

B2E Online Event



The Road to 2030 - Building Electrification in BC

Wed Dec 8, 2021, 10am - 11.30am PST

 **BC Hydro**
Power smart

 **CITY OF
VANCOUVER**

Agenda

- CleanBC Roadmap to 2030
- BC Hydro Electrification Plan
- Metro Vancouver Buildings Roadmap
- B2E Highlights



B2E

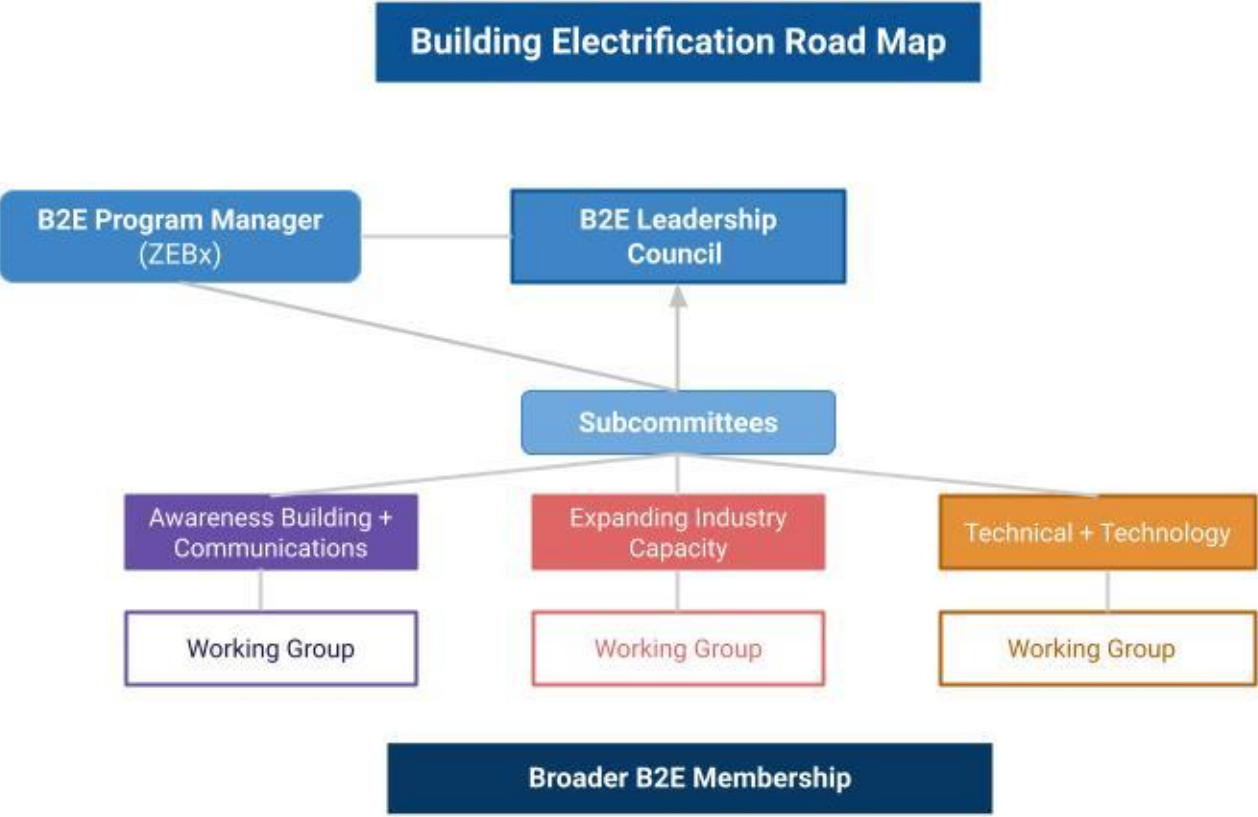
**Building to
Electrification
Coalition**



Our Vision

By 2030, all new and most replacement space heating and domestic hot water systems in BC's buildings will be affordable high-efficiency and low-carbon with electric systems being widely used across all market sectors.

B2E Structure





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Building to Electrification Coalition

B2E is a BC-based member-driven coalition working towards a

Our Mission

We are a broad coalition working together to electrify buildings



cleanBC

our nature. our power. **our future.**

Roadmap to 2030
Buildings Pathway Commitments
B2E
December 8, 2021

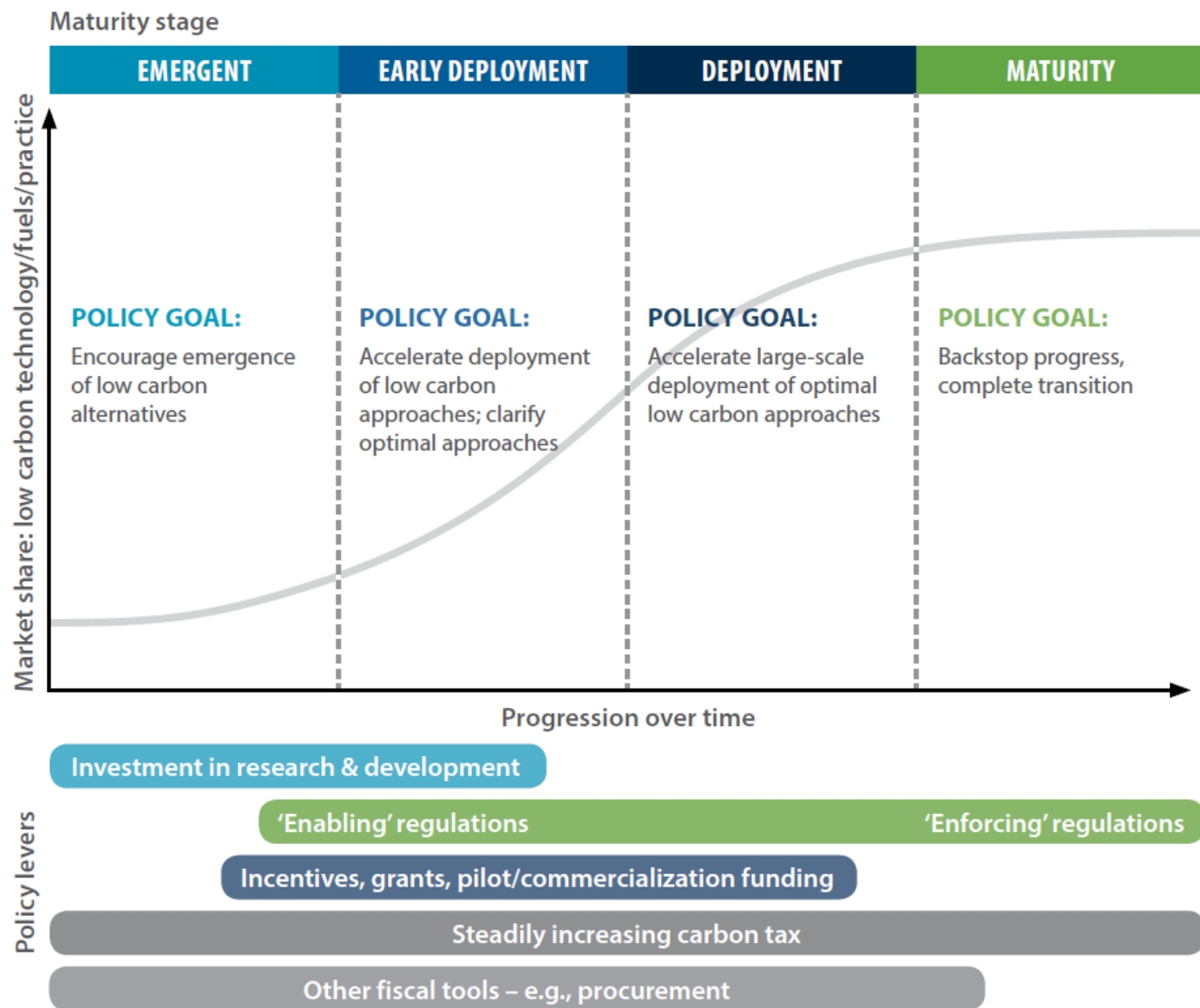


Marquee Measures

- ✓ A stronger price on carbon pollution with corresponding affordability and competitiveness protection
- ✓ Accelerated zero emission vehicle law for light-duty and new targets for medium- and heavy-duty vehicles
- ✓ Low Carbon Fuel Standard enhancement and doubling the target for renewable fuels produced in B.C. to 1.3 billion litres by 2030
- ✓ **New GHG Cap for Natural Gas Utilities with a variety of pathways to achieve it**
- ✓ Enhance the CleanBC Program for Industry and ensure oil and gas achieves its sectoral target
- ✓ Near elimination of industrial methane emissions by 2035 and a 75% reduction in oil and gas methane by 2030
- ✓ New large industrial facilities to work with government to demonstrate how they align with government's 2030 and 2040 targets and submit plans to achieve net-zero emissions by 2050
- ✓ **Zero carbon new buildings and highest efficiency standards for new space and water heating equipment by 2030**
- ✓ A new program to support local government climate action



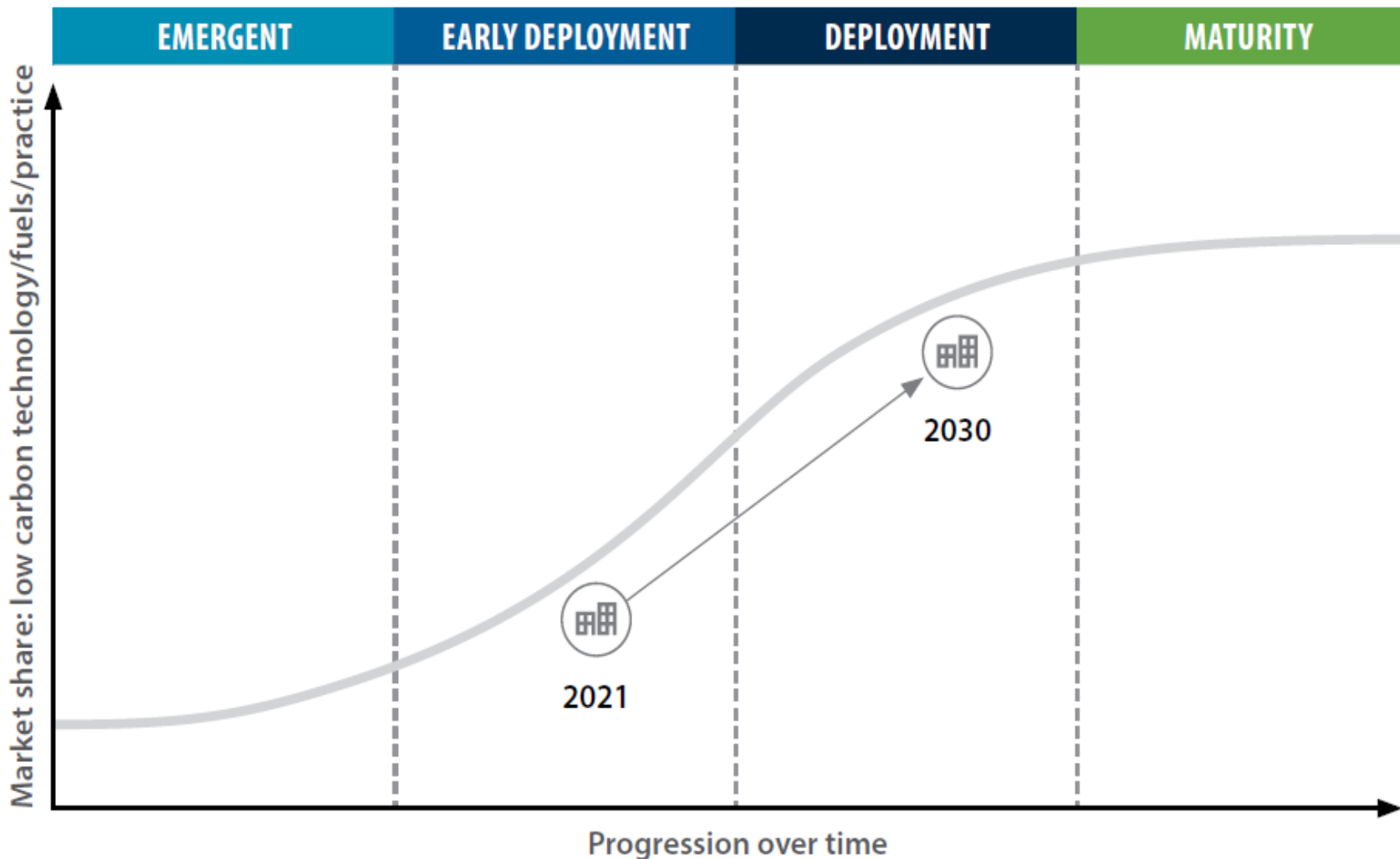
Market Readiness





Buildings Pathways

Maturity stage



KEY ACTIONS

- Zero-carbon new construction by 2030
- Highest efficiency standards for new space and water heating equipment
- Enhancing energy efficiency programs
- Introducing home energy labelling
- More low carbon building materials



Low Carbon Energy Pathway

- **GHG Reduction Standard** with emissions cap set at approximately 6 Mt CO₂e per year for 2030 for natural gas utilities aligned with sectoral targets
- Implement **100% Clean Electricity Delivery Standard** for BC Hydro to increase benefit of further electrification, support BC Hydro in phasing out remaining gas-fired facilities on its integrated grid by 2030
- To **support BC Hydro's electrification plan**, add electrification/fuel-switching to its mandate, introduce an internal carbon price to evaluate electrification initiatives in regulatory applications, and enable investments in green hydrogen production and commercial vehicle incentives and infrastructure



Buildings - Zero Carbon New Construction by 2030 **cleanBC**

- Introduce voluntary GHG intensity standards for buildings initially, with local government to pilot (like the Step Code)
- Government will review progress in 2023
- **Phase in provincial requirements in the base BC Building Code starting in 2024, targeting zero carbon new construction by 2030**
- **Zero carbon new public sector buildings by 2027**



Buildings - Highest Efficiency Equipment Standards **cleanBC**

- Space and water heating are the primary drivers of GHG emissions from buildings
- Need to ensure these functions are super-efficient and, wherever possible, use clean electricity or renewable fuels
- **After 2030, all new space and water heating equipment sold and installed in B.C. will be at least 100% efficient,** significantly reducing emissions compared to current combustion technology
- Implementation through the *Energy Efficiency Act* and BC Building Code
- Eligible equipment will include electric resistance technologies, electric heat pumps, hybrid systems and high-efficiency gas heat pumps



Buildings - Enhancing Energy Efficiency Programs **cleanBC**

- Shift utility and provincial energy efficiency programs **to better align with CleanBC** – support market readiness for future codes and standards as well as affordability for households and businesses
- **Modify utility energy efficiency programs so they no longer incent conventional gas-fired heating equipment;** enhance building envelope and hybrid system incentives
- Ensure incentive programs benefit those with the greatest needs/lowest incomes
- Proceed with next steps on a Property Assessed Clean Energy (PACE) program



Buildings - Home Energy Labelling

- Ministers of Finance and Energy, Mines and Low Carbon Innovation were mandated to require realtors to provide energy efficiency ratings on listed homes
- Policy implementation timeline TBD
- Roadmap commits to introduce a web-based, virtual home-energy rating tool to support this requirement, including retrofit decision assistance functionality tied to the Better Homes web hub
- In-home EnerGuide assessments will continue to play a role where homeowners want a more in-depth evaluation, or where homes are too unique for virtual energy ratings to be accurate



Buildings - Next Steps

- Work with building owners, professionals, tradespeople and supply chains to prepare for these shifts
- Continue to support market readiness and affordability through CleanBC Better Homes and Better Buildings rebates and financing, innovation funding, technical guidance and ongoing industry training
- Engagement on Roadmap implementation over the next 2 years

Thanks

A clean future powered by water

Introducing BC Hydro's Electrification Plan

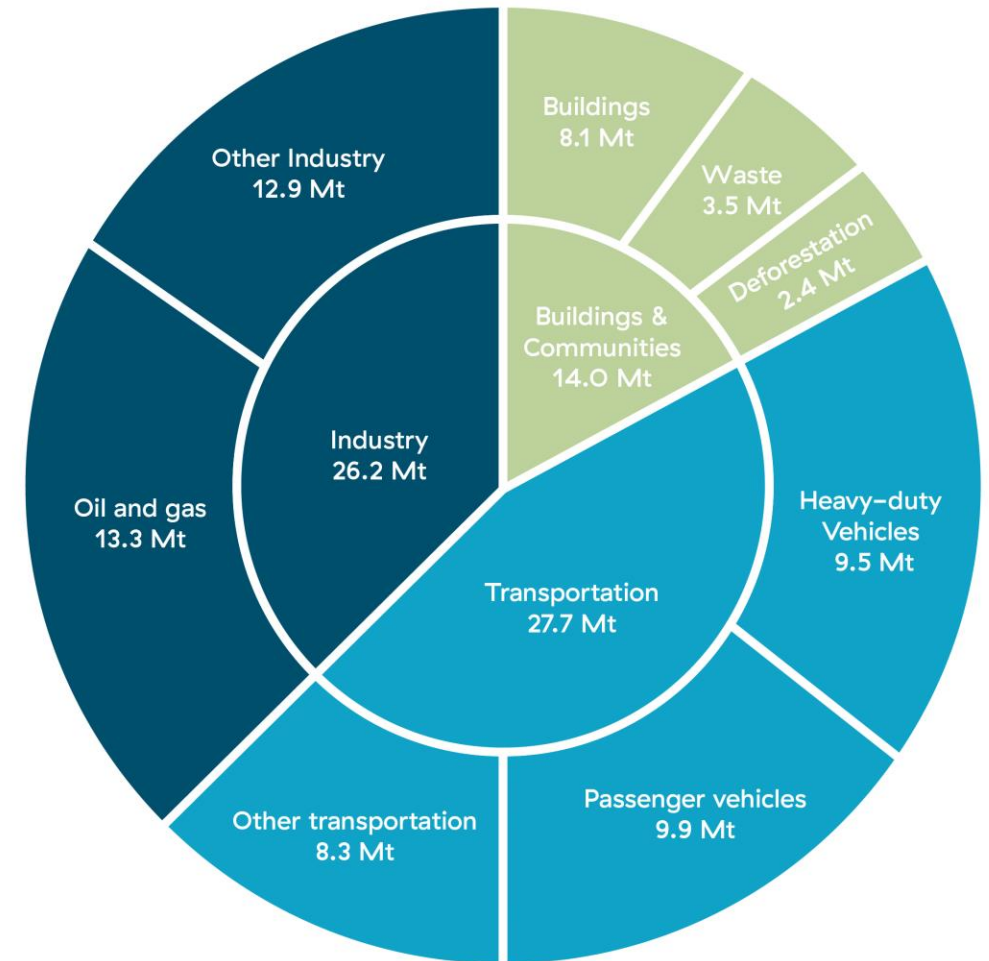


In B.C.

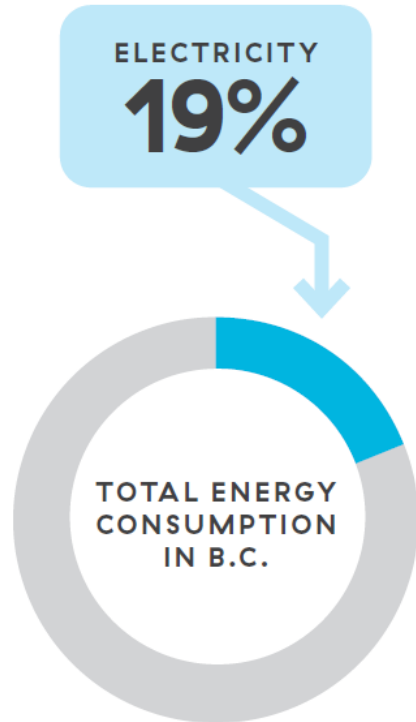
- Greenhouse gas emissions are rising steadily
- Three sectors account for most emissions: buildings, transportation and industry
- B.C. government launched its CleanBC plan in 2018 to address emissions reductions across sectors
- Targets require GHG emissions in B.C. to be 40% below 2007 level by 2030; 60% by 2020 and 80% by 2050.



B.C.'S gross emissions by sector in 2018



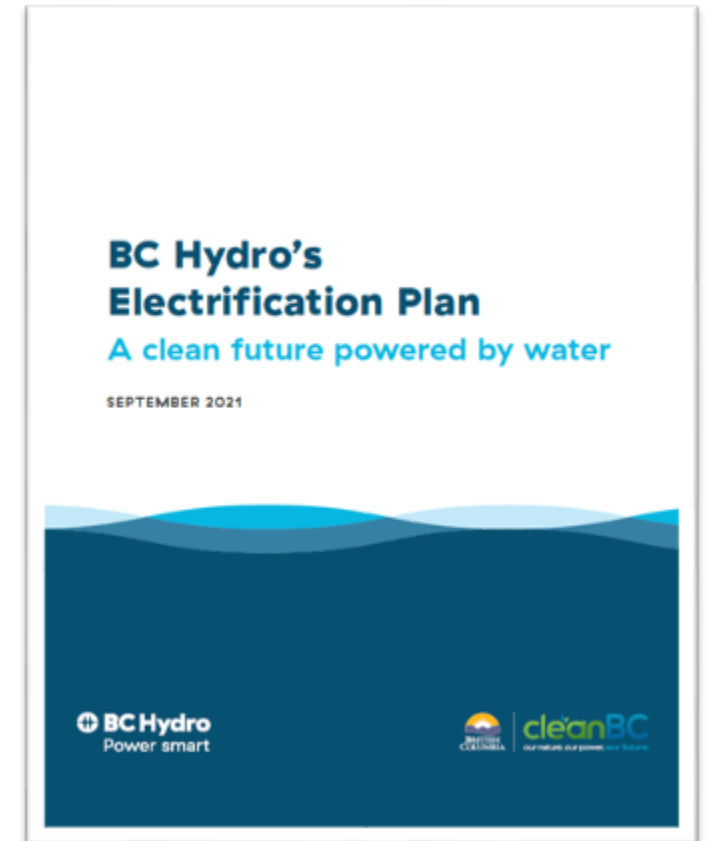
Electrification is a way forward



- Currently, electricity is only 19% of total energy consumption in B.C.
- Industry, transportation and building sectors have the potential to decarbonize, making the switch to clean
- BC Hydro can support fuel switching, reducing B.C.'s emissions and meeting targets
- This can help keep rates low

BC Hydro's Electrification Plan

- BC Hydro has developed a 5-year **Electrification Plan** that supports CleanBC targets through:
 - Programs to help customers **switch to clean** electricity across key sectors: Building, Transportation and Industry
 - Attracting **new businesses to B.C.** that want to be powered clean
 - Making it easier for current and future customers to **connect to our grid**



Investing in electrification

- BC Hydro will invest **\$260 million** over the next 5 years
 - More than **\$190 million** to promote fuel switching including:
 - Residential heat pump offers
 - Commercial building retrofits
 - Transportation electrification
 - Industrial fuel switching
 - Energy studies – a combined \$19M
 - More than **\$50 million** to attract new customers to B.C. and support hydrogen production

What the plan will achieve

- 3,100 GWh of new electricity load
- 930,000 tonnes CO₂e reduced per year
- 1.6% reduction in rates

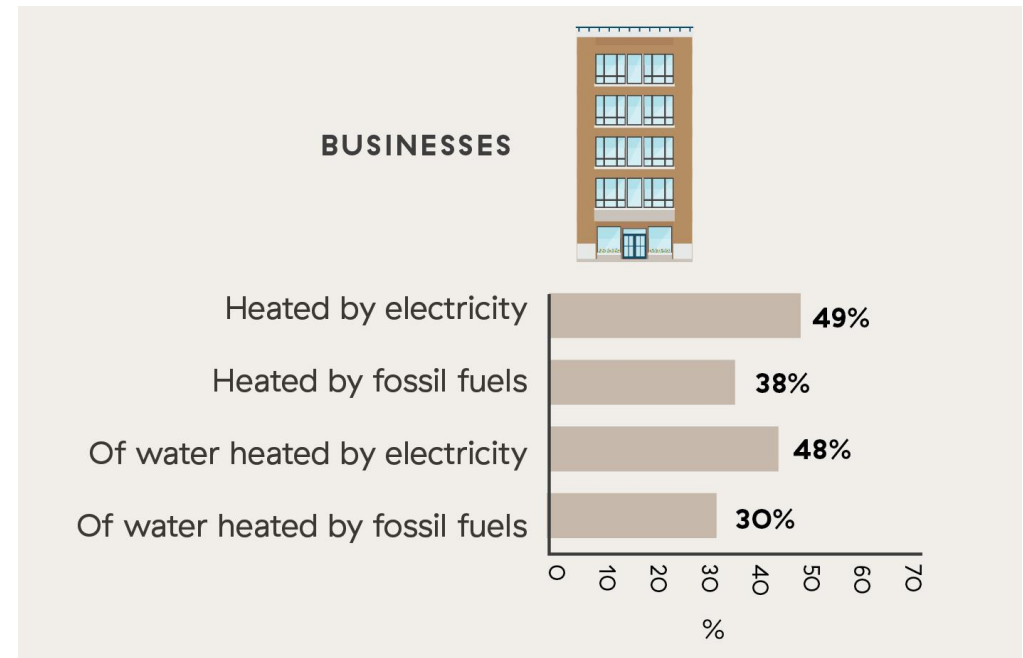
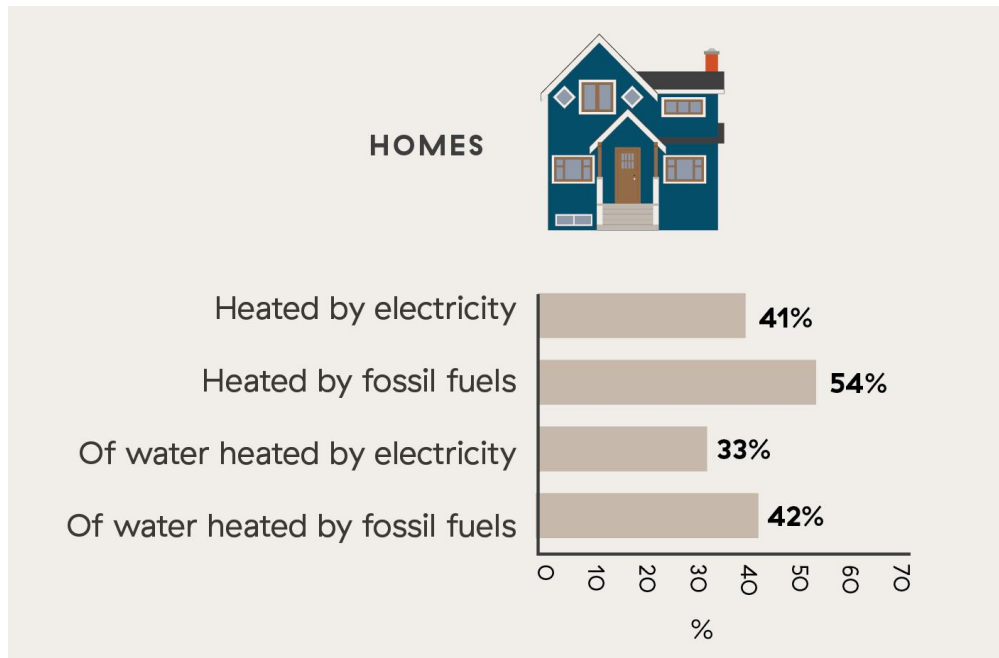
Switching to clean across sectors

The plan identifies many opportunities across sectors to encourage the switch

HOMES AND BUILDINGS	<ul style="list-style-type: none">○ Space heating○ Water heating
TRANSPORTATION	<ul style="list-style-type: none">○ Road: personal vehicles, fleet vehicles, transit○ Non-road: marine, port operations, airports, rail○ Mobile diesel: power tie-ins to replace mobile generators
INDUSTRY	<ul style="list-style-type: none">○ Industrial process: mining operations, forest products○ Natural gas production & pipelines○ Clean technology and innovation (data centres, hydrogen production, and carbon capture sequestration)

Powering homes and businesses

- Space and water heating represents the majority of a building's total energy use
- 11% of B.C.'s greenhouse gas emissions or 6.9 million tonnes are from this sector



The plan for homes and businesses

- A significant shift in how space and water are heated is required
- Right now:
 - Low awareness of heat pump technologies
 - Higher upfront costs (and longer-term payback)
 - Contractors, manufactures and distributors need support to shift the market
- BC Hydro's Electrification Plan includes:
 - \$13 million in top-up offers for residential heat pumps (up \$3000 per household)
 - \$8 million for low-income housing sector
 - \$5 million in incentives and other support for commercial building retrofits and electrification of new buildings
- Expanded Energy Manager program for commercial customers

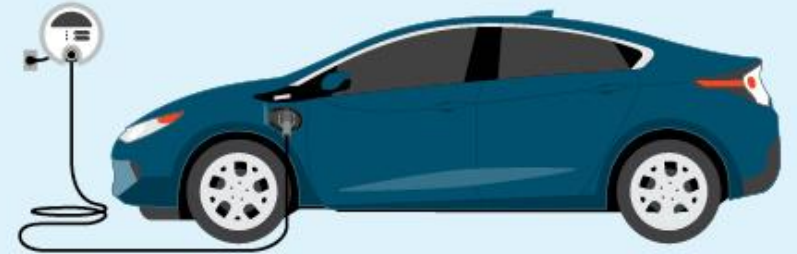
NEW LOAD	↑ 200 GWh
GREENHOUSE GAS EMISSIONS	↓ 200,000 Tonnes
NEW INCENTIVES	↑ \$26 Million

Powering transportation

- Transportation includes light duty passenger vehicles and medium and heavy-duty trucks, buses, ferries and commercial fleets
- Represents 40% of B.C.'s greenhouse gas emissions
- The *CleanBC Roadmap to 2030* targets 90% of new cars and light-duty trucks sold to be clean by 2030, moving to 100% by 2035.

EV BENEFITS

- Reduce emissions
- Save 80% in fuel costs
- Save about \$100 in maintenance costs per month



The plan for transportation

- More public awareness about the benefits of driving an EV in B.C.
- BC Hydro's Electrification Plan includes:
 - Further expand BC Hydro's fast charging network to 325 stations at 145 sites by 2025
 - Advisory services, study funding, infrastructure assessments, pilot projects, and charging infrastructure for commercial and heavy duty fleets
 - Up to \$30 million in incentives for electrification of transportation (buses, ferries, and fleets)

NEW LOAD	↑ 100 GWh
GREENHOUSE GAS EMISSIONS	↓ 90,000 Tonnes
NEW INCENTIVES	↑ \$30 Million

Easier grid connections

Behind the scenes, programs are underway improve our speed of service and cost certainty for customers. Improvements in:

- Planning
- Processes
- Customer support

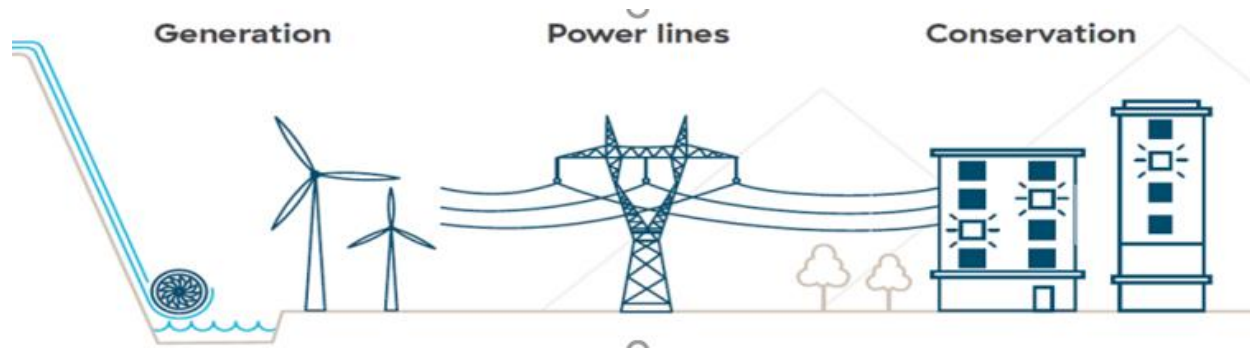


Electrification and Conservation

- Electrification and energy efficiency are **complementary**
- Power Smart means – it's more than conserving energy, it also means making the smart choice of switching to clean power
- Efficient use of electricity will free up more capacity and energy for other opportunities like low carbon electrification
- BC Hydro's Demand-Side Management Plan is being developed as part of the 2021 IRP

Integrated Resource Plan

Actions we need to take now to meet future electricity needs



- BC Hydro's 20-year plan to meet future customer electricity needs
- Province-wide plan for our integrated system

Timing





BC Hydro

Power smart





Brock Commons, UBC – Photo courtesy of www.aturallywood.com

Climate 2050 Buildings Roadmap

A PATHWAY TO ZERO EMISSIONS AND RESILIENT BUILDINGS

Conor Reynolds

Division Manager, Air Quality & Climate Change Policy,
Metro Vancouver

Erik Blair

Senior Planner, Metro Vancouver

VISION

Buildings Roadmap

In 2050...

- *Metro Vancouver residents live in resilient, healthy, zero emissions buildings across the region*
- *Buildings are healthy, comfortable and smart*
- *Flood protection, increased shading, air filtration and cooling have become a standard in nearly every building.*



Brock Commons, UBC – Photo courtesy of www.aturallywood.com

CLIMATE 2050

Issue Areas & Climate 2050 Roadmaps



Infrastructure



Energy



Human Health and Well-Being



Land-Use and Growth Management



Nature and Ecosystems



Industry



Buildings



Agriculture



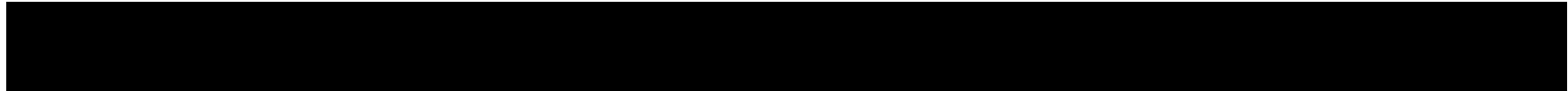
Transportation



Waste

GOALS

Buildings Roadmap



GOAL: Zero Emissions Buildings

All buildings are zero emissions from heating and cooling by 2050.

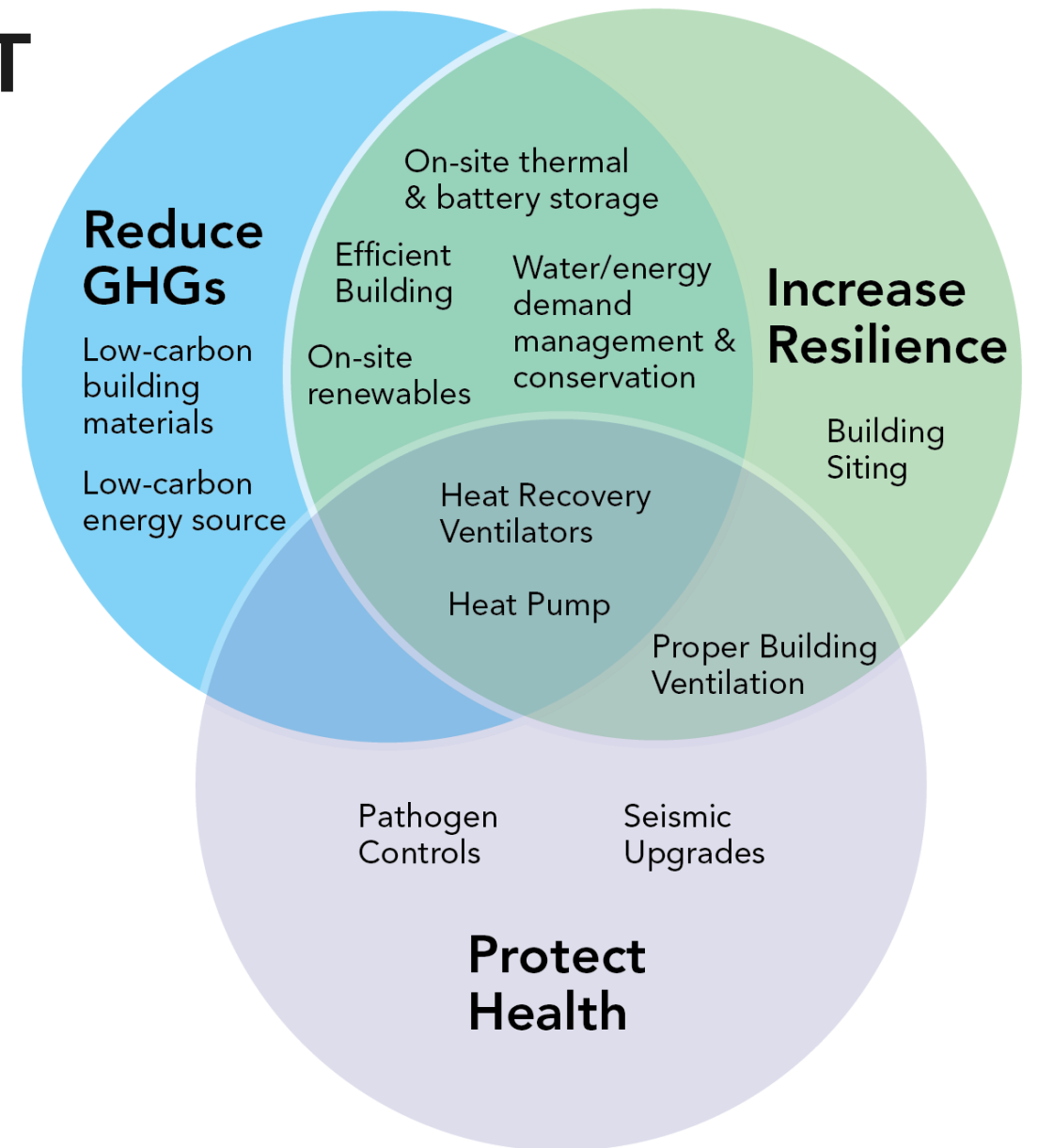
GOAL: Resilient Buildings

Residents are protected by buildings that are resilient to high temperatures, harmful air quality, severe storms and flooding by 2050.

ZERO EMISSIONS & RESILIENT

Buildings Roadmap

- Sources of GHGs and expected impacts from a changing climate
- Framing zero emissions and resilient buildings & electrification as a viable pathway
- Barriers & opportunities to address



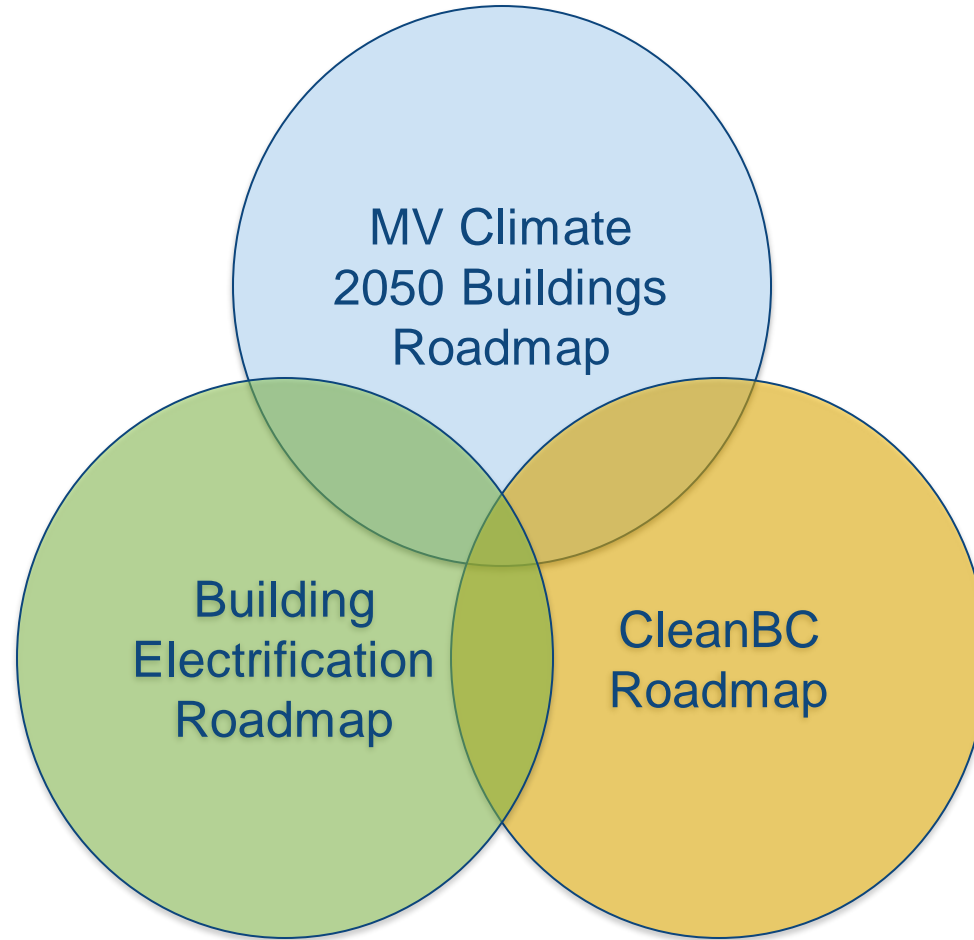
BIG MOVES

Emissions Reductions

- GHG performance requirements for existing large buildings (1.1)
- GHG performance requirements for existing homes and townhomes (1.2)
- New buildings are highly efficient and **electric** (1.3)
- Require GHG reductions during renovations (1.4)
- **Building electrification mandate** for BC Hydro (1.5)
- Expand incentives for low carbon upgrades (2.1)
- Online decision support tools for low carbon upgrades in buildings (2.2)
- Emission requirements for district energy systems (3.1)
- Incorporate embodied emissions into the BC Building Code (4.1)

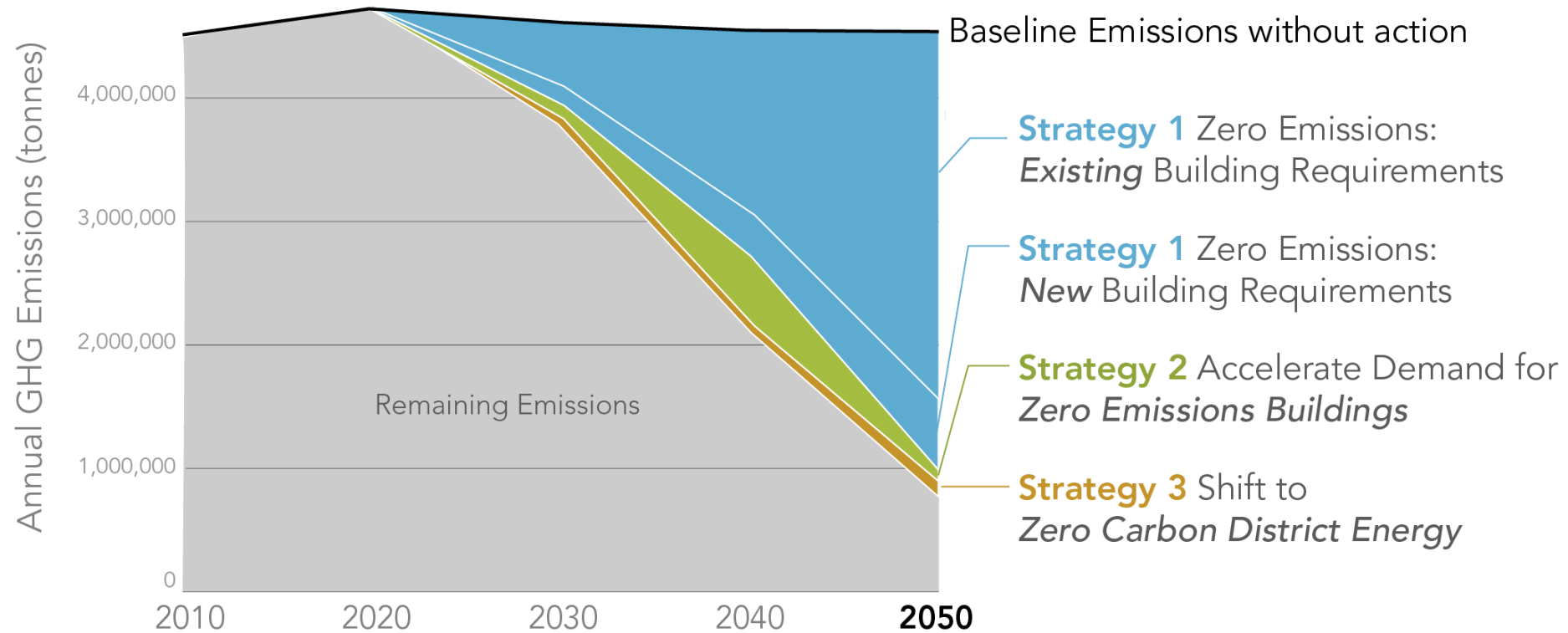
ELECTRIFICATION LINKS

Buildings Roadmaps



URGENCY FOR ACTION

GETTING TO CARBON NEUTRAL BUILDINGS: Impact of key strategies





Thank you



B2E Subcommittees

- Awareness Building and Communications
- Technical + Technology
- Expanding Industry Capacity



Awareness Building and Communications



Technical/Technology

A diverse group of smiling people of various ages and ethnicities, including men and women of different colors and ages, arranged in several rows. The background is a light gray gradient.

Expanding Industry Capacity



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Get Involved

Become a Member

Becoming a member of B2E is simple and free!

As a member you will enjoy the following benefits:

- Numerous collaboration opportunities with industry leaders through working groups, subcommittees, B2E events, case study development, and publishing online articles;
- Early access to building electrification news, updates and events;
- Recognition on B2E website and acknowledgement that your organization is fully engaged in the decarbonization of the building sector.

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Events

Thank you!

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