

ANSI 0.15 – Hardware Standard Update

Revenue Metering Standing Committee Meeting Oct 2, 2008
Neill Wong, Settlements, Metering Installations



- **High Accuracy Instrument Transformer Working Group was formed at the Metering Service Provider User Group Meeting of June 19, 2008**
- **5 Metering Service Providers in the Working Group**
 - Robert Reid, N-Sci Technologies Inc.
 - Selina Chang, Rodan Energy & Metering Solutions Inc.
 - Terry Court, Hydro One Networks Inc.
 - David Sharpe, Peterborough Utilities Inc.
 - Roger Ersil, Powerstream Inc.
- **2 Instrument Transformer Manufacturers were invited to join in technical advisory capacity**
 - Alex Kaminsky, KA Factor Group representing Trench Ltd.
 - Peter Hajek, LaPraire Incorporated representing SADTEM

1. Wholesale Revenue Metering Standard – Hardware requires Current Transformer (CT) ratios be selected such that:
 - “minimum sustained current during normal operation shall not be less than 10% of the primary tap for ANSI 0.3 accuracy class”
2. To allow for accurate CT operation within a wide dynamic range, WRMS-Hardware design considerations provide:
 - “use of extended range current transformers meeting the 0.15S ANSI standard”
3. IESO practice was to accept “extended range” test of ANSI 0.3 class CTs in form of factory test cards complete with serial numbers as proof of compliance
4. Recently, ANSI and CSA standards were formalized to recognize 0.15/0.15S accuracy class
5. Recently, Measurement Canada S-E-07 approval specifications for instrument transformers recognized 0.15 accuracy class

Relative Comparison of Industry Standards IEEE ANSI, CSA & MC S-E-07 CT Accuracy Classes			
100% Nominal x RF	10%	5%	1%
IEEE Std C57.13 - 1993 ANSI 0.3- Table 6	0.997-1.003	0.994-1.006	
CSA/CAN3-C13 - 1992 0.3- Table 12	0.997-1.003	0.994-1.006	
IEEE Std C57.6 - 2005 ANSI 0.15 - Table 1	0.9985-1.0015	0.9970-1.0030	
IEEE Std C57.6 - 2005 ANSI 0.15S- Table 1	0.9985-1.0015	0.9985-1.0015	
CAN/CSA-C60044-1:07 0.15 - Table 10B	0.9985-1.0015	0.997-1.003	0.994-1.006
CAN/CSA-C60044-1:07 0.15S - Table 10B	0.9985-1.0015	0.9985-1.0015	0.997-1.003
MC S-E-07- 07/01/2008 0.15 Table 4	0.9985-1.0015	0.997-1.003	
MC S-E-07- 07/01/2008 0.3 Table 4	0.997-1.003	0.994-1.006	
MC S-E-07- 07/01/2008 0.6 Table 4	0.994-1.006	0.988-1.012	

- **High Accuracy Instrument Transformer Working Group drafted a report with recommendations to:**
 - Adopt Measurement Canada S-E-07 Specifications for the Approval of Measuring Instrument Transformers dated July 1, 2008
 - adopt ANSI C57.13.6 High Accuracy Instrument Transformer standard for 0.15 and 0.15S ANSI accuracy class
 - Adopt CAN/CSA-C60044-1:07 Part 1 standard for 0.15 ANSI accuracy class
- **Working Group comments received**
- **Teleconference meeting of Working Group convened**

1. Basis for practice of applying 80/20 rule to review CTs operating >10%. Consider economic impact around the province with loads dropping; Requires cost/benefit analysis → may have significant cost impact; MMP's mode of operation; perhaps look at multi-year window.
2. Consequences of adopting 0.15S accuracy class to 1% rated nominal current. Measurement Canada S-E-07 only recognizes 0.15 accuracy class to 5% rated nominal current. How to treat 0.15S at 1% for the market metering?
3. Balance overly prescriptive regulations versus allowing for design flexibility. Could disadvantage MSPs who opt for “rule” compliant quotation.

4. Consequences of metering “design guidelines” versus metering “regulations”.

Guidelines may mean “optional use/no adherence to” whereas regulations imparts “fairness/consistency of application” for market meters.

5. Could be implemented within a tool design context:

>10% rated nominal → 0.3% ANSI class

>5% rated nominal → 0.15% ANSI class

>1% rated nominal → 0.15S% ANSI class

- No changes will be made to Metering Installation (MI) standards accuracy requirements. CTs shall continue to meet or exceed 0.3% accuracy class of ANSI C57.13 over operating range.
- Working Group and IESO recommendation will be to adopt 0.15 and 0.15S high accuracy standards.
- 0.3 accuracy class CTs tested to extended range will no longer be accepted for MI registration.
- WRMS-Hardware would then read as:
.... requires Current Transformer (CT) ratios be selected such that:
 - “minimum sustained current during normal operation shall not be less than 5% of primary tap for ANSI 0.15 accuracy class”
 - OR
 - “minimum sustained current during normal operation shall not be less than 1% of primary tap for ANSI 0.15S accuracy class”

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- Implementation timeframe: To recommend within a 1 year transition (July 1, 2009 or Jan 1, 2010);
- To allow use of new MI designs currently in the pipeline to utilize extended range current transformers;
- When implementing EITRP restoration, to permit continued use of extended range CTs. Spare units must already be inventoried or on order. To propose spares must be written into EITRP plan;
- When MI substantial upgrade triggered, to require designs consider 0.15/0.15S class high accuracy CTs as applicable to the operating loads;
- To consider parallel design criteria used in retail metering – (E.g. Embedded distributed generation being transferred into wholesale market)

- Group Discussion
- Email comments to: Metering.Installations@ieso.ca
- Directly contact your Metering Service Provider who is a Working Group member
- High Accuracy Instrument Transformer Working Group to reconvene to incorporate any RMSC stakeholder direction and input