



Deep Retrofit Plans

Intro to Emissions-Neutral Buildings Series: Deep Retrofits

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Deep retrofit plans

When considering a deep retrofit for your building, it is critical to develop a plan. A deep retrofit plan is more than just an energy audit (e.g., ASHRAE Level 2), which analyses energy use and related financial metrics such as the estimated capital costs and savings potential of each element. A deep retrofit plan includes additional components like a list of what retrofit work will be implemented and the timing of each element. The building upgrades may be planned as a single project or as a longer-term series of upgrades that aligns with the building's asset renewal plan. By planning ahead, you can minimize costs associated with retrofit projects as you upgrade your building(s) to improve their asset value and lifespan.

What is a deep retrofit?

At Alberta Ecotrust Foundation, we define a **deep retrofit** as a whole-building approach to optimizing energy performance and achieving meaningful carbon emissions reductions. This approach considers all systems and components in a building and involves upgrading some or all of them. Deep retrofits typically target emissions reductions of 50 per cent or more. A deep retrofit project can have a variety of building upgrades, which are also referred to as **energy conservation measures (ECMs)**.

What are examples of deep retrofit upgrades?

A deep retrofit project can include many different types of ECMs, such as:

- Energy-efficient equipment (e.g., efficient boilers or chillers)
- Waste heat recovery (e.g., heat recovery ventilator)
- Electrification (e.g., heat pump for heating and cooling)
- On-site energy generation (e.g., solar panels)

How do I plan my deep retrofit project?

In the early stages of a deep retrofit project, it is important to develop a **deep retrofit plan**. Most building owners don't do this alone. Support may include:

- **Opportunity Assessments:** Conducted by online service providers or traditional consulting firms without visiting the building(s). These can help building owners identify areas of opportunity for further investigation and can be particularly helpful for owners with multiple buildings in their portfolio.

- **Detailed Deep Retrofit Plans:** Prepared by consulting firms who visit your building(s) in person and develop detailed deep retrofit plans based on the information they gather.

Every service offering is unique and may include one or more of the categories above. Before hiring any service provider, it's important to ask about the advantages and limitations of the services they offer.

What is included in a deep retrofit plan?

A deep retrofit plan is more than just an energy audit (e.g., ASHRAE Level 2). It includes:

- **Retrofit roadmap:** Planned upgrades and a schedule for when each will be completed.
- **Costs:** Estimated cost for each upgrade and the total project.
- **Cost savings:** Estimated cost savings for each upgrade (e.g., reduced utility bills).
- **Energy savings:** Estimated energy use savings for each upgrade.
- **Financial metrics:** Estimated return on investment, net present value and cash flow.
- **Carbon reduction potential:** Estimated carbon emissions reductions over time.
- **Non-energy impacts:** Potential impacts on occupant comfort and tenant retention.

When hiring a service provider to develop a deep retrofit plan, you can specify which of these items, and any others, that you would like to be included. A clear scope of work helps you and your service provider have a shared understanding of what your deep retrofit plan will cover.

Why should I have a deep retrofit plan?

Deep retrofit plans offer some key benefits:

- **Comparison to status-quo:** Compares existing systems and proposed upgrades, side by side.
- **Sequencing:** Big-picture view helps optimize steps (e.g., solar panels after roof replacement).
- **Alignment with existing renewal cycles or capital plans, allowing for:**
 - Project prioritization based on cost-effectiveness and impact.
 - Adequate planning time, which can minimize operational disruption.
 - Efficient resource allocation by spreading costs over time.
- **Value to potential buyers:** Demonstrates your building's potential and your commitment to improving the building's condition and quality.