Standing Senate Committee on Energy, the Environment and Natural Resources
Follow-up questions.

Q. 1. How many departments and groups have participated with the High-performance Buildings program?

- The NRC has aligned two of its programs, High Performance Buildings and Building Regulations and Market Access to support the four stages of decarbonisation for buildings in Canada.
- The NRC has been working extremely closely with custodial departments namely PSPC (ESAP, PPB, and Real Properties), DND, and the RCMP to reduce the carbon footprint of their buildings.
- The NRC is collaborating with other science-based departments on the delivery of practical cost-effective solutions to reduce the operational carbon footprint of GoC buildings.
- The NRC serves on DG-level and ADM-level steering committees of TBS’s Center for Greening Government and uses these to identify opportunities where NRC can help provide custodial departments with practical and often turn-key solutions.

Q.2. Who coordinates the actions of the government in terms of green buildings?

The NRC is working in close collaboration and partnership with NRCan to meet the following goals:

- making new buildings more energy efficient;
- retrofitting existing buildings, as well as fuel switching; and
- supporting building codes and energy efficient housing in Indigenous communities.

NRC has two major and distinct roles to achieve these goals. First, the NRC will conduct, monitor and assemble, the body of research and knowledge to:

- determine or develop the best technical and policy solutions to achieve those goals,
- provide this information to the CCBFC for consideration and inclusion in the model codes, and
- make this information widely available to the public and industry to improve the chances of adoption and increase industry uptake.

Second, the NRC will work closely with the Canadian Commission on Building and Fire Codes (CCBFC) and its committees to determine research and resource needs to expedite the process of code development to meet the aggressive timelines stated in the Pan Canadian Framework.

The CCBFC’s long term energy policy was developed in response to the Pan Canadian Framework, the code targets were set to be as closely aligned with the framework as possible. The timelines included a gradual reduction towards net-zero with adoption planned by the 2035 code cycle. This project aims to accelerate this adoption process by aiming to publish the code requirements for net zero energy ready buildings and housing by 2022/2023, which would provide sufficient time for the industry to prepare and subsequently accelerate adoption.
Q.3. Can you provide a definition of “NetZero Energy ready”, the cost to meet this standard for a new construction and how much uptake would have to take place across Canada to cut that cost in half?

A net-zero energy building is defined as a high performance building that combines superior performance in energy efficiency with renewable energy production to offset all of the building’s annual energy consumption. Aggregated over one year, a net-zero energy building produces as much energy as it consumes from utilities. A net-zero energy ready building is built to the same level of energy efficiency as a net-zero energy building but does not include renewable energy production which typically involves harvesting energy from the sun and converting it to electricity (by photovoltaic panels) and/or heat (by solar thermal panels).

Federal, provincial, and territorial governments will work to develop and adopt increasingly stringent model building codes, starting in 2020, with the goal that provinces and territories adopt a “net-zero energy ready” model building code by 2030. These building codes will take regional differences into account. Continued federal investment in research, development, and demonstration, and cooperation with industry will help to reduce technology costs over time.

The cost to achieve net-zero energy ready is specific to the building and its location so there is no simple prescriptive number for all types of building and all locations in Canada. Because of this, Standing Committees on energy codes are undertaking a thorough cost benefit analysis that considers the type of building (residential, commercial and institutional), its geographic location, availability of needed trades and technologies, etc. Since it is likely that any additional capital costs will be included in the price of a new building and mortgaged/amortized it is important not only to look at the capital cost but to look at the total cost of ownership including any applicable carbon tax when assessing any incremental cost to the owner.

When speaking before the Senate Committee Kevin Lee, President of the Canadian Home Builders Association reported that an average net-zero energy house in British Columbia has an incremental capital cost of approximately $27,000 relative to a house that is energy code compliant. The incremental cost of net-zero energy ready will be lower than the incremental cost for net-zero energy, because it would not have renewable energy source(s). Some have estimated the incremental capital cost of a net-zero energy ready house to be about 50% lower than that of a net-zero-energy house.

This provides a regionally specific answer but affirms the need for a detailed cost-benefit analysis that addresses buildings across all of Canada. As noted above this is a priority for the Standing Committees to the National Building Code.