "buried off on a government website."
- **His prescription: act like salespeople.** The electric utility should act like a business that wants to sell power, and advocates should lead with enthusiasm rather than climate change alarms or intellectual argument.
- **Other engineers' sources.** ENG-2 and ENG-3 described their sources as suppliers, municipal officials, colleagues and professional networks, and both described a sense that feedback to government and the utilities goes nowhere.

ENG-3 described limited responsiveness from the utilities, and staff turnover that makes it worse.

> "I find with Fortis and with Hydro, one of the challenges is that they'll hire somebody fresh out of school, and they don't know what they don't know. They start learning, but the second they really start building a feel for it, now they're transferred over here, or promoted over there. And that's the thing, you bring up a question, and they're like, "Oh yeah, well, that's another department, I don't know who that is," or "Yeah, that's frustrating, thanks for your input, have a good day." — ENG-3

He relies on colleagues for information, and recalled a provincial portal that he believes has lost its funding.[25]

> "We get our information through collaboration, basically. There's a lot of people I work with in different fields, and if I see something come out, a press release or whatever — internally, inside our firm, we flag things to each other, new programs coming up. CleanBC, I think, tried to build a portal of all these different opportunities, but I think they lost their funding or something. — ENG-3

For his own information, ENG-1 relies on technical sources.

> Code stuff, we're obviously getting direct bulletins and updates there. Being engineers, we're used to doing our technical research, so we'll get updates through our association. It's probably less news-based for us for the most part, so it'll be through technical organizations, any energy efficiency, sustainable kind of association we're related with. So, more reliable sources there. — ENG-1

ENG-2 described utilities as useful for rebates, and suppliers as the main source of technical education.

> BC Hydro and Fortis have good rebate information. I wouldn't say that they're a good resource for regulations. The regulations would be from the municipality which you're applying for permits, so we would generally read bylaws or maybe communicate with the authority, directly.
>
> Education also is coming quite heavily from suppliers. They'll have somebody flown in from Texas, from the factory, on one of their product line, and they'll just do a round of engineering consultants — giving them lunch, training them on the products and changes that are coming. We're generalists, in a way, whereas each piece of equipment is highly specific, and they're the experts in that piece of equipment. — ENG-2

ENG-2 doubted that announced targets would be met, and said regulators lack the feedback they need.

> I know there's been, you know, politicians talking about, "Oh, we're going to electrify everything by 2030," and it's like, "Uh, sure. I don't think you will." What we're seeing right now is regulators are making the decisions and not fully getting all the feedback they need to be able to inform that. My gut feeling is my input, any good ideas will just go into a black hole. Nobody's really listening. — ENG-2

ENG-1 said FortisBC's message on RNG reaches his staff and clients directly.

> Yeah, it's like they have two farms supplying it, right?[26] It's non-existent. And yeah, they're hosting the lunches, they're baiting my junior staff, our EITs, who are like, "Can I go?" And I'm like, "Well, sure, I'm not going to tell you not to, but here's my view." And they come back, and they're like, "RNG, and da-da-da." We have clients — even two weeks ago — saying, "Can we bring gas in?" I'm saying, "No, you guys are emissions-level 4." "Well, what if we only buy RNG?" And it's like, "Well, it doesn't exist." Thankfully, the code doesn't account for it, so it doesn't rely on it. But yeah, they're winning the PR and sales battle, for sure. — ENG-1

His prescription was for BC Hydro to treat electrification more like a sales enterprise, competing for market share.

> They need to be like salespeople. They need to be trying to upgrade these places, instead of discouraging it. It comes across as discouraging. It's like, "Oh, we don't have capacity, the infrastructure is strained, we don't have enough power production." Well, then why are we electrifying, if not everyone's working in the same direction? As soon as someone sees one thing that's discouraging, they hang their hat on that, right? — ENG-1

> Again, they need to look at Fortis, and model at least that small part of outward-facing, public-facing, developer-facing, strata-facing. It needs to be more progressive, for sure. Because if you're the province and the government, you're like, "I want to sell power." Think of it that way. You want to electrify, you also want to sell power — they're the same outcome. Treat it more like that. What would you do if you had a business and you're trying to get more people to use power? Like what Fortis is doing. They're incentivizing it, they have salespeople, they're having lunches. Have open houses. Hydro doesn't do any of that, because they don't need to. — ENG-1

From the HVAC Sector

Contractors draw on a mix of sources, and FortisBC is prominent among them.

- **Gas-side updates.** HVAC-1 named FortisBC alongside CleanBC updates, a trade magazine, wholesalers and sales representatives, and said FortisBC is quick to tell contractors when something changes on the gas side. He was also the respondent most positive about RNG, which he wants promoted as part of a hybrid future, in contrast to ENG-1, who considers it a marketing abstraction.
- **Suppliers and peers.** HVAC-3 and HVAC-4 rely mainly on suppliers, manufacturers and peers, and HVAC-3 described a close working relationship with FortisBC's local staff.
- **One source of program information.** HVAC-4 called for a single, trusted, province-wide source, in place of the many overlapping contractor networks to which he belongs and the outdated rebate claims customers find online.

HVAC-3 relies on suppliers and peers, and on FortisBC.

> A lot of it comes from the suppliers, realistically. They're very good at knowing the rebate programs, knowing what's eligible. And then, just staying current with other subcontractors in Victoria, keeping in touch with them, trying to keep a good, friendly circle with the competition too.

> We're fairly tied in with Fortis as well. I go for lunches with [a FortisBC representative], who's our main Fortis contact on the Island. — HVAC-3

HVAC-1 also appreciates FortisBC's timely communications.

> I do get emails from CleanBC with updates to rebate programs and things like that, and that's BC Hydro basically communicating through them. And I get information through FortisBC. FortisBC is pretty on top of it when something happens on the natural gas side — if they're phasing something out, or a rebate program's being deleted, any of that sort of stuff. I also subscribe to Mechanical Business Magazine, so I usually take a quick read through those to see what's going on in the industry. And you always hear through wholesalers. You'll hear stuff through your local wholesalers and buyers, industry partners, other business owners. — HVAC-1

HVAC-1 wants RNG to get more attention, and described talking with customers who dismiss it as a FortisBC talking point.[27]

> I would like there to be a bit more talk about renewable natural gas as a viable source, more of a focus on how we utilize that. I've spoken to customers where I've talked about it before, and they almost got upset with me — like, "Oh, that's just FortisBC, it's not actually good for the environment." And I don't see how it isn't. It takes methane out of the air that otherwise would be going to the atmosphere. I would like to see renewable natural gas get more focus as a viable energy source for home heating and domestic hot water. And to me, the perfect system would be a renewable natural gas system combined with electrical — a combination of both of those.
>
> If you're a FortisBC customer, you can basically request it — I think about 3% of the total natural gas supplied through FortisBC is renewable. They've committed to that. And as a homeowner, you can actually request that you pay the renewable natural gas rate, which means FortisBC purchases more renewable natural gas to put into the system. — HVAC-1

HVAC-4 relies on suppliers, distributors, manufacturers and peers, and called for one trusted source of program information.

> I think one location for all the information would help a lot. All the electrification stuff — all the rebate programs, all the incentives, how all the systems are changed over. If you could have one point of information that everyone referenced for rebates and other stuff, that would be helpful. Right now if a customer Googles heat pump, it comes up, "You get $21,000 back" and all this false information, because those programs died like six months ago. — HVAC-4

Asked what governments get wrong, HVAC-2 returned to certification. Earlier in the interview (see Section 4) he argued that a 40-hour online course has let installers from other trades become certified without the knowledge the work requires, and that the trade's capacity is being counted in certified numbers rather than skill. He also pointed to a wavering policy course, which he linked to pressure from FortisBC.

> Certification, 100 percent. And then get dialed in. Either you're totally on the road for electrification, or you're not. Right now I've seen a really big waffle. "Yes, we're all in," and then all of a sudden, "No, we better roll off, because we pissed off Fortis." — HVAC-2

From the Supply Sector

SUP-1 described a generational divide in how contractors keep up.

- **Suppliers and AI.** Older contractors still rely heavily on their distributor for information and updates; younger ones use AI tools to track policy, code and rebate changes, and need far less hand-holding at training sessions. Suppliers tailor their outreach to both groups.
- **Provincial outreach.** He was the most positive respondent about provincial outreach, describing a responsive program team that attends industry events and fixes gaps in online information within weeks. This is a counterpoint to other respondents' views of government communication, and it may reflect a distributor's closer working relationship with program staff.
- **Listen to builders.** His advice to policymakers was to listen more to builders and apartment building owners about the costs they will face.

> It was interesting to see the 50-and-older contractor was still relying heavily on the wholesaler to advise him. The under-50s were using AI, typing into Claude or ChatGPT or whatever, dumping policy changes, BC code changes, into it and getting anything current. And then telling it, "Update me—run this once a day or once a month and update me on any changes."
>
> It's an interesting age gap. The older guys who've been doing this for 20 years rely on the supplier, so when we have an information change, we go to the older guys first. The younger guys are far more dialed in, they know where to look, they're using AI in their businesses daily for code changes, rebates, updates on what the province, region, or municipality wants to do. — SUP-1

> The province has done very well, whether it's TV marketing about heat pumps or just being there. They're always game to come to an event, always game to answer questions. I'd say there's not much more they could do. Everybody's going to tell you they want the rebates back, but I think they've done a great job getting their message across, and they'll listen.
>
> When we reach out to [the provincial program team] about something not being on the website, they can get it added within a few weeks. They're very flexible, good to work with. — SUP-1

> The one thing I've heard from a lot of contractors is to talk more with the builders of new homes about what they're allowed and not allowed to put in. If you're pushing them to not have gas in a 20-unit subdivision, that's coming at a cost, and they can explain that difference. That might be the one gap: listening more to the builders who are seeing this on the ground, or the apartment building owners. Just connect with them on the costs they're going to see, going from gas boilers to either electric commercial tanks in their buildings, or a true heat pump rooftop unit versus a gas rooftop. — SUP-1

From the Property Management Sector

The property management respondents described whom they trust, and why trust is in short supply.

- **Trusted sources.** PM-1 trusts LandlordBC, which they said presents information "in a way that is digestible and very, very obtainable," and independent mechanical engineers.
- **Wariness.** They are wary of government programs, BC Hydro and energy consultants whose motives they are not sure of, and said that "very few government programs" work as intended in their experience as property owners.
- **Underrepresented.** They have taken part in workshops and have seen some of their input reflected in the latest building electrification roadmap, but feel landlords are underrepresented in those discussions relative to non-profits, social housing providers and government bodies.
- **Trust before rules.** PM-2 said regulators who "just regulate" skip the trust-building that owners need, and that imposing rules before owners are brought along has turned a technical transition into a political fight.

- **Who reaches whom.** He described several sources of information for property owners, including the Building to Electrification Coalition (B2E), the Zero Emissions Innovation Centre (ZEIC) and LandlordBC. In our reading, the first two tend to reach larger operations, while the much greater number of smaller operators rely on LandlordBC; as he noted in Section 4, large firms control a relatively small share of buildings.

> You can probably get the vibe, there's not a lot of trust in the government programs, or even in BC Hydro, because they're big bureaucracies, they're not well managed, you can get caught in the red tape very badly. And, you know, we're a small entrepreneurial organization. Like, we quite frankly don't have time for that. That's not an efficient use of our time. And with government organizations, there's always seems it's always a form of tax. And, you know, this industry is so heavily taxed already. — PM-1

> We would also look to, probably, mechanical engineers. Because otherwise you have industry [firms selling their services], and they all have their motives. I've definitely been offered consulting from them on a free basis, but it's difficult to understand what their incentive is. — PM-1

> We have limited representation from a landlord and property management's perspective. Oftentimes, it was productive because I have actually seen talking points that were covered in the workshop were then adopted in this newest building electrification roadmap. But without that representation, it feels as though there is a lack of input on our side of the aisle. And we have a great deal of NGOs, social housing, and governmental organizations that are leading the charge on this and then leaving us in the dust. — PM-1

> So I think there's this journey that we need to take people on... And it's more than just heat pumps. There's a whole trust-building process. And this is the other piece around the regulators—they're like, "We're just going to regulate you." They're not about building trust. They're about command and control, telling people what to do. And that's how it's gotten politicized, too. Right now it's the conservatives and Republicans in the US raging against the rules. We've made it political by creating rules. — PM-2

> There's a host of places people can get their information. ZEIC has a webinar series. B2E has a webinar series. Those tend to be attended by the bigger owners, engineers, contractors, groups like that. On the non-profit side, they go to BCNPHA. Market rental buildings, really, are going to LandlordBC. — PM-2

Conclusion

The practitioners we interviewed didn't dispute the value of moving Greater Victoria's buildings away from gas. No respondent questioned the reality of climate change. Most accepted that this change is ultimately for the good, that it is happening and will continue to happen — and several are already doing the work. Their concerns were about how the transition is being managed: who pays, where the power comes from, who does the installation, and whether the direction set by governments will hold.

Three themes ran through most of the interviews. The first was predictability. Contractors described a market whipsawed by rebates that arrived quickly and ended abruptly, and owners described rules and targets they were not confident would stay in place. Several respondents said, in different words, that what they need most is a clear and stable direction they can plan around.

The second was the gap between the single building and the system around it. Electrical capacity, the cost of service upgrades and the experience of dealing with BC Hydro were recurring barriers, especially in older buildings. Engineers argued that many building-level problems — space, noise, capacity, backup heat — could be addressed more efficiently at a larger scale, through district energy, waste heat recovery or coordinated management of peak loads, but that there are few mechanisms to make those connections.

The third was trust. Practitioners rely on suppliers, peers and associations far more than on governments or utilities, and several felt that their feedback to government is not sought, not valued, and not heeded. FortisBC's active presence with contractors and clients, set against BC Hydro's more passive posture, is shaping how parts of the trade understand issues such as grid capacity, the need for gas backup in residential settings and the reality of renewable natural gas. Installation quality also relates to trust in the long term: established contractors worry that poor installs, enabled by light certification and little inspection, will damage the technology's reputation with the public.

These findings come from a small sample, but they offer some direction, and some insight into where policy attention could be most useful: incentives designed for the long term rather than in bursts; a utility that treats building electrification as business it wants; higher certification and inspection standards for residential installs; practical support for small rental and strata owners facing a single, unfamiliar decision; and closer alignment between levels of government and the agencies that deliver programs.

As PM-2 put it, building owners "want certainty. They want a direction."

Appendix: Additional Perspectives by Topic

This Appendix collects further quotations from the interviews, grouped by topic for deeper reference. The main report sections summarize many (but not all) of these contributions. Each topic is divided into subtopics. Within each subtopic, quotations are grouped by sector where possible, in the order used throughout the report: mechanical engineering, HVAC, supply and property management.

Technical Considerations and Recommendations

Equipment, operating temperatures, space, noise, storage and code requirements.

Electrical Code and In-Suite Systems

ENG-1 pointed to a feature of the electrical code that can favour in-suite HVAC systems over centralized systems:

> You can't rewrite the electrical code, but there's an interesting one: if you do electric hot water tanks in each suite you only have to count like 30 percent of the load... But if you do a central system, you have to count 100 percent of it, because the whole thing can start up at once... It's one thing we've talked about when doing new developments. We're like, "Maybe is the in-suite electric tank really that bad?" There's a lot of pros for it. — ENG-1

He added that in-suite tanks also reduce the risk of leaks from central piping, a growing insurance cost, though he noted this applies to new construction rather than retrofits.

> All the central piping in buildings fails, like we see, and the costs for these insurance claims now are massive... Back in the day everyone had carpet, so you'd dry out the carpet and it was fine, but now everyone has hardwood, laminates, and the costs are in the millions of dollars.
>
> The initial cost is actually quite competitive, because you only need to run cold water piping throughout the building instead of both hot water and hot water recirculation... You have much less piping, you put in leak detection, so as soon as a drop of water hits the pan, it shuts off the water to the suite. — ENG-1

PM-1 raised a separate concern about being pushed to use new technologies that they perceive as unproven.

> The in-suite units for individual heating and cooling, which is required, I believe, under code, they're not a tried, proven technology. So we're taking a huge risk on those. The original one we spec'd, BC Housing said it's failing all over the province, and they don't recommend putting it in anywhere. So we are going with another Canadian-made product and hoping and praying that the thing functions properly. — PM-1

Low-Temperature Conversions and Hydronic Systems

ENG-3 explained why buildings with hot-water heating are the hardest case.

> You know the direction things are going, but basically the issue is that natural gas is roughly a third of the price for the same amount of heat. So fundamentally, this is a problem, because if you look at a heat pump, if you use one, you're getting a similar operating cost to gas when it comes to heating. However, the equipment costs way more, and it's a more complicated machine. So one of the biggest challenges of electrification is trying to bring the utility costs down to a reasonable level. — ENG-3

> If your building's heating system is hydronic, based on hot water, either you spike the utility costs so much no one can afford it. Say you have an apartment building, since a lot of them have central hot water, you'd need to switch all the convectors to low-temperature convectors. The technology's there, but that means evicting everyone in the building. We already have a housing problem. You'd have to redo every single suite, every radiator would need replacing — a substantial renovation — and the residents would have to be moved out. I don't think there's any politician who wants to take that on. — ENG-3

> The biggest thing is that a lot of our existing infrastructure is heated with hot water. So, for instance, if you look at something like a university campus, or even just a standard, older apartment building... the individual buildings themselves need water temperatures around 80 to 90°C. Heat pumps just can't provide that temperature level. It's a fundamental limit of the technology... you can use an electric boiler, but then your operating costs are triple. — ENG-3

ENG-2 called this conversion to low-temperature heating "the hidden cost," and gave the example of a school where replacing the boilers meant replacing every radiator.

> Most people don't understand that it's not deleting a boiler and putting a heat pump in, and then your job's done. There's also converting all of the building to low temperature, which is the hidden cost in it as well.

> A lot of times you have to convert all the terminal devices, I would say. So, for an example, a school, you might replace the boiler with a low-temperature system... but you lose capacity out of all the classrooms' radiators when you just drop the temperature out of the loop. We had projects where we replaced boilers with low temperature systems, but then we had to go through and replace all the radiators, and there's more cost to that. — ENG-2

Space, Weight and Noise

ENG-2 listed further practical costs: space, noise, weight, and larger storage tanks.

> You can't necessarily just take a gas boiler out of a room and put a heat pump in. It's larger, and heavier... Some of the buildings, like let's say a parliament building in Victoria, those buildings aren't necessarily built with huge mechanical rooms, and they're often stuffed away in the basement... it's quite difficult, sometimes impossible to do without installing something on the exterior. Then when you're dealing with historic buildings, you don't really have the ability to put this mechanical enclosure outside. — ENG-2

> When you go to compressor technology like a heat pump, it's going to be loud, or louder by far than a gas system... so there are noise considerations with vibrations and meeting the sound bylaws. And then the weight of the equipment is a factor too, in the size of the buffer tanks and storage tanks that we need to use. You end up with these larger buffer tanks of water to be able to handle peak demands, but you end up with five times the storage capacity, in some cases. — ENG-2

HVAC-4 described the physical constraints of older downtown buildings.

> We do a bunch of work downtown Victoria, and we've got to find places to put all these units. Heat pumps are great, but they take up so much room. And if you want to put a bunch of extra units on a roof, you've got to get structural involved, because now we're looking at a hundred-year-old building and we want to put, you know, 10,000 pounds up on the roof. — HVAC-4

Water Heating

HVAC-1 offered a critique of heat pump water heaters.

> It's also just not a good technology for our climate here in Victoria, or in BC in general, really. They pull in air from the room they're installed in, or from outdoors, and they use the heat in that room or from outside to do that energy exchange to heat the hot water. It gets hot in the summertime here, so it's great then if you're vented to the outdoors. But if you have another heat source in that room — what if you had an electric baseboard heater in that room? You'd be running that, and it would literally just be pulling the energy off of that to heat your hot water. Is that even taken into the calculation of energy savings? It's not, it never is. — HVAC-1

He described contract sites where panel space limitations ruled out the possibility of making changes.

> I've run into it a few times where someone's had an older technology gas hot water tank, like an atmospheric vented tank or a direct vent tank, and they want to switch to electrical or tankless or something. But then you go to look and it's like, well, you need to get an electrician in here to look at your panel to make sure you have enough room if you want to switch to an electric hot water tank, because it needs a double-pole 30-amp supply. There have been times when they've done that, they've looked into it, and it's like, "No, we don't have the space on our panel." Then it's not cost-effective to install a tankless water heater either because it requires a bunch more upgrades to the gas line or the venting — so they just end up doing a like-for-like replacement. — HVAC-1

HVAC-2 also stays away from heat pump water heaters, for technical reasons, and said a provincial program staffer who tested one at home came to agree with him.

> We stay away from heat pump water heaters, for the sole reason that you need electric backup to get the water temperature up to what you require. And not only do you need the backup, you're rejecting heat, taking heat out of the building to heat your hot water, then rejecting that cold either back into the building or outside. You're not getting the capacity you should, you're not getting the recovery time you should. It's an expensive option compared to an electric hot water tank. — HVAC-2

Resilience, Backup Heat and Dual Fuel

ENG-2 raised resilience as a concern of both installers and customers. He argued that a gas system is easier to protect in an outage, because only its controls need power, and described his own all-electric house falling to about 2°C during a winter outage.[28]

> We lost power for maybe 16 hours or something, and it got down to, like, two degrees in our house, and I was panicking, because I was trying to drain all the water out of the pipes... and I could see these electric condos being in similar situation... You can't just show up with a generator and power an entire electric heat pump system. It's a lot of power for that stuff... but you can do it with gas really easily. Even just a Home Depot generator or battery pack can really power all that you need to get a gas boiler up and running. — ENG-2

ENG-1 described FortisBC's incentives for gas backup as a deliberate effort to hold on to customers, and a complication for consultants advising clients.

> Right now Fortis is throwing a lot of incentive money out there to hold on to whatever market they have. It's kind of insane, honestly. They'll almost pay for dual-use gas-fired backup equipment. They'll subsidize the cost of putting that equipment in, just so they have gas-fired equipment still being installed. So it's tough as a consultant when you work for clients. You're like, "Yeah, let's electrify, but by the way, Fortis is going to pay for this equipment." At least it's gas backup, and we're getting heat pumps in there instead of just gas electric units. — ENG-1

ENG-3 added that FortisBC's pricing model makes offering backup options easy to justify, and that including gas as backup may have a negligible environmental impact.

> And of course, from Fortis's perspective, they're perfectly happy for you to put a pipe in the ground and never use any gas—they charge you for the pipe either way. So the case for skipping the backup gas boiler, environmentally speaking, may not be as strong as you'd think, since you're barely going to use it anyway—and it's cheaper up front to include it. — ENG-3

HVAC-2 noted the common argument that gas protects against power outages, and said it doesn't hold true unless homeowners have a backup generator.

> Well, if the power goes out, your furnace isn't going to work... because your furnace requires 110 volts to run your furnace fan motor. You've got no electricity going to your furnace, you got no heat... if you have a generator, you could hook up a furnace to that. — HVAC-2

HVAC-4 warned that rebate-driven conversions removing working furnaces leave homes with no backup if a heat pump fails.

> You saw a lot of that with natural-gas-to-heat-pump conversions, where the furnace is perfectly fine. And the disadvantage to that is that we can add a heat pump to any furnace, any HVAC contractor can do that, it's pretty straightforward — but if we have a furnace that's in good shape, still has a lot of life left, and we remove that whole thing and just put in the heat pump, now they only have a heat pump option. So in the middle of winter, if anything goes wrong with that heat pump — and they're all variable-speed now, so they've got a lot of components, and we're waiting on a part — they have no heat. So they need temporary heaters. But before, they had a furnace, we could've just thrown a coil on it. — HVAC-4

HVAC-2 sees dual fuel as useful in a narrow set of cases, and unnecessary for most homes in this climate.[29]

> Dual fuel is great when you take a look at it, for a couple of reasons — and don't hear me wrong, in some cases it is a good thing to have. Like if somebody just installed a brand new furnace because they got a killer rebate from Fortis, the furnace is three years old, but they want air conditioning and a heat pump too — there's a good application for dual fuel there. The heat pumps of old were only efficient down to minus three to minus seven... Over the years, through technology, we've become more and more efficient, and we're good to minus 28 now — we can run our heat pump and still be within 90% of nameplate capacity. So do we need the dual fuel? No — not here on the island, and not on the mainland. Prince George, up north, yes. But here, no. — HVAC-2

HVAC-4 called dual fuel "the best system you could have" for a home. HVAC-3 drew the line by building type, and described the FortisBC rebate for commercial rooftop units.

> There's a dual-fuel one right now for Fortis — if you have a rooftop unit at your building and you want to switch that gas unit out for a dual fuel, meaning heat pump with gas backup, you get 30% of the costs required to do that paid back from Fortis. Whether that's upgrading your electrical service, running a gas line to the roof, doing ductwork — they'll pay for 30% of the whole project cost.
>
> I mean, I like dual fuel, because a lot of times gas is needed on bigger commercial projects, or to heat large spaces — it would make sense to do that. And if there's an opportunity to heat those large spaces with electricity at higher ambient outdoor temperatures, that allows for less gas usage overall, more cost savings for the customer, and better comfort — I think it does make sense... The dual-fuel rebate requires you to be able to maintain down to zero degrees on your heat pump, and anything colder than zero outside, the gas backup kicks in... And roof-top units generally just don't produce good heat below that — different technology than the inverter, ductless, or newer-style split heat pumps. — HVAC-3

Refrigerants and VRF Systems

HVAC-3 described the switch to new refrigerants, which in his account has stalled VRF systems, a highly efficient form of heat pump used in multi-unit and commercial buildings, and pushed some designs back to gas.[30]

> A big part of my business in the past has been VRF projects, whether in an apartment building, condo building, commercial space, all that sort of stuff. That was a huge portion of our business, which is basically like a light switch being turned off in the past few months.
>
> It's the most efficient way to heat and cool a building, but with these refrigerant changes, there's flammability characteristics in the new units, which has caused engineers to stop specifying these on jobs, and it's basically killed the market. Everywhere else in the world has been using R-32 or R-454B for the past 10 or 15 years, and doing it completely fine. The problem is Canada has way too much red tape around every new process, and the engineers won't spec it because they say there's too much liability risk. But you can literally take a Bic lighter to this refrigerant and it will not light on fire.
>
> Because it's got flammability characteristics, it needs to be put in a chase, and nobody knows the proper codes to do this. And it's caused a lot of designs to go back to a boiler and cooling tower, which again is much more pollutant overall, putting out carbon from the gas boiler — whereas the VRF system is just using straight electricity.
>
> The engineers need to get comfortable with the fire codes on this... And basically what happens is it starts out real strict, they get comfortable, they find ways around it, and it becomes common practice again to use this. — HVAC-3

Beyond the Single Building: District Energy, Data Centres and More

Two engineers looked beyond the single building. ENG-2, comparing practice here with district energy systems in Europe, argued that many of the problems described in this report arise because each building solves them on its own.

> Well, to be honest, the biggest thing they do better in Europe is they don't try to do everything by themselves. Buildings are not one owner versus another owner, or this owner versus the city. Everyone works together. They have central plants that the municipality put together... You can use the big dollars that you get from the government, focus on building yourself a little factory or whatever of heat pumps, and you can deal with all your electric stuff all in that one little spot. And deal with all of your noise and everything there, and then you just feed out some nice water pipes for cooling and heating, meter it at each building, and then everybody just hooks up to it and pays for it.

> The problem with the way we do things here is you have each building looking at their own... It's tunnel vision, right? All these issues that we have that I mentioned in this are all to do with each building doing their own thing. Let's say you put that energy toward building a new thermal, or, like, district energy plant, and you run the pipes, and the pipes are there for every building when they feel like they want to, and all they have to do is upgrade their piping... That's a much easier ask to somebody.
>
> Let's say you have one building that's like a data centre. They have so much heat, they don't know what to do with it. They can put it into the [district energy] grid, get credit, and then other people can use that. So we're not necessarily generating more power, it's just moving around the grid.
>
> Even still, I've tried to sell district energy to a ton of people, and they've all just, uh, at the end of the day, the regulator shuts it off. — ENG-2

ENG-3 described using waste heat from computer servers, and argued that the right partnerships could pay for much of the cost of heating.

> There's one project I'm doing right now where we're using a [server installation] that's heating domestic hot water for a multifamily building. The data centre people are willing to pay the electrical cost — they'll pay the entirety of it. That means the only cost is the capital cost of the equipment needed to heat the domestic hot water, in this case. Looked at over the life of the equipment, that's very financially viable — it can pay itself off more than twice.
>
> If we took one of our public rec facilities and housed a suitably sized AI data farm or server farm there, we could provide all the heat to the facility, which would lower the community's operating cost, and the electricity cost would end up being paid for by whoever's using the server farm.
>
> Right now, I think we treat decarbonization and sovereign AI as separate things. But if we put servers in at a smaller scale, distributed — first, they're completely sovereign, because they're physically here. Second, they reduce our operating costs. Third, they create more resiliency, because they're distributed — you can't take them all down at once.
>
> Years ago I did a project where a regional government was involved — we were recovering heat from a wastewater plant, and there was a pool, a school, and another facility nearby. All three needed huge amounts of heat, and they could have had it for free.
>
> That's the problem — there's capital out there, there's opportunity out there, but there's no way to connect them unless you happen to have the right Rolodex. And that's something I think the government side could help facilitate. — ENG-3

Costs and Economics

Capital and operating costs, payback, and who pays.

Operating Costs and Who Pays

The simplest electric options, ENG-1 noted, can be cheap to install but cost more to run:

> “Electric storage tanks with big coils in them are sometimes the answer, and are cheap, and competitive with gas boilers. It’s probably cheaper, honestly. The electrical service is the offset, so you have to pay for that… But you’re getting that one-to-one COP, so you’re not getting cheaper operating cost. But it depends on the developer. If they’re selling the building, they don’t care either, right? Operating cost doesn’t factor into their pro forma. But a lot of rentals are being built now, where developers will have that incentive to care about operating costs, so there are a lot of competing factors. — ENG-1

Retrofit Costs for Rental Owners

PM-1 underscored again (see Operational and Economic Impact) the perceived existential problem that electrification poses.

> “This whole issue of electrification raises challenges for new builds, but it is really, really problematic for retrofits. Like, there’s just no point… we might as well close up shop and go home… The costs and, you know, putting it in are going to be insurmountable. You know, we’re businesses, we’re not charities, right? We’ve got to stay above the water line, and that will make it really difficult to do so. — PM-1

PM-2 described the costs associated with the increased space needed for electrification retrofits.

> “Then the other things they’re struggling with are space constraints — if you’re dealing with a small boiler room, where do you put your heat pump system? ….You can take people’s parking spots and submit a service change form — but you have to pay people for it. If you take someone’s parking spot, it’s worth $10,000, so you have to pay the tenant for that space. So space is just money, right? A lot of this ultimately trickles back down to money. — PM-2

Electrical Capacity and Utilities

Building and grid capacity, service upgrades, and working with BC Hydro and FortisBC.

The Provincial Grid

On the provincial grid, views differed. ENG-1 was untroubled by it, and thought building-level capacity was often more available than people assume.

> I don't worry about the wider grid. I assume there are very smart people at Hydro planning for this sort of stuff, and we kind of leave that to them... I think we're generally okay; I don't think it's been prohibitive for many. One nice thing is the electrical code is quite conservative for sizing. So what we've seen electrical engineers do is, if they measure the power usage for a year, they can determine the actual usage, which tends to be — because the code is conservative — quite a bit lower. So it does give us room to work with. — ENG-1

ENG-2 was more concerned.

> Well, everyone knows, like, the new dam, the Site C dam, that it's already kind of spoken for, all that power. It's not like those projects are quick to do. There's going to be a certain point where you're going to apply for a building, and they're basically going to tell you no, because we don't have the power for it... It's not even just building, you're dealing with vehicles, with more cooling, more electrification for hot water, EV charging. And it all has to come from somewhere. — ENG-2

ENG-3 pointed to the links that carry power to Vancouver Island as a weak point in extreme weather.[31]

> As an example, there's a couple of main power feeds that connect the Island to the mainland... When we had the heat dome, the load going through those went beyond what they could handle, and the result was we ended up burning one of those conductors... For power to go from one place to another there's a whole series of steps, wires, transformers it has to go through. So whenever load changes, at some point along that chain there's going to be a weak spot — that's the issue we'll keep running into, we're always going to be finding that weak spot. — ENG-3

ENG-3 suggested a simple way to use backup generators that large facilities already have to test every month.

> Hydro can predict when their peaks are going to be. So if they just created some kind of feedback system, they could put out a call and say, "Tomorrow afternoon at two o'clock is when we're predicting a peak" — and tons of data centre people, hospital people, a lot of these mission-critical facilities with generators could flip them on and do their run test for Hydro, since they usually have to run for a couple hours anyway. That structure's already there. — ENG-3

Service Upgrades in Buildings and Homes

PM-2 explained why electrical upgrades fall so heavily on owners.

> A lot of these buildings will have a transformer of some kind, and BC Hydro will come in and pay for like-for-like. But if you're adding heat pump space heating, heat pump domestic hot water, and heat pump make-up air units, you're adding a lot of capacity. So BC Hydro will pay for the initial transformer size, which is severely undersized, but they won't pay for the big one — so the owners are on the hook for the big one. And when these buildings were built, everything was sized just right. So your electrical capacity has to be upgraded, that transformer needs to be replaced, the lines in the building need to be replaced. — PM-2

> I know an owner right now who's upgrading their electrical capacity in Vancouver. The estimated cost to do all [the units] to heat pumps is, say, a million dollars. Their cost for electrical capacity — they've whittled it down from $10 million for the electrical capacity upgrade to 2.5 million... A lot of what they've done is push the cost off into the future. This is the other big hurdle, right? — PM-2

On capacity, HVAC-3 described constraints at the scale of the house and the condo suite.

> Switching from most old-school houses that have a hundred-amp service, and we're trying to put a heat pump in, that can happen. And then there's also issues in a condo building — say there's a hundred suites, and one suite wants to put a heat pump in, we can't just go throw one heat pump into that one suite, we've got to do an electrical survey of the whole building, to make sure everybody can have a heat pump.
>
> Residentially, there's usually a way we can make it work — there's a lot of load-shedding devices now too, so you can load-shed your car charger or your dryer, et cetera, if you want a heat pump and don't have enough capacity on the panel... But it definitely adds cost to every job when you have to do that too. — HVAC-3

HVAC-3 suggested the easiest place to start would be buildings that already know their electrical capacity.

> I guess the easiest ones to attack are those that have had the electrical planning report done — where you say, "Hey, our service will sustain putting heat pumps in, we just need to remove all the baseboard heating circuits out of the appropriate suites to free up enough space on the panel to run these." Those will probably be the easiest checkbox to turn to electrification. — HVAC-3

Working with BC Hydro

ENG-1 added to his comments about the desire for a change in BC Hydro's customer-service posture, and for certainty for owners about whether power can be had.

> So electrical capacity for a building needs to be the same way with Hydro. The attitude should be: "You need power, you got power." It might be expensive, or maybe it gets subsidized. Just creating less uncertainty around that and more reliability would go a long way. — ENG-1

> If it changed from where you go to them and they're like, "Ah, there's this issue, that issue," and instead you have someone proactive, like, "Hey, come to us, we'll deal with all that, we'll resolve all that" — it's a very different mentality that would go a long way on retrofits, for sure. — ENG-1

HVAC-4 described BC Hydro's process for connecting solar and battery systems.

> I think it's been good — we do electrical contracting as well, so we do all that in-house. It's pretty good for us. Hydro's been good on the scheduling, and they're good with what they're doing. The tricky part, I think, would be Complex B, which is solar-battery systems, generation, off-grid kind of stuff too. But if you tie into Hydro, then you have Complex B, and that process, going through their design and stuff, can take a while. You've got to allow yourself like six months for it. — HVAC-4

HVAC-4 said building owners without an engineer or energy modeller expect the contractor to design the system and estimate the savings, using the owner's BC Hydro billing history.

> Unless there's some sort of engineering and energy modelling involved beforehand, if they don't have any, they always look to us to do the design, contract the project, install the system, and the controls. And then they'll ask us for estimations of energy savings, which we can do — it's not exact, but everyone has a Hydro account, so we can go in and see their energy usage and make kind of a guess on how much they'd save. — HVAC-4

Asked whether utilities should do those assessments instead, HVAC-4 agreed, though he said his firm prefers to do the work itself if BC Hydro funds it.

> I think they should do those. They'd have to get very involved with the design, all the system designs, in all these places, if they're going to do the modelling. We don't mind doing it — I actually prefer to, because if we design a system and model the energy against that, Hydro could offer money for it, that'd be good. — HVAC-4

Incentives, Financing and Regulation

Rebates, financing programs, codes, bylaws and how requirements are phased in.

Rebate Design and Administration

HVAC-3 said the effects of rebate retractions have spread into commercial work.

> The rebate slowdown residentially has driven all these residential companies into the commercial line now. So now we've got all these small guys competing in the commercial market against us too, which is dropping the margins there and screwing everything up on that side as well. And then you get that race-to-the-bottom thing, where guys bid cheap and don't do a good job, and then you get a black eye for the technology — because they're not going to maintain it properly, and you get that word of mouth, which isn't good for anybody. — HVAC-3

Rebates are now paid to contractors rather than homeowners, which HVAC-3 said leaves his firm carrying the risk.

> Nowadays, how it is, we go do the sales call, they have a rebate code number, and the rebate gets paid back to us — we basically don't get paid until the rebate comes through. Right now we've got $300,000 owed to us from the rebate company, which is a lot of money. Three months down the road, CleanBC says, "Oh no, the customer only gets a $2,000 rebate," so you're on the hook... We can't go back to the customer and say, "Give us that extra $3,000," or they'll say, "Well, no, you said it was $5,000." So in the last couple of weeks, I've been dealing with a couple of these where we ended up eating like three or four grand. — HVAC-3

HVAC-2 went further, arguing that rebates now push buyers toward low-quality equipment.

> I would not be upset if they got rid of the rebate program totally. Because we've gotten to the point that the people who really want heat pumps are the people who can't afford them — they're looking to get them for free, or pay very, very little. So they're getting the bottom-of-the-line equipment, that's like a Bic lighter. When it runs out, you throw it out, it's disposable. The people who can afford a good-quality system that's going to last 20, 25 years, they can afford it. Right now they're sitting back going, where's the world at, I'm not spending any money. — HVAC-2

Financing and Program Models

ENG-1 pointed to government-backed loans as a model of support that costs little in the long run.

> As soon as you throw little things on top of that, like incentives, or low-interest loans, or solar panel loans — again, all that is, is the government financing someone's loan for them. And I know people who are jumping all over that, because they're like, "Hey, solar panels are gonna last me 15 to 25 years, payback on this loan is 5 to 10 years, it's a no-brainer." That's not like an EV-cash giveaway, or a heat-pump-swap giveaway. It's in-between, but it doesn't cost the province or the feds in the long term either. — ENG-1

ENG-3 credited a provincial program, now much reduced, with driving heat pump projects in school districts.

> I think one thing the province did very effectively was the CNCP program, the Carbon Neutral Capital Program. It started in the school districts... Basically, if you're a school district paying, say, $20 or $30 a tonne per year for your emissions, that money goes into a fund, and you can apply to get it back for a project that reduces your emissions. School districts would say, "If we put in a heat pump, we save this much," and they'd say, "That's awesome, let's do it," and use their CNCP funding to pay for it. That doesn't happen anymore, though. It still exists, but it's been stripped back and kind of dropped off. — ENG-3

HVAC-4 proposed low-interest financing for building owners and time-of-use pricing that would reward battery owners.

> I think, for building owners, access to funding — if you can show them all the savings on energy, and then also give them access to the funding to do it, so immediately they're recouping... That would be big... If it could be on even like a zero-percent loan, or a low, super-low-interest loan, and they could use that to pay for the system. Then automatically, first month in operation, they're saving money on the utility and offsetting it that way... And if they know they're going to own the building for the next 10 to 20 years, it'd be an easy sell. — HVAC-4

> If Hydro did peak-usage rates — and paid back the peak-usage amounts, when it's peak, say they went from like 11 cents to 20 cents a kilowatt at peak — but also, if you gave power to the grid, they'd pay you a higher rate — that would just turn every house into a little battery system. I don't understand why we don't have that here. — HVAC-4

Phasing and Requirements

ENG-2 described how a building can be staged toward electrification, and proposed a yearly planning requirement for high-emission buildings.

> We will do a building condition assessment of those buildings and come up with a bit of a concept on how we think the building could best stage toward getting electrified. Maybe that takes several projects in order to get there. If it looks like your boiler's 50 years old that one might be the first one to go, but maybe we operate the new replacement in the same temperature range as what the boiler was before, just until you can get your other project done, and then we can lower the temperature of the system.
>
> My suggestion would probably be that somebody looks at the project practically, summarizes it in a report, maybe makes a recommendation on how things can go. Maybe it's an action plan for the next 10 years, that this is what the building can do, given the restrictions it has. You don't want to nuke a business just because you're asking them to do this stuff.
>
> Every building that is flagged as, like, a high contributor to carbon emissions must come up with some sort of plan that is sent in and saved, and then every year it's updated as far as, like, what have you done this year? And then people that don't do anything get maybe penalized, whatever that is, and then people that do really well on it are, you know, maybe they have credits for the next year. — ENG-2

ENG-2 argued for regulation that recognizes partial progress, and for incentives on a sliding scale rather than a pass-or-fail test.

> There needs to be the ability for each site to basically prove out what they can do and what they can't do. Maybe we can do 50%. But is that going to be enough to get electrification — like, does that qualify under electrification? Most people see that as you need to convert your entire building 100%, or it's nothing. But in taking those steps toward the goal, it makes it easier and easier... the next renovation is easier, right? It's easier to do it in steps.
>
> Just set benchmarks to the funding. If you can achieve 80% reduction, then you get X. And if you can achieve 50%, then it's less. It's a scale, not necessarily a pass-or-fail type look. — ENG-2

PM-1 described the prospect of emissions requirements for existing buildings as a cost that would have to land somewhere.[32]

> There is implications in the newest edition of the building electrification roadmap that a 2030 agenda would have some kind of GHG emissions requirements, which would then either be through some punitive tax measure if you are emitting too much greenhouse gases. And so that cost has to go somewhere. Or we have to look into retrofits. Now, gas at its current levels is a more affordable and a more efficient means in most cases, especially in a commercial application or a centrally located application, say, in a multi-unit residential. — PM-1

> It's a bit frustrating, too, because, you know, there's a lack of alignment between our federal politics and our provincial and municipal politics, because federally, Canada is leaning into its resource nature to become competitive on the world stage. Far from, you know, cutting back on gas, and other fossil fuel production, we're actually using that as a competitive advantage. So, it just feels like the property management industry is going to be the one squeezed on a current and not very practical policy rollout. — PM-1

PM-1's central recommendation was that governments measure outcomes.

> Well, I personally think a lot of the time they shoot themselves in the foot. And you know, the policies are made for political reasons, but they don't measure outcomes. They don't measure the efficacy of their programs — because what they often would see is that actually they're doing the opposite of what they want. Like if these sorts of policies become enforced in older buildings we're gonna have to evict tenants and knock buildings down, because there comes a point with these older buildings where it just isn't practical to reuse existing infrastructure and try and enforce a current technology into them. — PM-1

Workforce, Installation and Maintenance

Training, certification, installation quality, commissioning and operation.

Knowledge and Training

ENG-2 was candid about the gap between what engineers are required to design and what contractors can see makes sense.

> There's knowledge gaps as far as people understanding why we're doing it this way. Because they're like, well, this doesn't make sense, and then it's hard for us to sometimes justify, yeah, maybe sometimes it doesn't make sense why we're doing it that way, but that's just the way... When a contractor sees it, they generally don't have a filter, and sometimes they say, "Well, why aren't you doing it this way, or why aren't you putting that boiler in? It's way cheaper to do." We kind of agree with the contractor sometimes, and then just say, "Well, that's the way we had to do it, because that's what the requirement is." — ENG-2

PM-2 raised the issue of bringing along a sector to use technologies they are unfamiliar with.

> You've got a training issue, because you're going from a system people know and understand to something they don't know. Which brings up the risk piece: how long do these things last? What are the maintenance cycles? There are all the what-ifs. — PM-2

Installation Standards and Quality

HVAC-2 explained why a short online course is not enough: small errors in refrigerant charge have large effects on performance.

> A heat pump or air conditioning system — if your charge is out by 10%, you're probably going to negatively affect the capacity of the equipment by up to 25%. Our equipment comes factory-charged for a certain amount of line, but the factory charge isn't always accurate — you've got to know what to do. We spend just about as much time on startup and commissioning as we do on the actual installation. There's a lot of contractors — chuck-in-a-truck guys — who go out, hook up their lines, throw the switch, it starts up, in the name of the Father, the Son, and the Holy Spirit, and they're out.
>
> Superheat, as far as [the certification training] goes, they teach you how to spell it, not what the critical component of it is. So it's nowhere near the training that's required. — HVAC-2

HVAC-3 made the case for inspection, similar to HVAC-2.

> There's not really much permitting involved with putting heat pumps in for retrofit applications, other than electrical permits. There's no refrigeration permit even needed for it.
>
> I think a certain set of standards is necessary. Somebody needs to be looking over these jobs after they're done, as an inspection. Maybe it turns into a permit that gets pulled by a registered refrigeration contractor, a follow-up inspection after the work's done to code, as required — because there's a lot of hack-show stuff going around, where we're going in and fixing installs from non-reputable companies. It's so bad now that you can go buy your own heat pump at Costco and install it yourself. There are companies selling heat pumps online, to everybody. And that's going to potentially have all kinds of problems. — HVAC-3

HVAC-3 said the biggest gap in customer understanding is the difference quality makes.

> I think the biggest thing for us is selling quality — explaining that if you go with one of these smaller chuck-in-a-truck guys, yeah, you get sold the warranty and all that stuff, but they're not going to be there to come fix it a lot of the time. Either they'll go out of business, or they won't even get back to you when you call them to fix this thing on a Saturday, when it's minus two out, because they just don't have the bandwidth to do it. — HVAC-3

Maintenance, Commissioning and Operation

HVAC-2 stressed that the operating economics of a heat pump depend on maintenance, which owners often neglect.

> Our equipment — I'm talking residentially — is designed to last 20, 25 years... A furnace can withstand a lot less maintenance, if you will, than a heat pump system. A heat pump system's got to be looked after and receive regular maintenance. If you do not do regular maintenance, like filter changes, I guarantee you won't get 20 months out of it... After it's in for two years, nobody touches it, it breaks down, and the whole project gets a real big black eye. But if it's looked after, it saves them so much money, it's incredible. — HVAC-2

HVAC-4 described working at the leading edge of new equipment.

> We do a lot of startup-and-commissioning work, so we deal with a lot of manufacturers directly, fly out, turn things on, commission systems... That's where I'd say we're right in the middle of the latest and greatest, we're turning it on and making it work, and finding out all the things that don't work with it, which is quite common too. — HVAC-4

Information and Trust

Where respondents get information, whom they trust, and how they view communication from governments and utilities, along with public perceptions of gas and heat pumps and the mood in the trade.

Utilities and Government

ENG-1 elaborated on his concern that BC Hydro emulate Fortis's business approach.

> There's no one really on the ground. There's no salesperson going around and talking to developers and existing building owners about this sort of stuff. A lot of people are finding it out on their own. They do their own research... Again, I think passion, getting people engaged and excited is the most powerful thing out there. And I think the government, Hydro, needs to find a way to do that, instead of being kind of intellectual about it, perhaps.
>
> And I know a lot of the questions you're asking are these bigger policy, bigger-picture questions, but it's honestly it's all these little battles day-to-day. We see them, we deal with people, we do a lot of projects, so we see these trends, and that's where a lot of these little decisions are made along the way. — ENG-1

Asked what governments get wrong, ENG-1 had no ready answer, beyond suggesting that operating costs deserve a closer look.

> In terms of what they tend to get wrong, operating cost would be an interesting one to look at, especially with the volatility of the price of gas. I don't know if they get much wrong otherwise. It's honestly not an easy thing to do. — ENG-1

Perceptions of Gas and Heat Pumps

ENG-1 described a long public attachment to gas that is only now shifting.

> Ten years ago, people were trying to stick instantaneous water heaters in condos — gas water heaters, which is overkill, it's crazy, but people love the idea of gas. Or gas fireplaces you can't even, honestly, turn on because they're too powerful... I think there's just been a long legacy of gas... People were eager to get on gas — like the previous generation — because it was viewed as a luxury. And so transitioning away from that is the next thing. So we are seeing it. — ENG-1

SUP-1 said that in the Prairie provinces, where gas is cheaper and incentives are weaker, contractors still face the belief that heat pumps fail in the cold.

> When I chat with my equivalents in Alberta, Manitoba, Saskatchewan — gas is cheaper, hydro's on par or more money than it is here. And they don't incentivize things the same way. They also still have to overcome the stigma of, "Well, heat pumps won't work when it's minus 18 outside." They still have that stigma to get over. — SUP-1

Mood and Persuasion

ENG-3 said his hopes now rest less on public pressure than on technology that is ready to use.

> I was always a bit of a climate-activist type, and I'm not really hopeful anymore that there's going to be some groundswell uprising. What I'm more hopeful about these days is that if we can just start using some of the technology we already have — which is finally coming around to where it might actually be able to do the job — then that, to me, is where the fight is right now. — ENG-3

HVAC-3 summed up the mood among mechanical contractors at the time of his interview.

> We're adapting, changing ways to do things to try to mitigate it, but — you talk to anybody in the mechanical industry, I'm obviously very expressive about how I feel about it, and I haven't heard anybody say, "Oh, we're doing great right now." — HVAC-3

Notes

1 BC's Zero Carbon Step Code has four emission levels, from EL-1 ("measure only") to EL-4 ("zero carbon performance"). The province requires most new buildings to meet at least EL-1 from March 10, 2025; local governments can require higher levels. (Government of BC: https://www2.gov.bc.ca/gov/content/industry/construction-industry/building-codes-standards/bc-codes/2024-bc-codes/step-codes/zero-carbon-step-code) The City of Victoria requires all new residential and commercial buildings to meet EL-4. (City of Victoria: https://www.victoria.ca/EN/main/residents/planning-development/development-services/green-buildings.html)

2 ENG-4's 50 percent figure for specific cities has not been verified, and stands here as anecdotal perception. The Capital Regional District's 2024 inventory attributes about 71 percent of regional emissions to transportation and buildings combined, and says natural gas accounts for the majority of building-related emissions. (Capital Regional District: https://www.crd.ca/node/31267)

3 For the "top 3" issues statistic, see Abacus Data. (Abacus Data: https://abacusdata.ca/federal-liberal-lead-remains-stable-as-canadians-settle-into-a-holding-pattern/) The claim that only half of Canadians (nationally) think climate change is human-caused seems unsupported by recent polling and research. (Re.Climate, page 15: https://reclimate.ca/wp-content/uploads/2025/06/Re.Climate-Public-Opinion-Summary-2025-Report.pdf) Polling on Canadians' climate change perceptions may have been conflated with US results. (CP24: https://www.cp24.com/news/canada/2026/04/02/canadians-and-americans-report-growing-divide-on-climate-change/)

4 Site C reached full operation in August 2025. BC Hydro says it adds more than 1,100 megawatts of capacity and increases BC Hydro's total electricity supply by about eight percent. (BC Hydro: https://www.bchydro.com/news/press_centre/news_releases/2025/site-c-full-operation.html)

5 HVAC-2's figures are his recollection. The province's 2030 target for the "buildings and communities" sector is a 59 to 64 percent reduction in emissions from 2007 levels. (Government of BC: https://www2.gov.bc.ca/gov/content/environment/climate-change/planning-and-action/ccar/progress-targets)

6 BC Hydro notes that more than 98 percent of the electricity it generates comes from clean, renewable sources. (BC Hydro: https://www.bchydro.com/toolbar/about/sustainability/our-clean-system.html) In recent drought years, however, BC Hydro has imported close to a quarter of its needs, mostly from the US and Alberta, where much of the electricity comes from fossil fuels. In 2023-2024 BC Hydro paid nearly $1.4 billion for these imports. (Business in Vancouver: https://www.biv.com/news/bc-hydro-electricity-imports-underscores-need-for-more-power-says-efi-9893600)

7 The City of Victoria launched a pilot program in May 2024 that offers eligible market rental

buildings an exemption from municipal property taxes for up to 10 years, covering up to 100 percent of the cost of converting gas-fired heating or hot water to electric. (City of Victoria: https://www.victoria.ca/node/187) The District of Saanich launched a similar exemption in January 2024 for large multi-unit residential buildings, including rentals and stratas, covering up to 100 percent of project costs after other rebates over up to 10 years. (District of Saanich: https://www.saanich.ca/EN/main/news-events/news-archives/2024-news/saanich-launches-tax-exemption-program-to-encourage-building-electrification.html)

8 Rent control rules differ by province. (Housing Rights Canada: https://housingrightscanada.com/resources/rent-control-policies-across-canada/)

9 Heat pump water heaters move heat from surrounding air into the tank and can be more than twice as efficient as electric resistance tanks. When installed indoors they cool and dehumidify the space, which helps in summer but adds to winter heating load. (Sustainable Technologies Evaluation Program: https://sustainabletechnologies.ca/?p=6348)

10 On April 11, 2025, CleanBC ended heat pump rebates for households that are not income-qualified and are switching from gas, oil or propane, except in northern BC. Income-qualified rebates and FortisBC's dual-fuel rebates continued. (Home Performance Stakeholder Council: https://homeperformance.ca/cleanbc-better-homes-rebate-program-changes-effective-april-11-2025/)

11 BC Hydro's residential rate is about 12 to 14 cents per kWh. (BC Hydro: https://app.bchydro.com/accounts-billing/rates-energy-use/electricity-rates/residential-rates/tiered.html) FortisBC's natural gas works out to about 4.5 cents per kWh as of July 1, 2026, before basic charges. (FortisBC: https://www.fortisbc.com/accounts/billing-rates/natural-gas-rates/residential-rates) An electric boiler therefore costs roughly three times as much as gas to run; a heat pump, which delivers about 2.5 to 3.5 units of heat per unit of electricity, largely closes the gap.

12 BC's maximum allowable rent increase for 2026 is 2.3 percent. (Government of BC: https://news.gov.bc.ca/releases/2025HMA0067-000786)

13 ENG-2 and ENG-3 describe hybrid designs with gas backup on current projects, so the restriction PM-1 describes may reflect the requirements of a specific project, municipality or permit.

14 The 2024 BC Building Code requires at least one living space in each new dwelling unit to be capable of staying at or below 26°C. (Government of BC: https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/construction-industry/building-codes-and-standards/bulletins/2024-code/b24-08_overheating.pdf)

15 Figure not confirmed. FortisBC's page for residential gas line requests invites customers to apply online but does not state an installation charge. (FortisBC: https://www.fortisbc.com/services/natural-gas-services/how-to-request-a-natural-gas-line)

16 The review cost and timeline ENG-3 cites are his figures. BC Hydro's self-generation (net metering) program is limited to systems of no more than 100 kW AC inverter capacity.

Larger projects fall outside the program and may require an interconnection study, with fees based on scope. (BC Hydro: https://app.bchydro.com/accounts-billing/electrical-connections/net-metering.html)

17 The province requires most new buildings to meet at least EL-1 of the Zero Carbon Step Code, and local governments may require higher levels (see the note in Section 1). The CleanBC Roadmap to 2030 anticipates that all new buildings in BC will be zero carbon, and all new space and water heating equipment will be at least 100 percent efficient, by 2030. (Government of BC: https://www2.gov.bc.ca/gov/content/environment/climate-change/clean-buildings) Buildings and communities produced 19 percent of BC's emissions in 2023; the sector's 2030 target is given in an earlier note.

18 ENG-1 refers to "the CMHC program." This is likely CMHC's MLI Select, a mortgage loan insurance program for multi-unit rental housing in which borrowers earn points for affordability, accessibility or energy efficiency commitments, in exchange for longer amortization, higher loan-to-value ratios and lower premiums. (Storeys: https://storeys.com/cmhc-mli-select-meaning-definition-real-estate/)

19 Whether a dual-fuel system switches to gas, and at what temperature, depends on how it is set up. FortisBC's commercial dual-fuel rebate requires the switch to gas at or below –3°C in most BC climate zones. (FortisBC: https://www.fortisbc.com/rebates/business/dual-fuel-rooftop-units-rebates) Cold-climate heat pumps can keep operating well below that; a Natural Resources Canada field assessment measured a coefficient of performance of about 2.3 at –15°C. (Natural Resources Canada: https://natural-resources.canada.ca/maps-tools-publications/publications/cooling-heating-season-performance-assessment-mini-split-cold-climate-air-source-heat-pump-canadian-centre-housing-technology)

20 SUP-1's figures are his recollection and have not been checked.

21 Cooling rules for existing rentals vary by municipality. In New Westminster, landlords must keep at least one living space in each rental unit at an average of no more than 26°C overnight from April 1 to October 31; the bylaw does not specify the cooling method, and portable air conditioners are allowed. (City of New Westminster: https://www.newwestcity.ca/cooling-requirements) In May 2026, Victoria council directed staff to investigate a similar requirement. (The Martlet: https://martlet.ca/victoria-city-council-unanimously-votes-to-move-toward-heat-protection-bylaw-for-tenants/) For new construction, see the earlier note on the 2024 BC Building Code.

22 PM-2 referred to "the Canada Investment Bank"; the Canada Infrastructure Bank is the likely reference. Its Building Retrofits Initiative finances retrofits of public buildings and of privately owned commercial, industrial and multi-unit residential buildings. (Canada Infrastructure Bank: https://cib-bic.ca/en/building-retrofits-initiative) The federal Clean Technology Investment Tax Credit, a refundable credit of up to 30 percent of eligible capital costs, applies to air-source and ground-source heat pumps and is available to taxable Canadian corporations and real estate investment trusts. (Canada Green Building Council: https://cagbc.org/news-resources/cagbc-news/federal-governments-clean-technology-investment-tax-credit-sweetens-the-pot) MLI Select is described in an earlier note.

23 CleanBC heat pump rebates require installation by a contractor in the Home Performance Contractor Network (HPCN). In March 2026, HPCN announced stricter eligibility for HVAC installers: a Red Seal refrigeration and air conditioning mechanic, or a related trade (plumbing, pipefitting, gasfitting or sheet metal) plus a BCIT microcredential with hands-on training. The changes are being phased in; outside the Lower Mainland, the in-person course is not required until 2027 or 2028. (Home Performance Stakeholder Council: https://homeperformance.ca/changes-coming-for-home-performance-contractor-network-hpcn-hvac-sector-eligibility-and-training-requirements-mar-26/) Respondents' comments on the 40-hour online training describe the pathway through which most current installers were certified. These rules govern which contractors' installations qualify for rebates; they do not set requirements for residential heat pump installation in general.

24 These figures are the respondent's and have not been validated.

25 We could not confirm this. CleanBC's Better Homes website, which lists provincial, utility and local rebates, remains online. (CleanBC Better Homes: https://betterhomesbc.ca/) Natural Resources Canada also maintains a list of federal funding programs for building retrofits. (Natural Resources Canada: https://natural-resources.canada.ca/energy-efficiency/building-energy-efficiency/retrofit-hub-funding-incentives)

26 FortisBC buys renewable natural gas (RNG) from many producers across North America, not "two farms." (The Tyee: https://thetyee.ca/News/2024/03/20/Fortis-BC-Promised-Green-Gas/) Estimates of the RNG in FortisBC's system vary with the measure. A 2024 Tyee investigation put actual RNG at about half of one percent of FortisBC's supply. The RNG share automatically included in customers' supply rose to two percent on January 1, 2025, and most RNG purchased by FortisBC comes from outside BC, largely through US contracts for RNG credits. (Canadian Climate Institute, March 2025: https://climateinstitute.ca/bc-has-a-math-problem-with-renewable-natural-gas/)

27 Renewable natural gas is made by capturing the methane released as organic waste breaks down, at landfills, farms and wastewater plants, and upgrading it for use in the gas system. Where that methane would otherwise escape, capturing it does reduce emissions. (Canada Energy Regulator: https://cer-rec.gc.ca/en/data-analysis/energy-markets/market-snapshots/2020/market-snapshot-energy-everydaywaste.html) On the share of RNG in FortisBC's supply, see the earlier note.

28 Most gas furnaces need electricity to run. The practical difference is the size of backup power required: a common portable generator can run a gas furnace, while a central heat pump typically needs a much larger one. Outages on Vancouver Island can be long: the November 2024 windstorm left up to 300,000 BC Hydro customers without power, more than half of them on the Island. (CP24: https://www.cp24.com/news/canada/2024/11/23/bc-hydro-says-power-almost-fully-restored-after-bc-windstorms/) That said, gas service can also fail; in April 2026 about 6,200 FortisBC customers in the Okanagan lost gas service for several days. (Energeticcity.ca: https://energeticcity.ca/2026/04/16/thousands-without-natural-gas-service-in-b-c-s-okanagan-possible-until-sunday/)

29 A Natural Resources Canada field assessment of a cold-climate mini-split heat pump

measured a coefficient of performance of about 2.3 at –15°C and estimated close to 2.0 at –25°C, though some backup heat was needed in the coldest periods. (Natural Resources Canada: https://natural-resources.canada.ca/maps-tools-publications/publications/cooling-heating-season-performance-assessment-mini-split-cold-climate-air-source-heat-pump-canadian-centre-housing-technology) HVAC-2's figures for current equipment are his own.

30 R-410A, the refrigerant in most heat pumps installed in recent years, is a potent greenhouse gas being phased out of new equipment. (IWAE: https://iwae.com/resources/articles/why-is-r-410a-being-phased-out.html) Its replacements, such as R-32 and R-454B, are rated "lower flammability": hard to ignite, but able to burn. (AAON: https://aaon.com/resources/understanding-the-safety-classification-of-r-454b-refrigerant-a2l-explained)

31 ENG-3 described one of the conductors as having burned. In July 2021, following the heat dome, BC Hydro reported that three submarine cables carrying power to Vancouver Island had bulged where they come ashore, one leaking oil, and speculated that the extreme heat was responsible. The leaking cable was taken out of service and power through the other two was reduced. (Times Colonist: https://www.timescolonist.com/local-news/cables-that-bring-power-to-island-damaged-maybe-by-heat-wave-4690639)

32 The 2030 emissions requirement PM-1 describes has not been confirmed. The BC Building Electrification Roadmap is produced by the Zero Emissions Innovation Centre, which runs the Building to Electrification (B2E) Coalition, with input from about 200 stakeholders. It is a set of recommendations to governments and utilities, not a regulation; the 2026 edition includes a strategy to accelerate retrofits of existing buildings. (Techcouver, May 2026: https://techcouver.com/2026/05/04/roadmap-pathway-electrified-building-stock-bc/)