



# Meter Installation Maintenance

**2016** 66<sup>th</sup> EDA Upper Canada District  
Metering Technologies Conference

# Outline

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- About Rodan
- Utility Services
- Meter Installation Maintenance
- Things to Consider
- Conclusion
- Questions

# About Rodan

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- Ontario's largest Meter Service Provider and Demand Response Aggregator
- Recently acquired Energent a leading EMIS (Energy Management Information Systems) and data analytics company based in Kitchener, ON
- OEA 2013 Company of the Year Award
- Canada's Top 100 Small & Medium Employers 2015, 2016
- Metering Services
  - Design, installation and management of advanced metering infrastructure & smart grid technologies (metering, monitoring, protections and controls)
  - Meter Changes, Upgrades, X-Phase testing, S-S-06 Testing
  - Meter Data Management Systems
- Engineering & Technical Services
  - Connection Impact Assessments
  - Project engineering & design
  - Remote monitoring, RTU set-up
  - System optimization studies
- Demand Management
  - Design and implementation of utility programs
  - Distributed energy resource development

# Introduction

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- With the province wide implementation of AMR the job of the meter reader has largely gone by the wayside.
- Although technology has taken the job of reading the meter, the job of monitoring the health and safety of your metering installations has at times been overlooked or forgotten.
- Implementing a continuous program to monitor the health and safety of your metering installation is critical in maintaining a healthy distribution system.

# Things to Consider

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- Outside the electrical room
- Inside the electrical room
- Meter cabinet
- Electrical safety (for you and your customers)

Note: this is not an exhaustive list but a reminder of things you may have overlooked or forgotten and need to consider when implementing a maintenance program or developing terms of service

# Outside Elec/Meter Rm.

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## Location

- Busy parking lot or driveway:
  - Are there bollards?
  - Is the door clearly marked?
- Is there free and clear access to the ER?
- Is there vegetation or terrain impeding access or service?
- Are the stairs or platform safe and secure with handrails in place?

# Outside Elec/Meter Rm.

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Broken & Unsafe Platform



Impeded access to Elec. Rm. & Fire Hazard

# Outside Elec/Meter Rm.

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## Security

- Is the room secure?
  - Is the lock damaged or need lubricating?
  - Is the lock box damaged or missing?
  - Is the door / door jamb damaged, falling apart or rusted away?
  - Is there anyone living in your Meter room?!?....

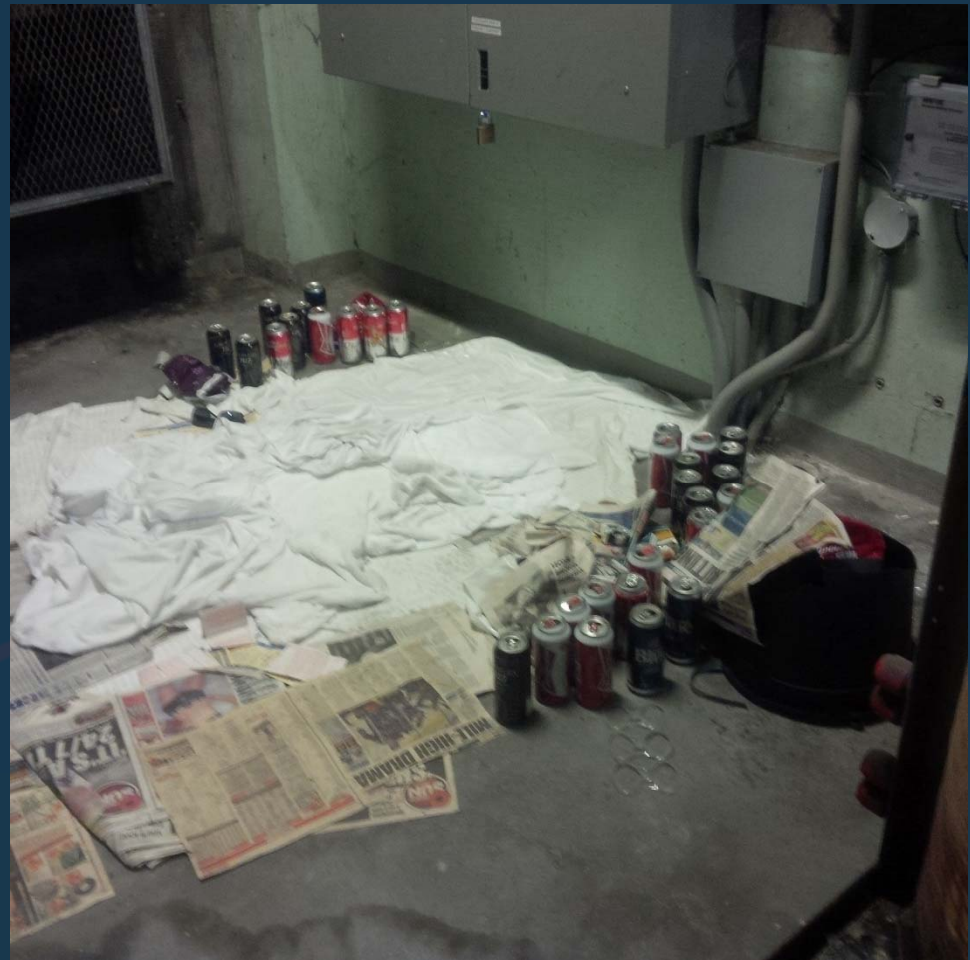


# Outside Elec/Meter Rm.

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Broken Door Jamb



Meter Room or Man Cave?

# Inside Elec/Meter Rm.

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- Are there Arc Flash warning decals?
- Are there any open, damaged or insecurely mounted switches, splitters, boxes or meter cabinets? Reportable to ESA.
- Is there junk stored above the meter cabinet? Can fall when the cabinet is opened.
- Are there any FIT or microFIT installations in the electrical room?
  - Back feed potential on metering circuits. Be wary of illegal solar installations that haven't been inspected.
  - Are the FIT and microFIT metering isolation switches marked on each side of the meter? Good practise to make sure the correct switches are used for isolation of the meter.
  - Is there contact information for the FIT/ microFIT owner posted in the E/R?

# Inside Elec/Meter Rm.

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- Are there any conduits pulled apart or LB covers missing in the metering installation?
- Are all switches for self contained meters labeled, locked and vacant meter bases have blank hole covers installed? Prevents inadvertent contact with live equipment if an unused service switch gets turned on.
- Is there any theft of power?



# Inside Elec/Meter Rm.

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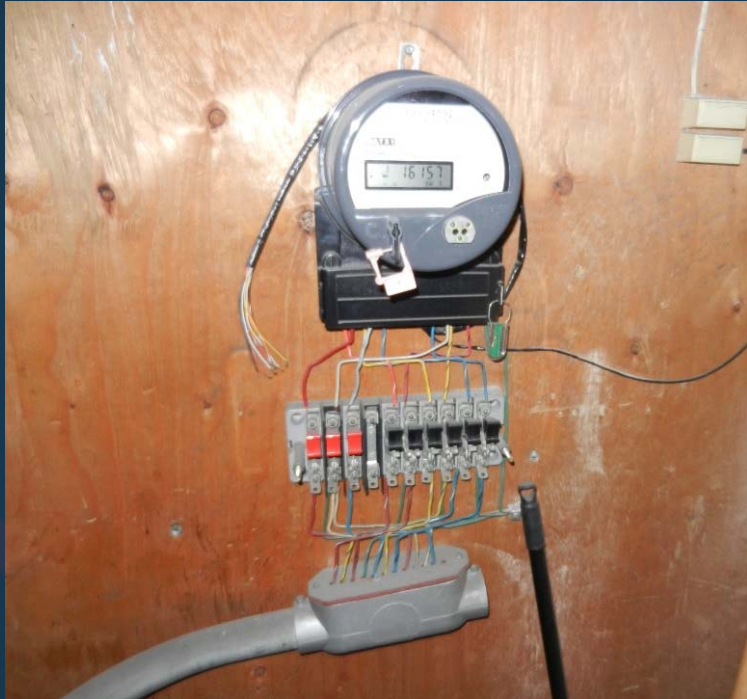


Properly Labeled FIT Disconnect



Meter Cabinet Pulling Off Wall

# Inside Elec/Meter Rm.



No Cabinet, No Switch Cover



Improper storage space... Candles?

# Meter Cabinets

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- Is the meter cabinet locked? Does it have provisions for a lock?
- Is the meter cabinet mounted at the correct height?
- Are the meter cabinet latches or hinges broken?
- Insect or rodent infestation?
- Is the meter cabinet rusted out?
- Does the test block need to be replaced? Some old test blocks can become brittle and break. Sometimes there are hidden delta connections on the back of the test block from previous installations.
- Is the meter wiring up to code? AWG, Type, Colour.
- Any signs of overheated equipment or wires?
- On parallel cable runs do the phases run through the conduits properly to prevent cable heating?

# Meter Cabinets

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- Do the communication wires run through energized conduits?
- Is there any equipment connected to the potentials on the test block? Is the equipment fused? What is the burden?

# Meter Cabinets

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Cabinet too High, un-level grade

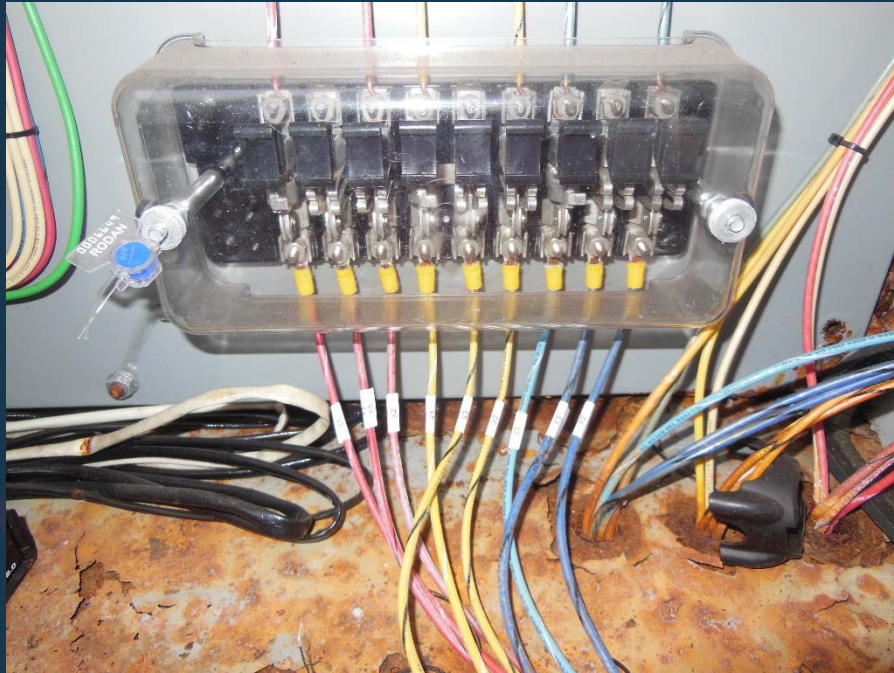


Knocked off pole by lawn tractor

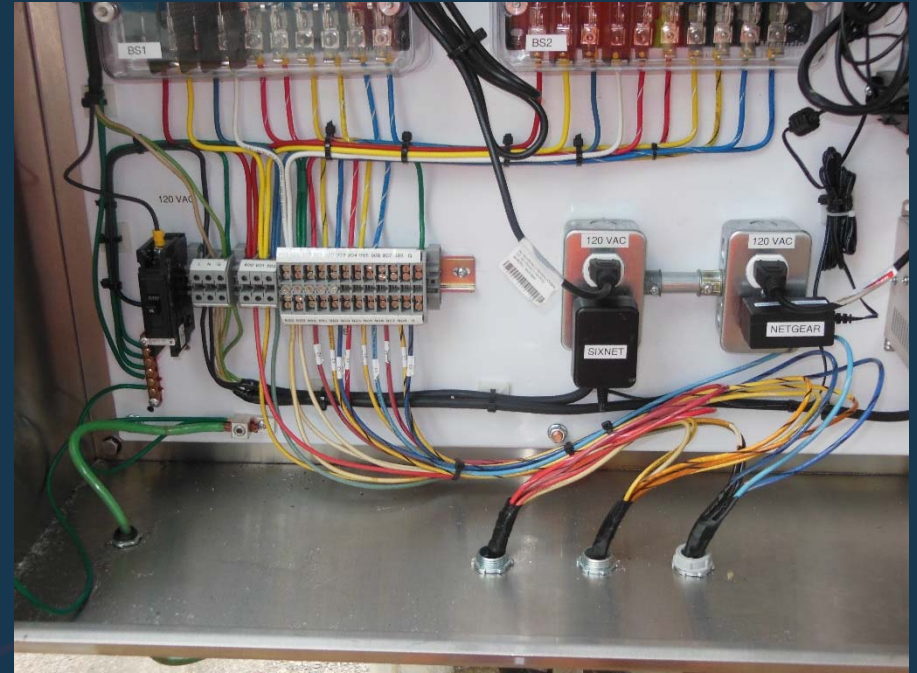


# Meter Cabinets

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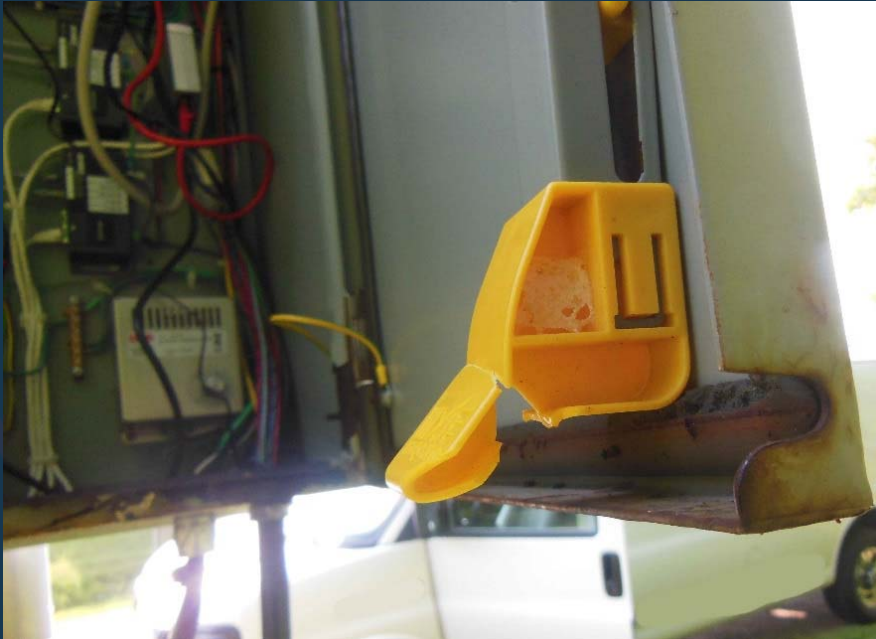
Rusted out cabinet bottom



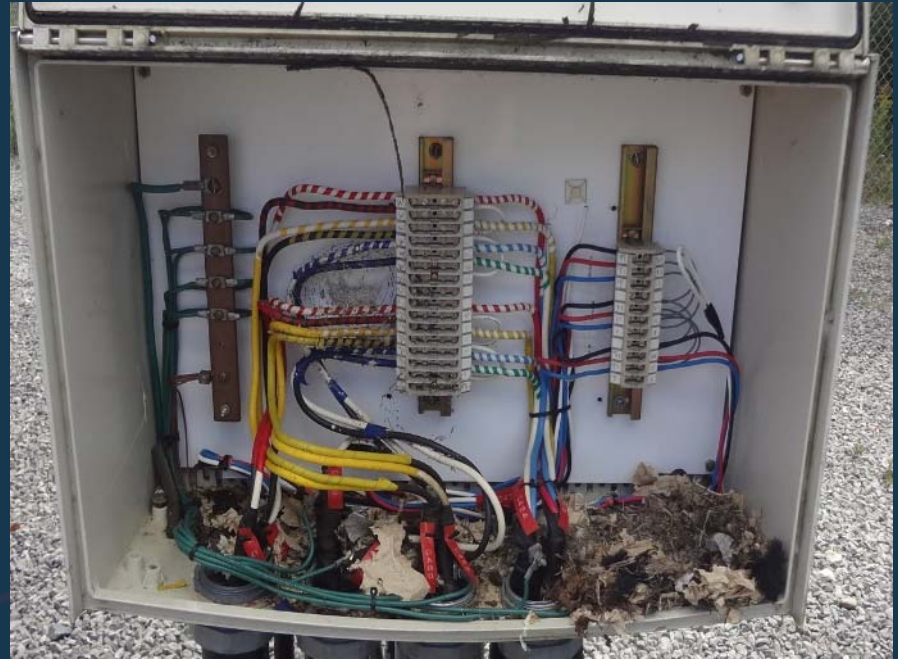
New Cabinet Installed... Much better.

# Meter Cabinets

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Broken Latch



Mice Nest

# Electrical Safety

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- Is the meter cabinet grounded and bonded?
- Is the cabinet bonded with the correct size wire for the service size?  
Always make sure the cabinet is bonded to the main service with a full sized ground for the service size. Don't rely on conduit grounds as they could be loose or rusted.
- Is the meter circuit grounded to the plate and cabinet? The back plate should be physically grounded to the cabinet as the nut and stud for the back plate cannot be relied on for a good connection through paint on the stud.
- On medium/high voltage metering, if present, is the H0 connection of the PT grounded properly?
- Is there a ground fault? Should always make sure that you check for ground faults before working on 3 Phase 3 Wire services
- Is there 600 volts at the test block, is this identified?
- Are the CT bars taped up?
- What electrical safety standards are you following and are they applied consistently across your install base?

# Electrical Safety

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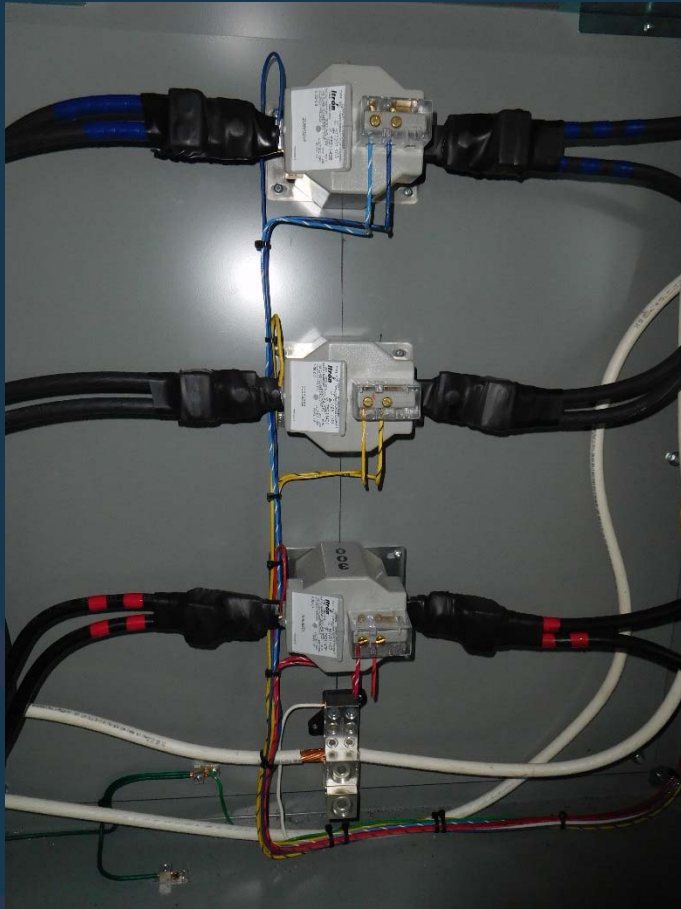


Improperly Grounded H0 Connection



Properly Grounded H0 Connection

# Electrical Safety



Properly Grounded & Taped IT Cabinet



Not Grounded, CT's not Taped  
& 600V at Test Block / Meter

# Electrical Safety



W T F : Wiring Total Fail !



Indoor PT's at top of the pole

# Conclusion

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- Make sure your conditions of service are up to date and make sure you enforce your rules and don't deviate from them.
- Remember they are your rules, not the contractors. They are your conditions for safety on the worksite during construction and in the future. It's easier to get problems corrected before final connection than trying to get deficiencies corrected after.
- Look at other utilities conditions of services and update yours to reflect ideas from others.
- Implementing a **continuous** program to monitor the health and safety of your metering installations is critical in maintaining a healthy distribution system.
- Don't just change your meters when they are due for reverification, upgrade the entire metering installation.
- You may be surprised at what you find!

# Questions?

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Whether your metering installations look like this:



Or like this:



It may be an accident waiting to happen....



# More Information

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