



## What is Stray Voltage?

Varying amounts of low-level voltage often exist between the earth and electrically-grounded farm equipment such as metal stabling, feeders, or milk pipelines. Usually, these voltage levels present no harm to animals. However, if an animal touches a grounded metal object where these low voltages are found, a small electric current may pass through the animal. The voltage that causes this small current is known as “animal contact voltage,” “stray voltage” or “tingle voltage.”

Reported symptoms for dairy cows include:

- Reluctance to enter milking parlour
- Reduced water or feed intake
- Nervous or aggressive behaviour
- Uneven and incomplete milkout
- Increased somatic count
- Lowered milk production

These symptoms can also be the result of other non-electrical farm factors such as disease, poor nutrition, unsanitary conditions or milking equipment problems. Farmers should consider and investigate all possibilities, including stray voltage, when attempting to resolve these symptoms.

## What causes Stray Voltage?

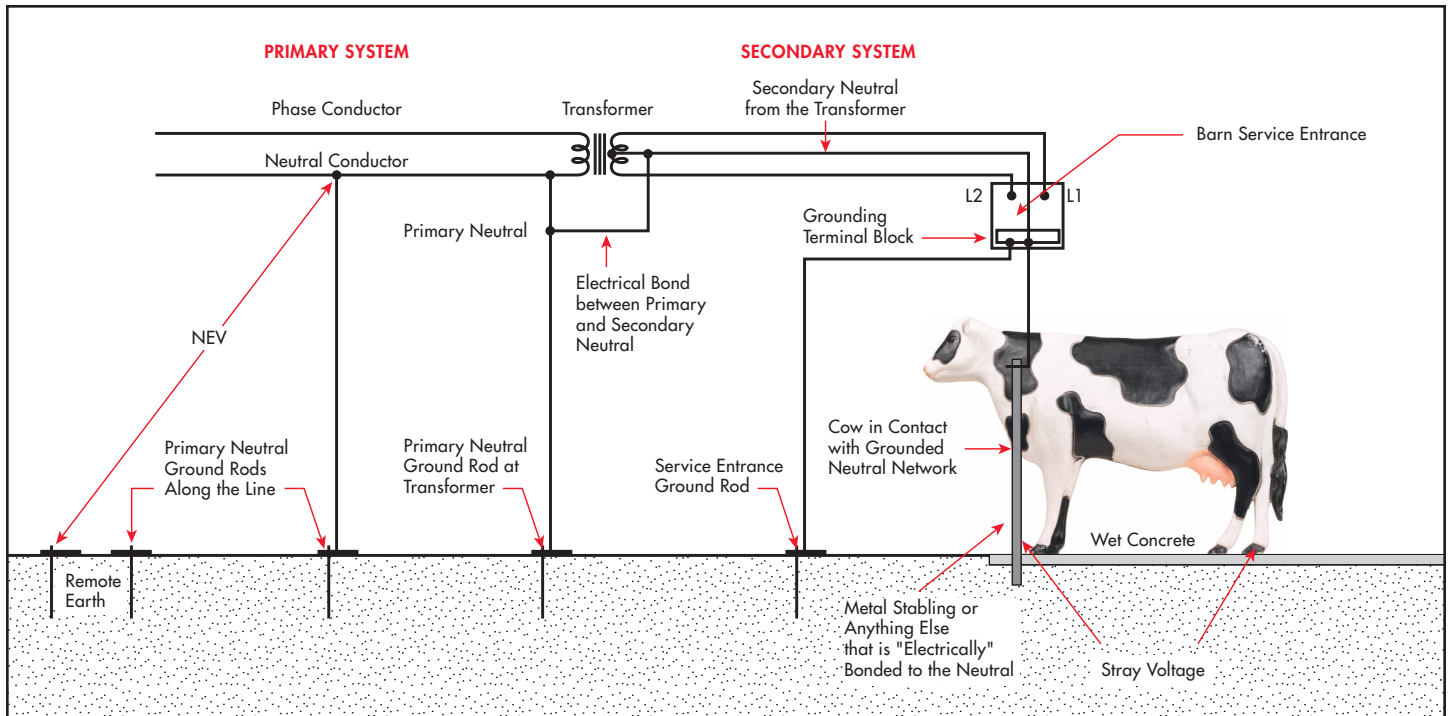
Stray voltage can be produced by a wide variety of off-farm and on-farm sources.

### Off-farm sources:

In a properly functioning electrical distribution system, some voltage will always exist between the neutral system (ground conductors) and the earth. The level of this neutral-to-earth voltage (NEV) can change on a daily or seasonal basis, depending on changes in electrical loading, environmental conditions and other factors. For safety reasons, Hydro One’s neutral system is connected to a farm’s grounding system. While this bond protects people and animals from shocks caused by faulty electrical equipment and lightning strikes, it can also result in a stray voltage equal to a fraction of the NEV appearing on grounded farm equipment, such as feeders, waterers, metal stabling, metal grates and milk pipelines.

### On-farm sources:

Poor or faulty farm wiring, improper grounding, unbalanced farm system loading, defective equipment or voltages from telephone lines or gas pipelines are all possible sources of stray voltage.



## If you think you have a Stray Voltage problem

Call our Customer Communications Centre at 1-888-664-9376 (Monday to Friday, 7:30 a.m. to 8 p.m.). Your local field business centre will call you within five business days to arrange an appointment.

1. **First Site Visit:** We'll meet with you at your property to perform pre-test inspections, conduct a site layout and carry out an animal contact test.
2. **Second Site Visit:** Five to ten business days after the first site visit, we will return to your property and install a farm stray voltage recording device.
3. **Third Site Visit:** Two to three business days after the second site visit, we'll remove the recording device and analyze the recorded data. We'll discuss the results of the testing with you at this time.
4. **The Ontario Energy Board (OEB) has specified that voltage levels of less than 1.0 volt to be of no concern.** If the measured threshold falls below this level, the investigation will conclude. Nevertheless, if you choose to purchase a stray voltage filter from us, we'll install it at no cost.
5. **If the stray voltage measured is above 1.0 volt,** we'll do further OEB-defined testing during a fourth site visit to determine whether corrective measures need to be taken by us.
6. **Final Site Visit:** If corrective measures were implemented by us, we'll return to your property to conduct final testing to see whether any additional corrective measures need to be taken by us.

For more information, go to [www.HydroOne.com/strayvoltage](http://www.HydroOne.com/strayvoltage)

For additional information on the effects of stray voltage on livestock, see the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) website, [www.omafra.gov.on.ca/english/livestock/dairy/facts/strayvol.htm](http://www.omafra.gov.on.ca/english/livestock/dairy/facts/strayvol.htm)

