

June 8, 2018

Louise Levert, Senior Tribunal Officer
Canadian Nuclear Safety Commission
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Dear Ms. Levert:

**Re: Supplemental Submission from the Canadian Environmental Law Association Re:
PNERP Implementing Plan for Pickering NGS (Hearing Ref No. 2018-H-03)**

The Canadian Environmental Law Association (CELA) has undertaken a detailed review of the Implementing Plan for the Pickering Nuclear Generating Station (“Implementing Plan”) and provides the following comments to the Canadian Nuclear Safety Commission (Commission). These comments are in addition to, and not a substitute for the findings and recommendations contained in our primary submission dated May 7, 2018.¹

As the Implementing Plan was publicly available for only one week prior to the intervention deadline, we appreciate having this opportunity to provide comments to the Commission. For the reasons summarized below, we reiterate our request to the Commission that Ontario Power Generation’s (OPG) request for a 10-year licence be denied:

- Emergency plans are not yet complete nor aligned
- Emergency planning zones are insufficient in size to safeguard human health
- Evacuation time estimate studies need to be updated prior to relicensing
- The availability of protective equipment for first responders must be confirmed
- Offsite monitoring during an accident requires review
- Transition to the recovery phase requires greater detail and guidance
- Meteorological data and modelling is deficient

¹ Canadian Environmental Law Association, “Evaluating Environmental Protection and Emergency Preparedness at the Pickering Nuclear Generating Station” (7 May 2018), online: <http://www.cela.ca/pickering-licence-renewal> [CELA Pickering NGS Submission]

1. Emergency plans are not yet complete nor aligned

Currently, the only emergency planning documents which are updated and publicly available are the 2017 Provincial Nuclear Emergency Response Plan (PNERP 2017) and Pickering NGS's Implementing Plan. As these plans were released in December 2017 and April 2018, respectively, Durham Region's nuclear emergency response plan and evacuation plan have not been updated nor aligned with new provincial standards. Furthermore, the province of Ontario is conducting additional technical work which will inform the adequacy of the current planning zones and response measures. Some of the recommendations in this submission are informed by CELA's review of the current plan that was conducted during the provincial consultation in the summer of 2017, as these specific issues remain outstanding pending the province's additional technical review.² Where relevant, these points are reiterated in this submission even though they were raised during another licensee's recent licence hearing in Kincardine for the Bruce Nuclear Power Plant.

As Durham Region details in its intervention to the Commission, the evacuation plan maintained by the Durham Regional Police Service requires review to ensure alignment with PNERP 2017. Durham Region also notes that their emergency response expectations since the release of PNERP 2017 "should not be underestimated" and they will need sufficient emergency staff "over and above the current complement" to extend their response capability.³ CELA submits that until Durham Region has completed necessary reviews and updates, the Pickering NGS should not be licensed for further operation. We also request the Commission inquire into the status of the municipal planning updates and potential timelines for completion.

Further planning required by Durham Region as a designated municipality is also outstanding. As s. 2.6.2 of the Implementing Plan states, designated municipalities "shall detail the planning data necessary to undertake an effective nuclear emergency response," referencing population estimates, institutional data and critical infrastructure. Because the Implementing Plan was released on April 30, 2018, there has not been sufficient time for this planning to occur. Furthermore, the Implementing Plan does not detail who provides guidance to municipalities in accomplishing this objective. We therefore ask the Commission query whether the Durham Region has been provided guidance in its review of "institutional data," and "critical infrastructure," and whether it requires assistance in this regard.

Lastly, the Office of the Fire Marshall and Emergency Management's (OFMEM) has noted that its technical study of PNERP 2017 – which reviews the size of emergency planning zones and

² CELA, "Discussion on Planning Basis Review and Recommendations and List of Proposed Changes to the PNERP 2009" (28 July 2017) online: <http://www.cela.ca/sites/cela.ca/files/EmergencyPlg.pdf>

³ <http://www.nuclearsafety.gc.ca/eng/the-commission/hearings/cmd/pdf/cmd18-h6/CMD18-H6-67.pdf>, p 10 [CELA Discussion on PNERP]

evacuation plans - is ongoing and completion not expected until the end of 2018.⁴ CELA submits that the adequacy of emergency measures currently in place must be reviewed as soon as possible, following the release of better technical information. Upon release of the technical study, the Commission should publicly review its effects on emergency planning arrangements. Any further technical studies should be publicly reviewed by the Commission on an ongoing, annual basis.

2. Emergency planning zones are insufficient in size to safeguard human health

For the reasons highlighted below, CELA reiterates its recommendation to the Commission that protective actions within the Detailed Planning Zone (DPZ) be expanded from 10 km to 20 km, and monitoring and response efforts in the Ingestion Planning Zone (IPZ) expanded from 50 km to 100 km.

2.1 Beyond Design Basis Accidents

Section 2.2.4(d) of the Implementing Plan notes that in order to mitigate severe, off-site effects of Beyond Design Basis Accidents, protective actions may be necessary into the Contingency Planning Zone (CPZ). Unfortunately, the Implementing Plan also states “the CPZ does not require the same level or type of detailed arrangements as the automatic action zone or detailed planning zone.” In the event of a radioactive hazard, it cannot be assumed that default protective measures – such as ingesting KI and safely evacuating - can be as effective as response measures which are pre-planned and tested. These deficiencies must be remedied as a condition of licensing.

We reiterate the Commission should not accept the province’s continued reliance on improvisation and adaptation as its main strategy for responding to large off-site accidents that require evacuation and other measures beyond the DPZ. To analyze if the nuclear power plant is acceptably safe for continued operation, CELA recommends the Commission undertake a detailed review of the measures currently in place to mitigate severe off-site effects beyond the DPZ with specific reference to (1) their achievability and sufficiency, (2) the distances to which they are effective, and (3) the timing and resourcing required for their implementation.

2.2 Automatic Action Zone

CELA requests the Commission review whether vulnerable communities within this zone (ie. people with disabilities, babies, children, pregnant women, people residing in retirement homes or hospital patients who may require evacuation) have been identified and whether they have been specifically considered in emergency plans. All information pertaining to default protective

⁴ CELA Pickering NGS Submission, *supra* note 1, p 49

actions, evacuation routes and emergency procedures must also be in the public domain to ensure the protection of the those residing or working in the AAZ.

2.3 Contingency Planning Zone

As CELA submitted in its primary submission, the detailed planning required in the DPZ should be expanded into the 20 km CPZ. Currently, the emergency plans before the Commission do not align with international guidance (see Table 1, below) nor ensure protective measures can be successfully implemented for all residents and evacuees in this area.

CELA recommends the Commission conduct a comparative analysis of the protective measures in place for the DPZ and CPZ and ensure licence conditions provide for (1) the health and safety of persons and the environment in the event of a large, offsite radioactive release and (2) are congruent with international guidance (see Table 1).

2.4 Ingestion Planning Zone

CELA recommends the Commission ascertain the information which has been communicated to residents, farmers, and other businesses who may be affected by the restrictions in the IPZ. We ask that examples of the information already disseminated be provided to confirm the existence of this communication, per section 2.4.3 of the Implementing Plan. We also request the Commission inquire into the level of advance planning that has occurred to ensure that in the event of a radioactive release, the food chain is protected.

2.5 International Guidance

CELA provides the following update to a table reviewing emergency planning zones and measures, in accordance with IAEA guidance, as provided in our primary submission.⁵

Table 1 Emergency Planning Zones and Accompanying Response Measures per IAEA Guidance

Zone	Size	Description	Response Measures
Precautionary Action Zone	3 – 5 km	Area within which arrangements should be made to implement precautionary urgent protective actions before or shortly after a major release with the aim of preventing or reducing the occurrence of severe deterministic effects ⁶	Urgent protective actions include: isolation of a contaminated area or radioactive source; prevention of inadvertent ingestion; evacuation; Sheltering; respiratory protection and protection of skin and eyes; decontamination of individuals;

⁵ CELA Pickering NGS Submission, *supra* note 1, p 48

⁶ IAEA Safety Standards, “General Safety Requirements Part 7 - Preparedness and response for a Nuclear Radiological Emergency” (2015), p 76 [GSR-7]

Urgent Protective Action Planning Zone	5 – 30 km	Area where preparations are made to promptly shelter in place, to perform environmental monitoring and to implement urgent protective actions on the basis of the results of monitoring within a few hours following a release. ⁸	prophylaxis with stable iodine; protection of the food supply and prevention of the consumption of significantly contaminated foodstuffs and water; management of the medical response; and, protection of international trade ⁷
Extended Planning Distance	100 km	Distance around a nuclear power plant where arrangements are made to conduct early monitoring of deposition to locate hotspots with dose rates warranting (1) evacuation within a day following a release or (2) relocation within a week to a month following a release	Relocation, decontamination, replacement of food, milk and water ⁹
Ingestion and Commodities Planning Distance	300 km	The distance around a nuclear power plant for the area within which arrangements are made, within hours of being notified by the nuclear power plant of the declaration of a General Emergency	Place grazing animals on covered feed; protect drinking water supplies that directly use rainwater (e.g. to disconnect rainwater collection pipes); restrict consumption and distribution of non-essential local produce, wildgrown products (e.g. mushrooms and game), milk from grazing animals, rainwater, animal feed; and, restrict distribution of commodities until further assessments are performed ¹⁰

3. Evacuation time estimate studies need to be updated prior to relicensing

Section 2.6.3 of the Implementing Plan requires that evacuation time estimate studies “be prepared and regularly updated to facilitate transportation planning and the management of transportation during a response.” CELA reiterates that this study should be updated as a prerequisite to licensing in order to align PNERP 2017 with existing plans. CELA also recommends that given growth projections in Durham Region, evacuation estimates be updated annually as a condition of licensing and be reviewed annually at the Commission’s nuclear power plant oversight meeting.

⁸ GSR-7, *supra* note 6, p 77

⁷ International Atomic Energy Agency, “Arrangements for Preparedness for a Nuclear or Radiological Emergency No. GS-G-2.1” (2007) online: <http://www-pub.iaea.org/MTCD/publications/PDF/Pub1265web.pdf>, p 32 [IAEA GS-G-2.1], p 32

⁹ IAEA, “Actions to protect the public in an emergency due to severe conditions at a light water reactor” (2013), online: https://www-pub.iaea.org/MTCD/Publications/PDF/EPR-NPP_PPA_web.pdf, p 102 [IAEA Actions to protect the public]

¹⁰ *Ibid*, p 103

4. The availability of protective equipment for first responders must be confirmed

Section 6.8.9 of the Implementing Plan lists the equipment emergency services should carry (ie. respiratory protection, gloves, dosimetry). First, CELA recommends the Commission inquire as to the availability of this equipment for *all* first responders and the immediacy of its availability in the event of an emergency. Secondly, we ask the Commission to determine levels of supplies and whether their quantity and the number of emergency service personnel is updated routinely. Third, we submit the Commission should query the availability of this equipment beyond the 10 km and 20 km zones.

5. Offsite monitoring during an accident requires review

Section 4.6.5 of the Implementing Plan explains that prior to or during a radioactive emission, the Provincial Emergency Operations Centre (PEOC) Science Section “shall undertake technical assessments” which “shall serve as input into the PEOC Planning Section recommendations for Command decision-making.” Response capacity in the event of a radioactive release is crucial and therefore CELA requests the Commission confirm the number, qualification and length of tenure for Science Section members. CELA submits that the depth of expertise and availability of the Science Section must be permanently available.

6. Transition to the recovery phrase requires greater detail and guidance

Section 4.8.4 of the Implementing Plan provides that stakeholder recovery plans should be prepared in advance and conform to the provincial recovery plan. The Implementing Plan does not, however, detail who must develop this plan which according to section 4.8.3 should address the care for persons exposed or contaminated, long-term relocation and care, and resettlement. Recovery plans are not new to PNERP 2017 and indeed, the CNSC’s DIS-17-01 *Framework for Recovery in the Event of a Nuclear or Radiological Emergency* commenting on PNERP 2009 states:

At a suitable stage, the PEOC will consult with the major organizations involved in the emergency response regarding their transition to the recovery phase, and what lead time they would need to make a smooth transition. Based on these consultations, the PEOC will set a time for ending the response phase and inform all stakeholders involved in advance.¹¹

Accordingly, CELA requests the Commission require an update on the drafting of recovery and stakeholder plans and require a timeline for their completion and public review.¹²

¹¹ CNSC, “DIS-17-01, Framework for Recovery in the Event of a Nuclear or Radiological Emergency” (2017) online: <http://nuclearsafety.gc.ca/eng/acts-and-regulations/consultation/comment/d-17-01.cfm>

¹² CELA was unable to located either of these plans in the public domain.

7. Meteorological data and modelling is deficient

Section 2.2.3 of the Implementing Plan reviews the “typical progression” of a design basis accident scenario, noting:

Suitable meteorological conditions may make it possible to vent some of this contained radioactivity through filters in a direction away from populated areas. It may be possible to do this several times.

CELA asks the Commission to verify the “direction” referenced in the above noted provision. Additionally, we ask that the Commission verify the modelling of weather and meteorological contingencies to date, and whether further planning is necessary to ensure the health and safety of the public and the environment. The weather models relied upon in the PNERP do not incorporate 365 days-per-year of weather data and thus we recommend such monitoring data be a required as an input to emergency planning.¹³

Conclusion

The mandate of the Commission per s. 9 of the NSCA requires that it “prevent unreasonable risk to the environment and to the health and safety of persons.” Determining whether the threshold of unreasonable risk has been met must be determined on a case-by-case basis. This is a subjective, value-based evaluation, albeit supported by technical information and analysis. With respect to interpreting “unreasonable risk,” the Commission must be satisfied that even the most serious of accidents can be mitigated to the extent that the resulting harm is reasonable to both people and the environment.

For the foregoing reasons, CELA submits the Commission does not have the requisite information upon which to make this finding. The evidence before the Commission in this regard is limited and therefore, the Commission cannot fulfill its statutory mandate and establish that unreasonable risk to the health and safety of persons and the environment can be prevented.

CELA respectfully reiterates our request, as stated in our primary submission, that OPG’s request for a 10-year licence be denied.

¹³ As CELA noted in submission to the OFMEM during the consultation on PNERP 2017, four years of weather data and five years of precipitation data was utilized and modelled in the “Independent Study of Technical Issues Relating to Offsite Consequences Resulting from a Release of Radioactivity at Chalk River Laboratories (International Safety Research Inc. (ISR), March 2004). We consequently recommended that four to five years of 365-days per year weather data be used as an input to emergency planning (see CELA Discussion on PNERP, *supra* note 3)

Thank you for your continued consideration of these matters.

All of which is respectfully submitted this 8th day of June 2018.

CANADIAN ENVIRONMENTAL LAW ASSOCIATION

Per



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