Connecting with a Busy Customer

The Art of Communicating Complex Regulation

VIII WFER
PERÚ 2023

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RESEARCH GROUP

August 2023 | Lima Convention Center

Table of Contents

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Why should we care about customer understanding of complex issues?

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There are at least 3 key areas where energy companies need to pay attention to their customers

Permission on Rates

Permission to Build

Consumer Behaviour

Outrage

Actions such as:

- Conservation
- Demand Management
- DERs

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Relevance and Efficacy:

Why does this matter to me, and what difference can I make?

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Case Study: Toronto Hydro-Electric System Limited

In the Canadian province of Ontario, the Ontario Energy Board requires utilities engage customers to determine their needs and preferences.

This is no easy challenge:

- Customers do not know very much about electricity.
- Customers are skeptical of authority.
- Customers are even more skeptical of monopolies.
- Asking about needs is straightforward, but asking about preferences on planning issues requires any customer engagement provide some basic background and focus on outcome trade-offs that do not require financial or technology literacy.

Job one is to get AND keep customer attention

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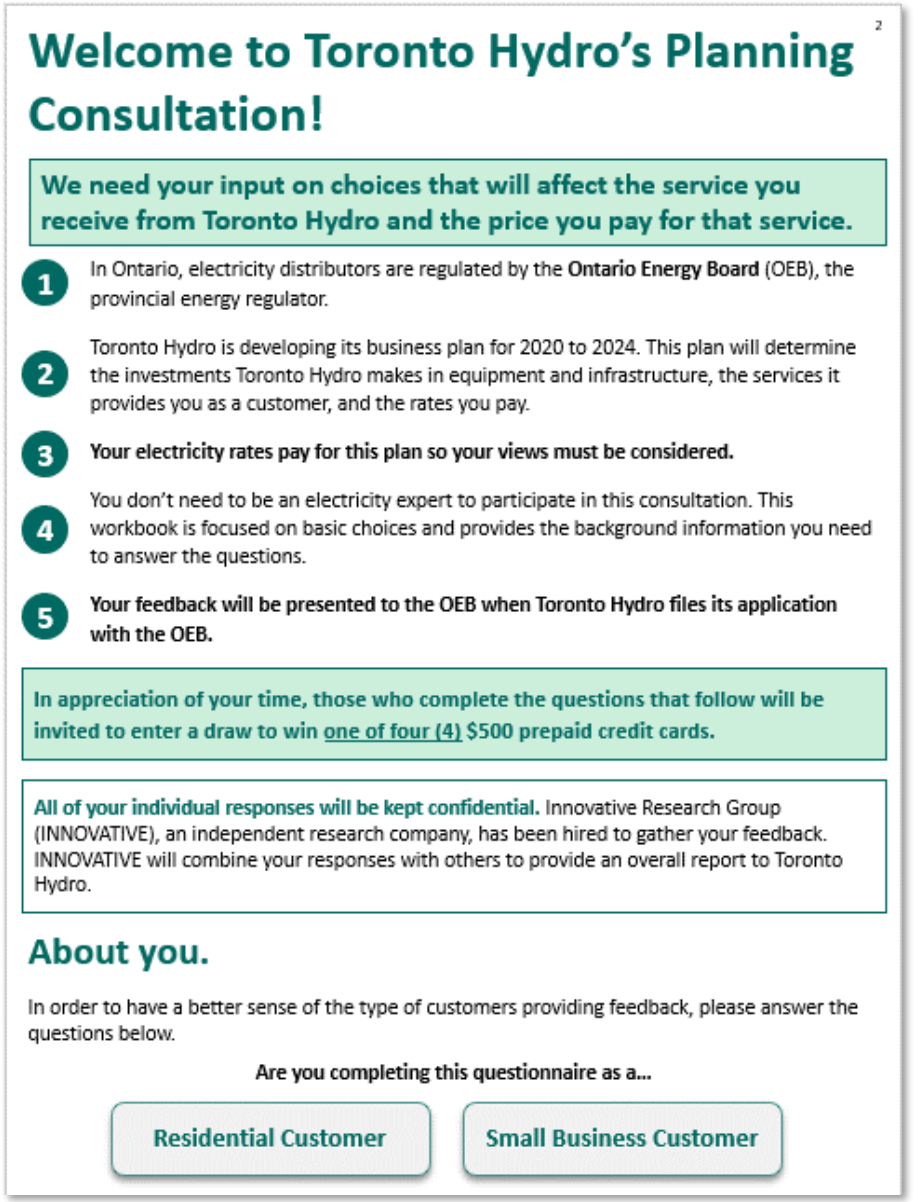

Welcome to Toronto Hydro's Planning Consultation!

We need your input on choices that will affect the service you receive from Toronto Hydro and the price you pay for that service.

1. In Ontario, electricity distributors are regulated by the **Ontario Energy Board** (OEB), the provincial energy regulator.
2. Toronto Hydro is developing its business plan for 2020 to 2024. This plan will determine the investments Toronto Hydro makes in equipment and infrastructure, the services it provides you as a customer, and the rates you pay.
3. **Your electricity rates pay for this plan so your views must be considered.**
4. You don't need to be an electricity expert to participate in this consultation. This workbook is focused on basic choices and provides the background information you need to answer the questions.
5. **Your feedback will be presented to the OEB when Toronto Hydro files its application with the OEB.**

In appreciation of your time, those who complete the questions that follow will be invited to enter a draw to win one of four (4) $500 prepaid credit cards.

All of your individual responses will be kept confidential. Innovative Research Group (INNOVATIVE), an independent research company, has been hired to gather your feedback. INNOVATIVE will combine your responses with others to provide an overall report to Toronto Hydro.

About you.

In order to have a better sense of the type of customers providing feedback, please answer the questions below.

Are you completing this questionnaire as a...

Residential Customer | Small Business Customer

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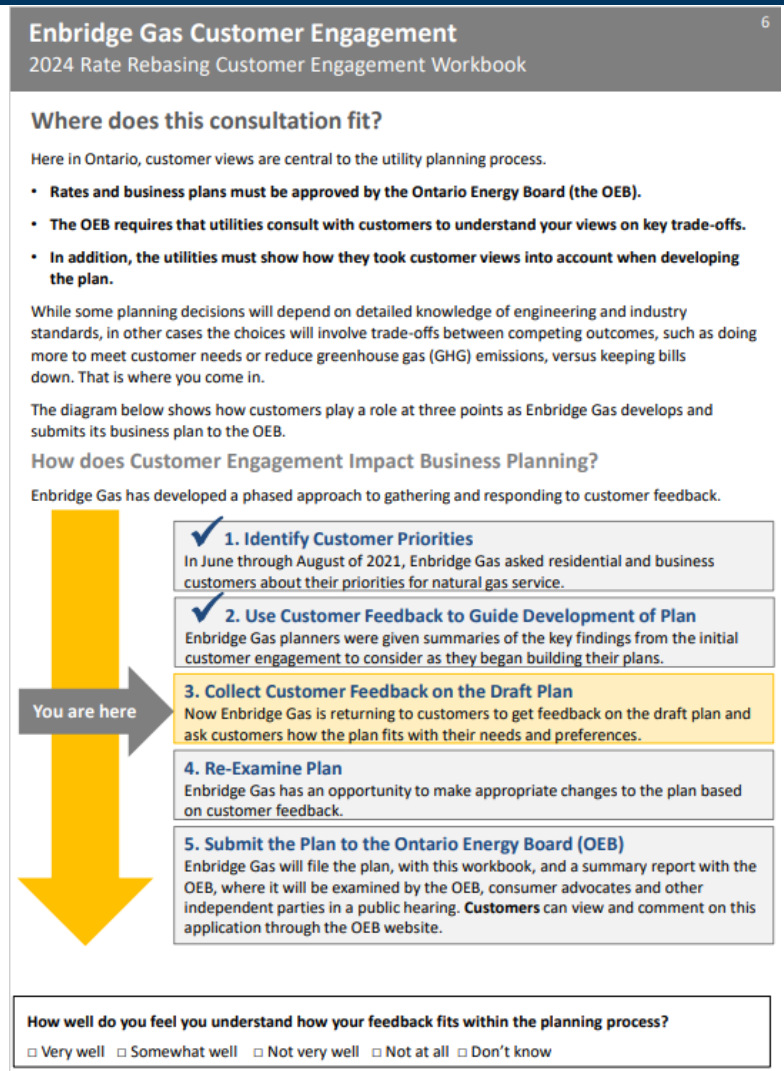

Enbridge Gas Customer Engagement 6
2024 Rate Rebasing Customer Engagement Workbook

Where does this consultation fit?

Here in Ontario, customer views are central to the utility planning process.

- **Rates and business plans must be approved by the Ontario Energy Board (the OEB).**
- **The OEB requires that utilities consult with customers to understand your views on key trade-offs.**
- **In addition, the utilities must show how they took customer views into account when developing the plan.**

While some planning decisions will depend on detailed knowledge of engineering and industry standards, in other cases the choices will involve trade-offs between competing outcomes, such as doing more to meet customer needs or reduce greenhouse gas (GHG) emissions, versus keeping bills down. That is where you come in.

The diagram below shows how customers play a role at three points as Enbridge Gas develops and submits its business plan to the OEB.

How does Customer Engagement Impact Business Planning?

Enbridge Gas has developed a phased approach to gathering and responding to customer feedback.

You are here

✓ **1. Identify Customer Priorities**
In June through August of 2021, Enbridge Gas asked residential and business customers about their priorities for natural gas service.

✓ **2. Use Customer Feedback to Guide Development of Plan**
Enbridge Gas planners were given summaries of the key findings from the initial customer engagement to consider as they began building their plans.

3. Collect Customer Feedback on the Draft Plan
Now Enbridge Gas is returning to customers to get feedback on the draft plan and ask customers how the plan fits with their needs and preferences.

4. Re-Examine Plan
Enbridge Gas has an opportunity to make appropriate changes to the plan based on customer feedback.

5. Submit the Plan to the Ontario Energy Board (OEB)
Enbridge Gas will file the plan, with this workbook, and a summary report with the OEB, where it will be examined by the OEB, consumer advocates and other independent parties in a public hearing. **Customers** can view and comment on this application through the OEB website.

How well do you feel you understand how your feedback fits within the planning process?
□ Very well □ Somewhat well □ Not very well □ Not at all □ Don't know

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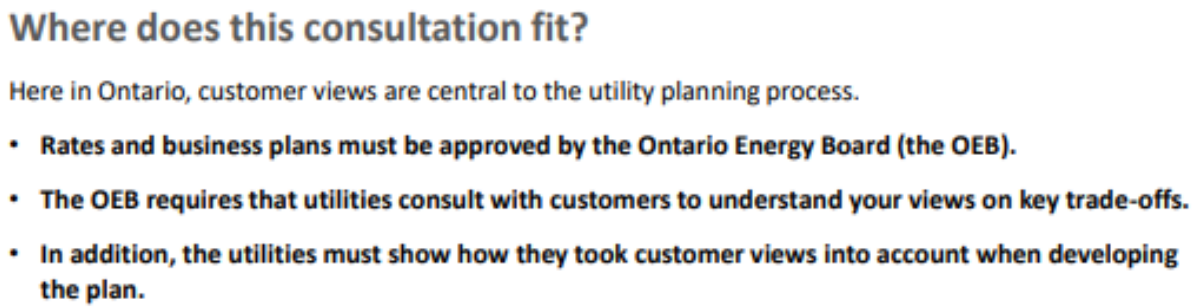

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A picture tells a thousand words

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Case Study: Alberta Nuclear Policy Review

When it comes to policy and regulatory substance, most customers, even some fairly large customers, do not start with very much knowledge.

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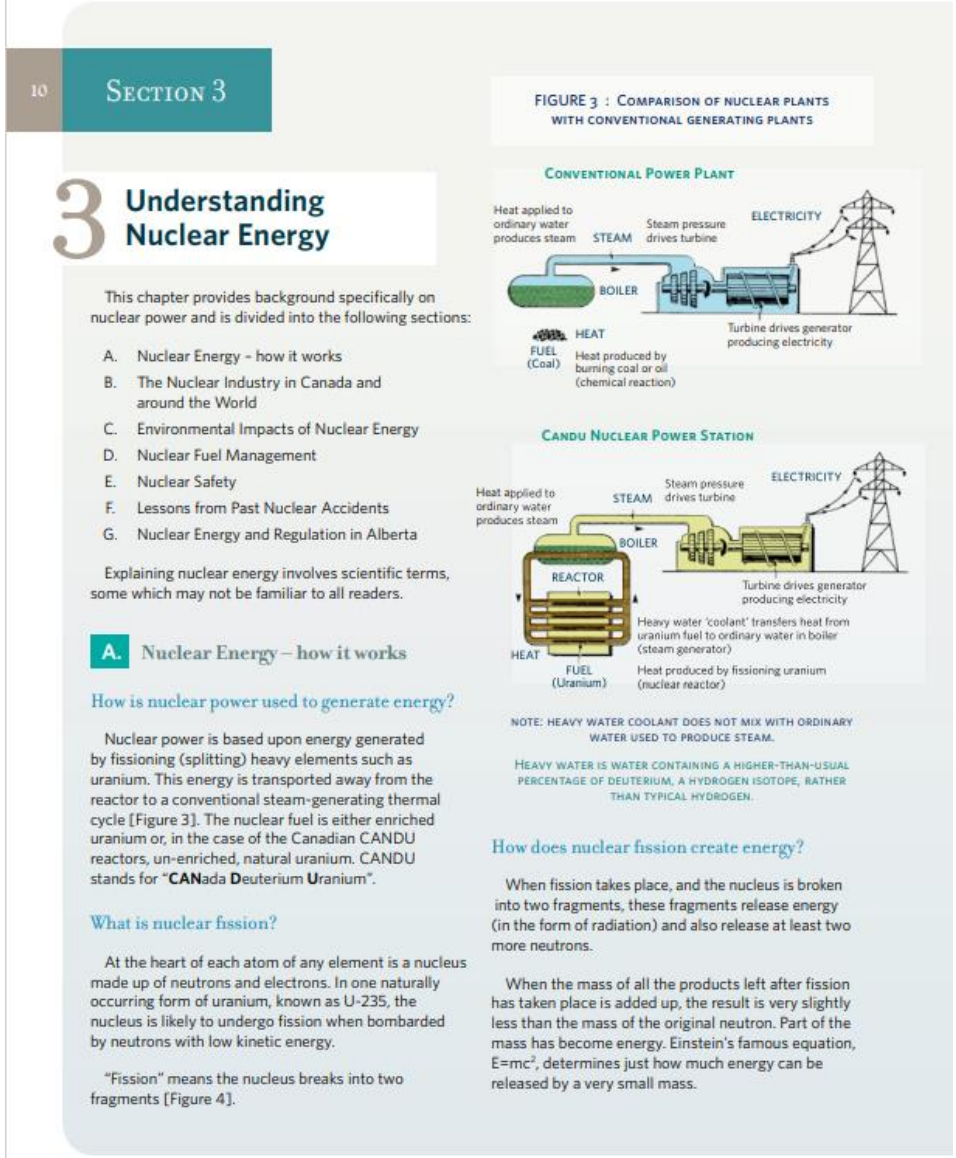

10 SECTION 3

3 Understanding Nuclear Energy

This chapter provides background specifically on nuclear power and is divided into the following sections:

A. Nuclear Energy – how it works
B. The Nuclear Industry in Canada and around the World
C. Environmental Impacts of Nuclear Energy
D. Nuclear Fuel Management
E. Nuclear Safety
F. Lessons from Past Nuclear Accidents
G. Nuclear Energy and Regulation in Alberta

Explaining nuclear energy involves scientific terms, some which may not be familiar to all readers.

A. Nuclear Energy – how it works

How is nuclear power used to generate energy?

Nuclear power is based upon energy generated by fissioning (splitting) heavy elements such as uranium. This energy is transported away from the reactor to a conventional steam-generating thermal cycle [Figure 3]. The nuclear fuel is either enriched uranium or, in the case of the Canadian CANDU reactors, un-enriched, natural uranium. CANDU stands for "**CAN**ada **D**euterium **U**ranium".

What is nuclear fission?

At the heart of each atom of any element is a nucleus made up of neutrons and electrons. In one naturally occurring form of uranium, known as U-235, the nucleus is likely to undergo fission when bombarded by neutrons with low kinetic energy.

"Fission" means the nucleus breaks into two fragments [Figure 4].

FIGURE 3 : COMPARISON OF NUCLEAR PLANTS WITH CONVENTIONAL GENERATING PLANTS

CONVENTIONAL POWER PLANT

CANDU NUCLEAR POWER STATION

NOTE: HEAVY WATER COOLANT DOES NOT MIX WITH ORDINARY WATER USED TO PRODUCE STEAM.

HEAVY WATER IS WATER CONTAINING A HIGHER-THAN-USUAL PERCENTAGE OF DEUTERIUM, A HYDROGEN ISOTOPE, RATHER THAN TYPICAL HYDROGEN.

How does nuclear fission create energy?

When fission takes place, and the nucleus is broken into two fragments, these fragments release energy (in the form of radiation) and also release at least two more neutrons.

When the mass of all the products left after fission has taken place is added up, the result is very slightly less than the mass of the original neutron. Part of the mass has become energy. Einstein's famous equation, $E=mc^2$, determines just how much energy can be released by a very small mass.

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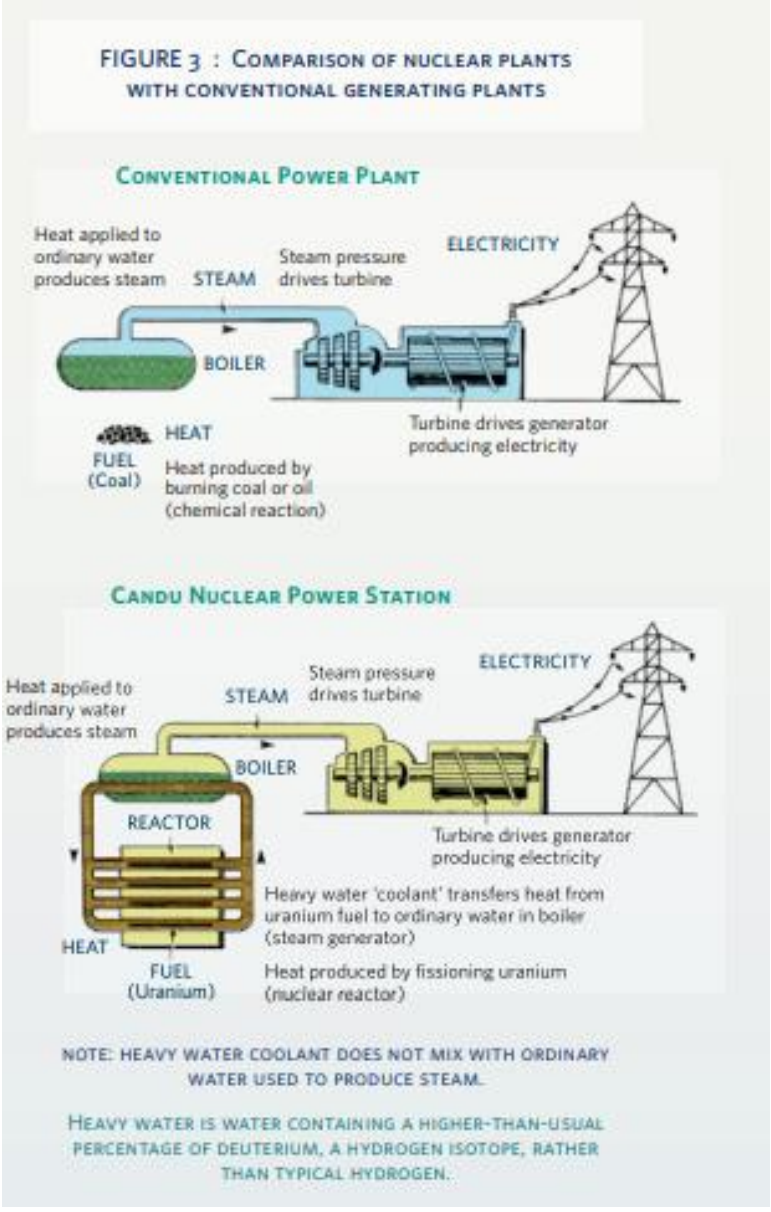

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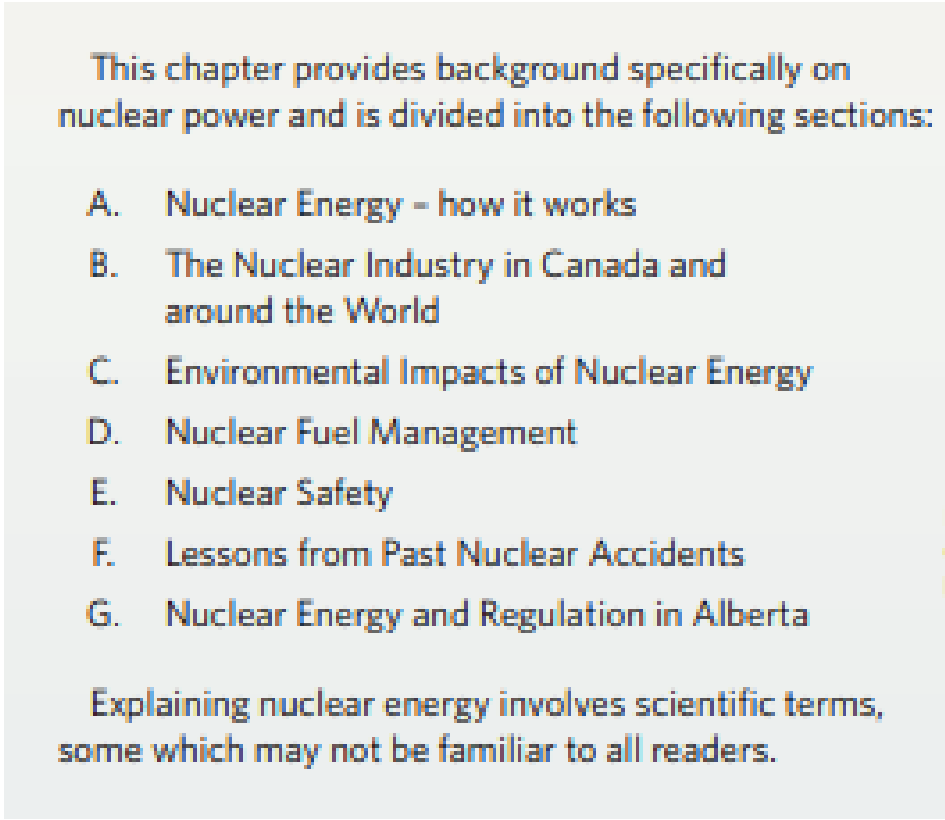
Other key elements include:

- Tell them what you are going to say before you say it



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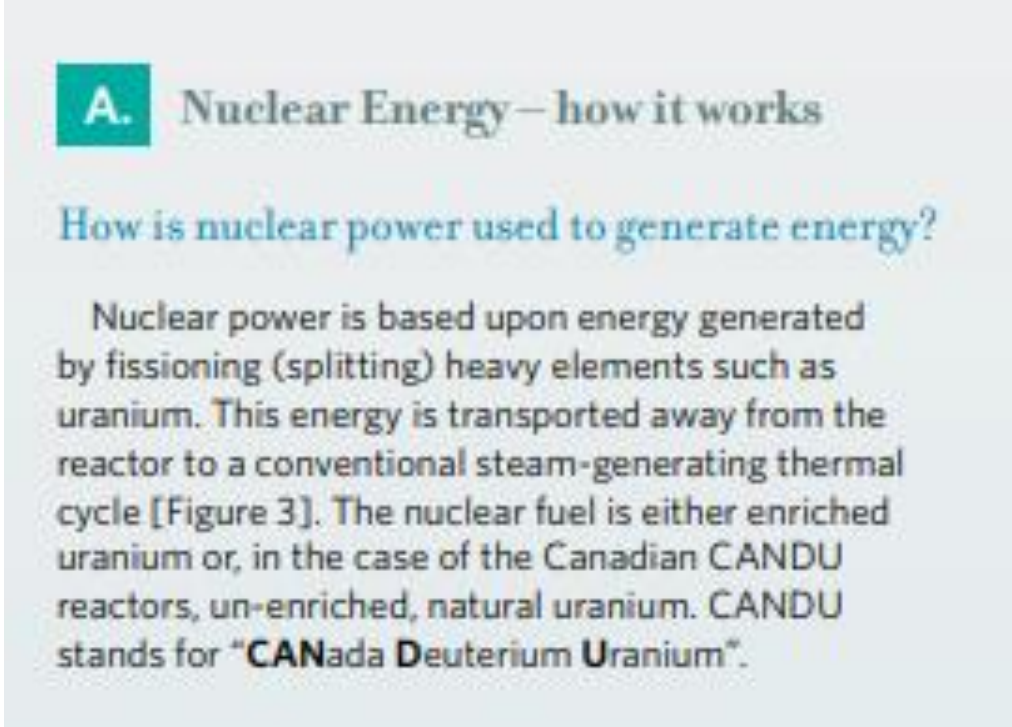
Other key elements include:

- Tell them what you are going to say before you say it
- Use headlines to focus the narrative.
- Frame headlines around questions customers are likely to have.



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Be upfront about past issues & potential risks

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As noted earlier, people are skeptical. They know all types of energy projects and services have risks and downsides.

If you do <u>not</u> share past problems and potential risks …

- Customers feel you are hiding something, and become even more distrustful.
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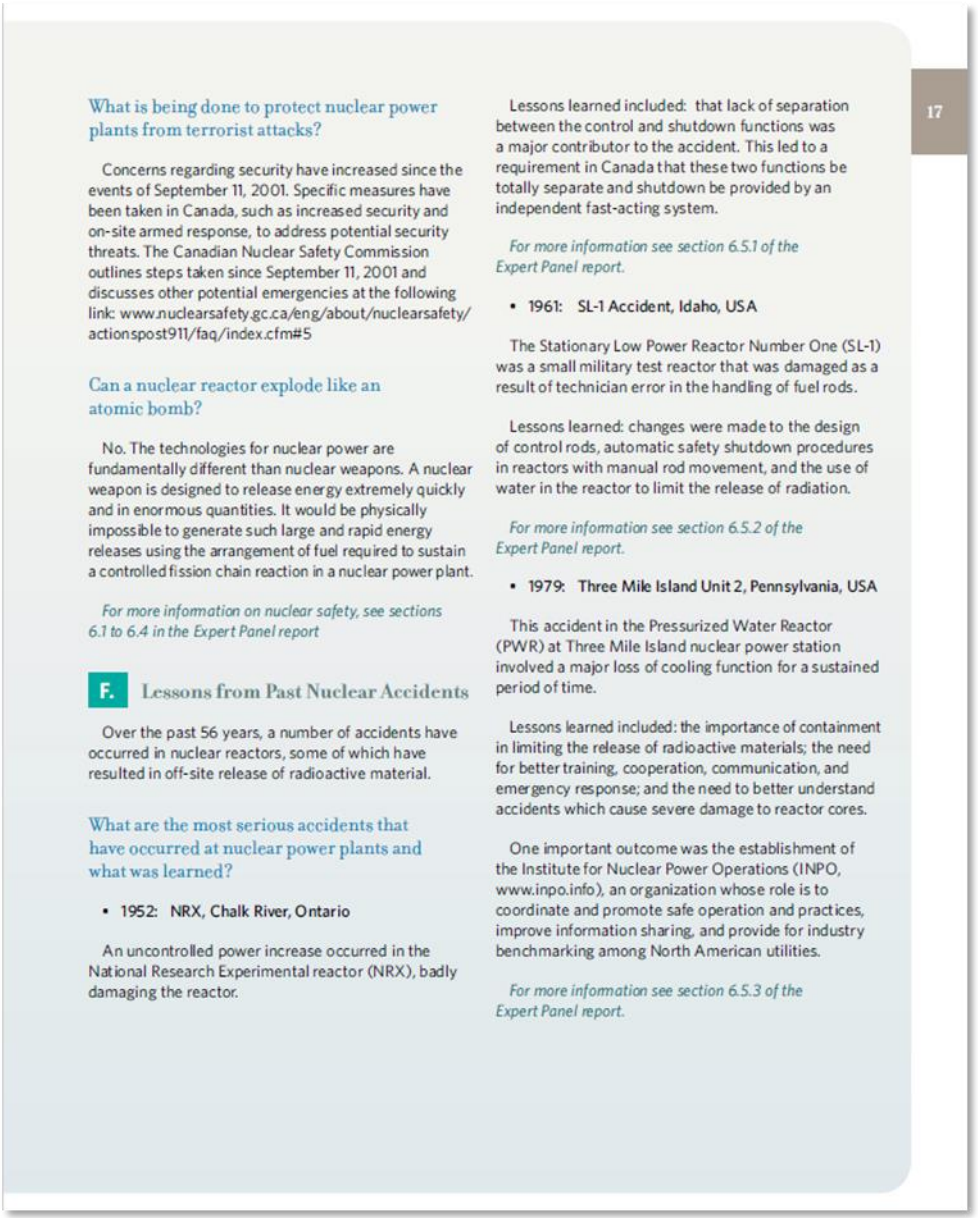

What is being done to protect nuclear power plants from terrorist attacks?

Concerns regarding security have increased since the events of September 11, 2001. Specific measures have been taken in Canada, such as increased security and on-site armed response, to address potential security threats. The Canadian Nuclear Safety Commission outlines steps taken since September 11, 2001 and discusses other potential emergencies at the following link: www.nuclearsafety.gc.ca/eng/about/nuclearsafety/actionspost911/faq/index.cfm#5

Can a nuclear reactor explode like an atomic bomb?

No. The technologies for nuclear power are fundamentally different than nuclear weapons. A nuclear weapon is designed to release energy extremely quickly and in enormous quantities. It would be physically impossible to generate such large and rapid energy releases using the arrangement of fuel required to sustain a controlled fission chain reaction in a nuclear power plant.

For more information on nuclear safety, see sections 6.1 to 6.4 in the Expert Panel report

F. Lessons from Past Nuclear Accidents

Over the past 56 years, a number of accidents have occurred in nuclear reactors, some of which have resulted in off-site release of radioactive material.

What are the most serious accidents that have occurred at nuclear power plants and what was learned?

- 1952: NRX, Chalk River, Ontario

An uncontrolled power increase occurred in the National Research Experimental reactor (NRX), badly damaging the reactor.

Lessons learned included: that lack of separation between the control and shutdown functions was a major contributor to the accident. This led to a requirement in Canada that these two functions be totally separate and shutdown be provided by an independent fast-acting system.

For more information see section 6.5.1 of the Expert Panel report.

- 1961: SL-1 Accident, Idaho, USA

The Stationary Low Power Reactor Number One (SL-1) was a small military test reactor that was damaged as a result of technician error in the handling of fuel rods.

Lessons learned: changes were made to the design of control rods, automatic safety shutdown procedures in reactors with manual rod movement, and the use of water in the reactor to limit the release of radiation.

For more information see section 6.5.2 of the Expert Panel report.

- 1979: Three Mile Island Unit 2, Pennsylvania, USA

This accident in the Pressurized Water Reactor (PWR) at Three Mile Island nuclear power station involved a major loss of cooling function for a sustained period of time.

Lessons learned included: the importance of containment in limiting the release of radioactive materials; the need for better training, cooperation, communication, and emergency response; and the need to better understand accidents which cause severe damage to reactor cores.

One important outcome was the establishment of the Institute for Nuclear Power Operations (INPO, www.inpo.info), an organization whose role is to coordinate and promote safe operation and practices, improve information sharing, and provide for industry benchmarking among North American utilities.

For more information see section 6.5.3 of the Expert Panel report.

Case Study: Alberta Nuclear Policy Review

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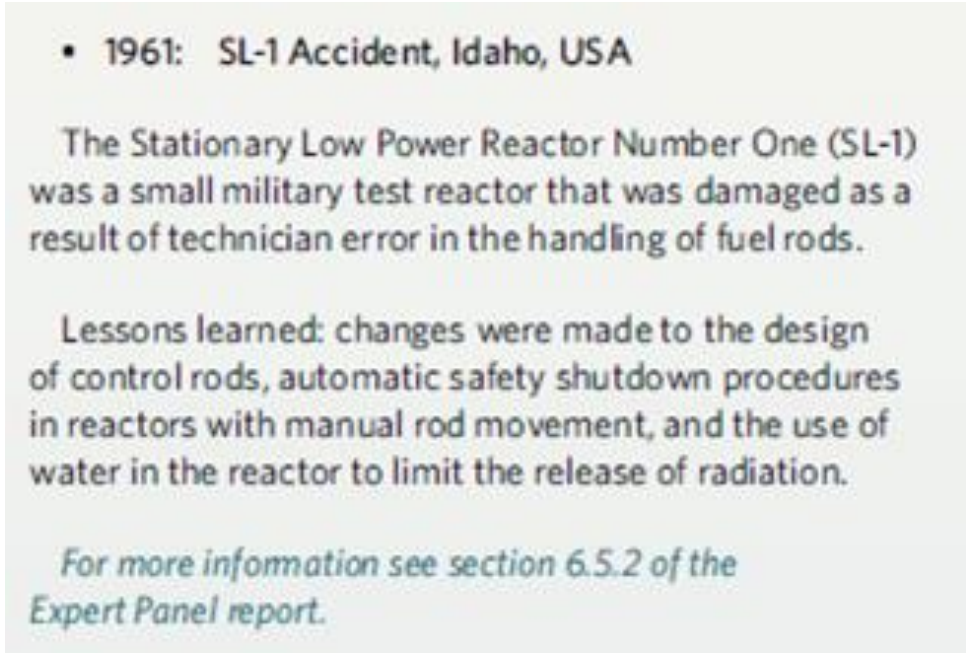
The government also walked through past problems

- The workbook included all significant events.
- Lessons were identified for each event.
- Sources for more information were identified.



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- The open-ended nature of the search for knowledge was recognized.

18 SECTION 3

• 1986: Chernobyl Unit 4, Ukraine

On April 26, 1986 the worst commercial nuclear power reactor accident in history occurred in the Fourth Unit of the Chernobyl Nuclear Power Station in Ukraine, which at that time was part of the Soviet Union. A large uncontrolled power increase occurred in the reactor during a safety system test. This destroyed the reactor and a large quantity of radioactive material was ejected to the environment during the initial stage of the accident. For the next five days the graphite moderator in the reactor core continued to burn, resulting in an ongoing release of radioactivity to the environment.

Lessons Learned: the main contributor to the accident's severity was the lack of fast-acting shutdown systems, while the main contributor to the large release was the lack of any containment structure around the reactor. Other factors involved included poor safety culture, poor design and poor communication between designers and operators.

In responding to the accident a large number of station operating staff and firefighters were exposed to very high doses of radiation and over a period of a number of months 28 of these individuals died from the effects of radiation exposure. The population in the nearby town of Pripyat was evacuated and permanently relocated. The radiation plume spread around Europe causing great concern. Subsequently the reactor was encased in a concrete vault where it remains awaiting final cleanup and decommissioning.

A large epidemiological study was initiated and continues to this day with reports at ten-year intervals following the accident. These studies are conducted by the Chernobyl Forum, led by the International Atomic Energy Agency and the World Health Organization and involve many other agencies of the United Nations. They address the health consequences including cancer and reproductive effects, environmental consequences including agricultural food or farming and forest contaminants and the socioeconomic impacts.

They estimate that the total number of individuals that could eventually die from radiation exposure from this accident to be about 4000 out of an exposed population of 600,000. The detailed studies have identified a total of 56 persons in this exposed population whose deaths in the past twenty years following the accident can be attributed to the effects of radiation released from the accident. This number includes 28 individuals who died within four months in 1986 as a result of high exposures received in responding to the event, 19 subsequent deaths between 1986 and 2004 of persons involved in responding to the consequences of the accident and 9 individuals who died of thyroid cancer.

As a result of the intense international focus on nuclear safety following the Chernobyl accident the World Association of Nuclear Operators (www.wano.org.uk) was formed with headquarters in London, UK, to promote safe operations an information exchange amongst nuclear operators world-wide.

For more information on Chernobyl see Section 6.5.4 of the Expert Panel report.

- Chernobyl Forum: www-ns.iaea.org/meetings/rw-summaries/chernobyl_forum.htm
- World Health Organization news release (2005) and background information: www.who.int/mediacentre/news/releases/2005/pr38/en/index.html
- www.iaea.org/Publications/Booklets/Chernobyl/chernobyl.pdf

G. Nuclear Electricity and Regulation in Alberta

In many respects a large base-load nuclear power plant is very much like a large base-load coal-fired plant (with respect to integration in the power grid and regional impacts) or to other large industrial projects (with respect to socioeconomic impacts). Like any large industrial proposal, nuclear power plants would have to undergo licensing, regulatory, and environmental approvals.

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Summary

1 **Respect where your audience is coming from.**
Imagine someone was reaching out to you on a topic that you don't know well. Maybe it is consumer protection for insurance … or a zoning change in your community. Customers may not start knowing much, but they can learn.

2 **Show, don't tell.**
Use diagrams and flow charts and other graphic elements. Don't just rely on words.

3 **Be frank and forthright.**
People know most things have downsides. If you are not upfront about that, you lose credibility and attention.

INNOVATIVE RESEARCH GROUP

Building Understanding.

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