

# **Network Protector Enabled Generation (NPEG) Collaborative**

**Presented by:**

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**On behalf of**

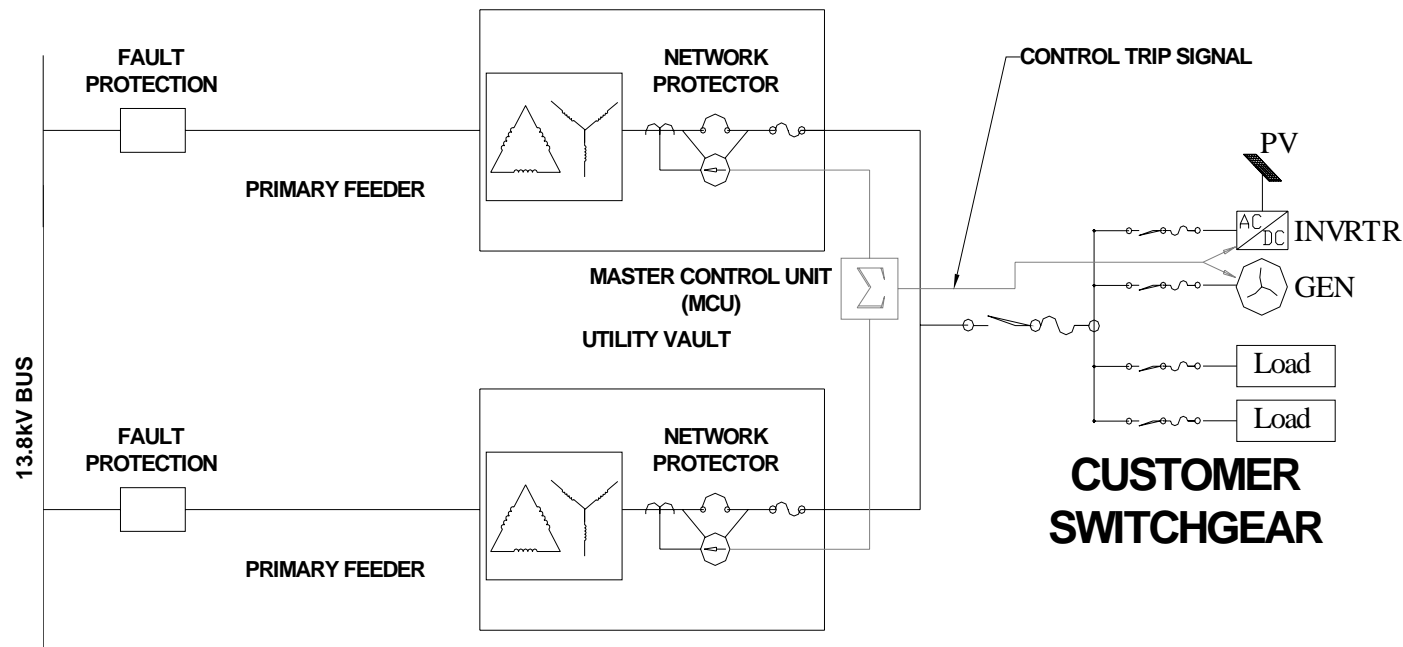
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# NPEG Concept

## SPOT NETWORK WITH NETWORK PROTECTOR ENABLE GENERATION CONTROL

### SUBSTATION



# Network Protector Enabled Generation (NPEG) Background

- 2002 MTC DG Collaborative funds Feero two year study of DG on 2-NP spot network
- 2005 Feero study final report recommends Advance Network Protector (ANP) Draft RFP
- 2/3/07 IEEE P1547.6 presentation
- 4/25/07 ANP 1<sup>st</sup> informal call: MTC, CEC, NYSERDA, EPRI, PG&E, NGrid, MA DOER, BEW Eng., NEO
- 6/13/07 2<sup>nd</sup> ANP call. Concept name changed to NPEG. Group requests NPEG performance specification
- 7/9/07 NPEG draft performance spec circulated
- 8/3/07 NPEG collaborative conference call. CEC to proceed with R&D

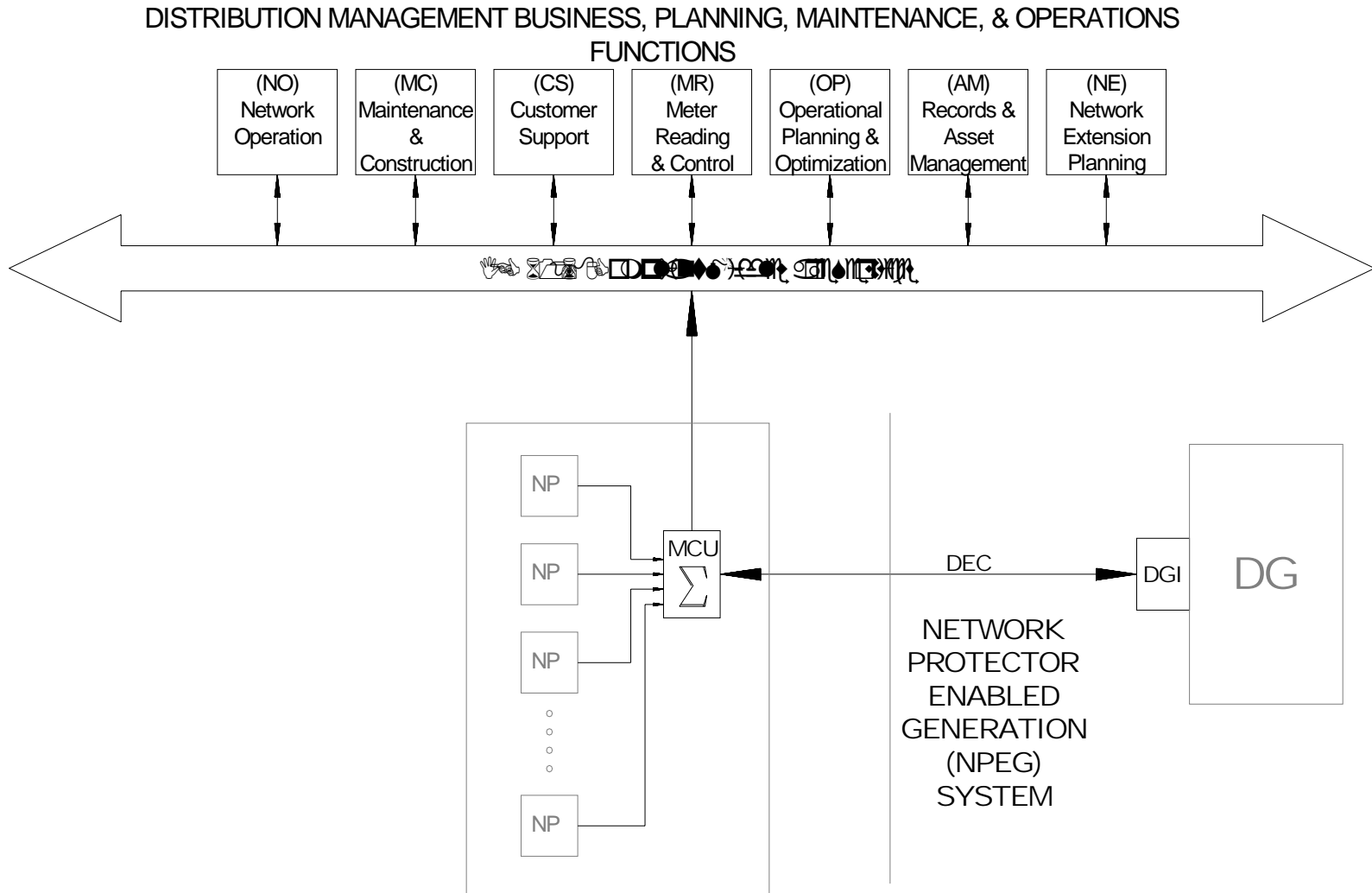
# Summary NPEG Performance Specification (Framework)

- Hierarchical organization based upon IEC TC 57 Standard: Power Systems Management and Associated Information Exchange
  - Information Model
  - Operational Performance Specification
  - Material Performance Specification

# Information Model: Business & Operations Perspective

- Enterprise Wide Information Exchange
  - Network Operation
  - Maintenance & Construction
  - Consumer Support
  - Meter Reading & Billing
  - Operational Planning
  - Etc.....

# Information Model

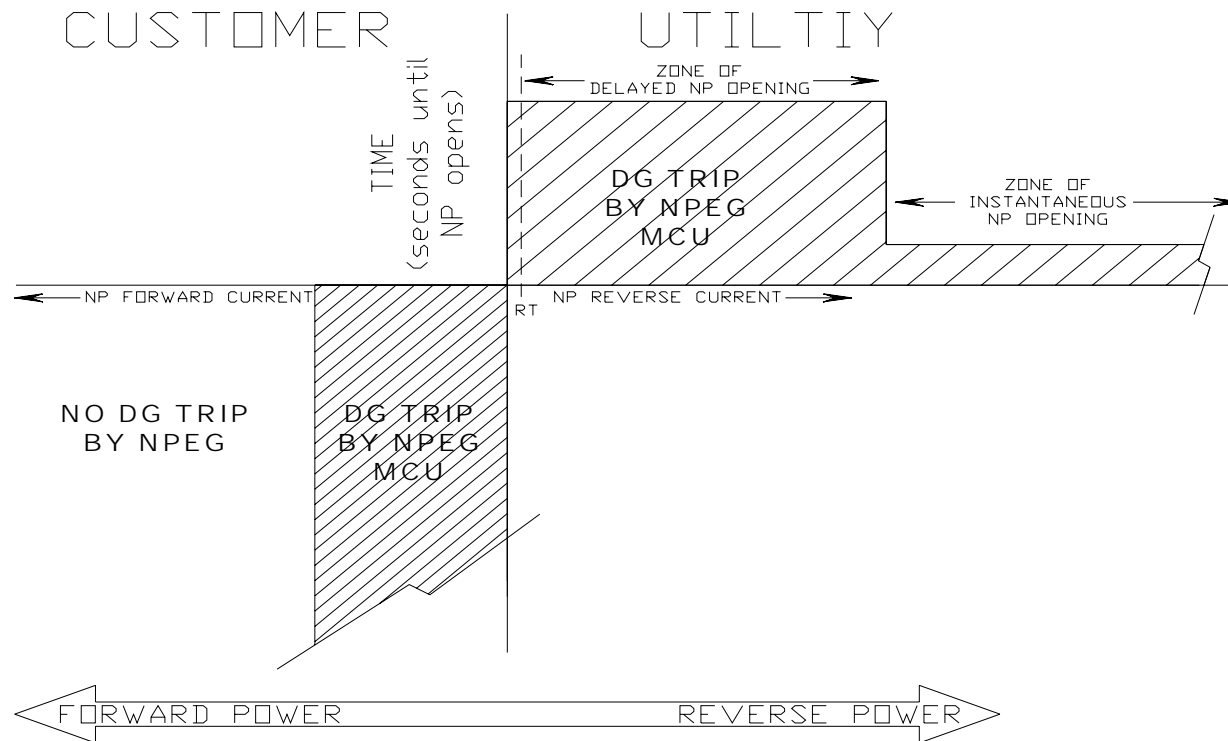


# Operational Performance Specification

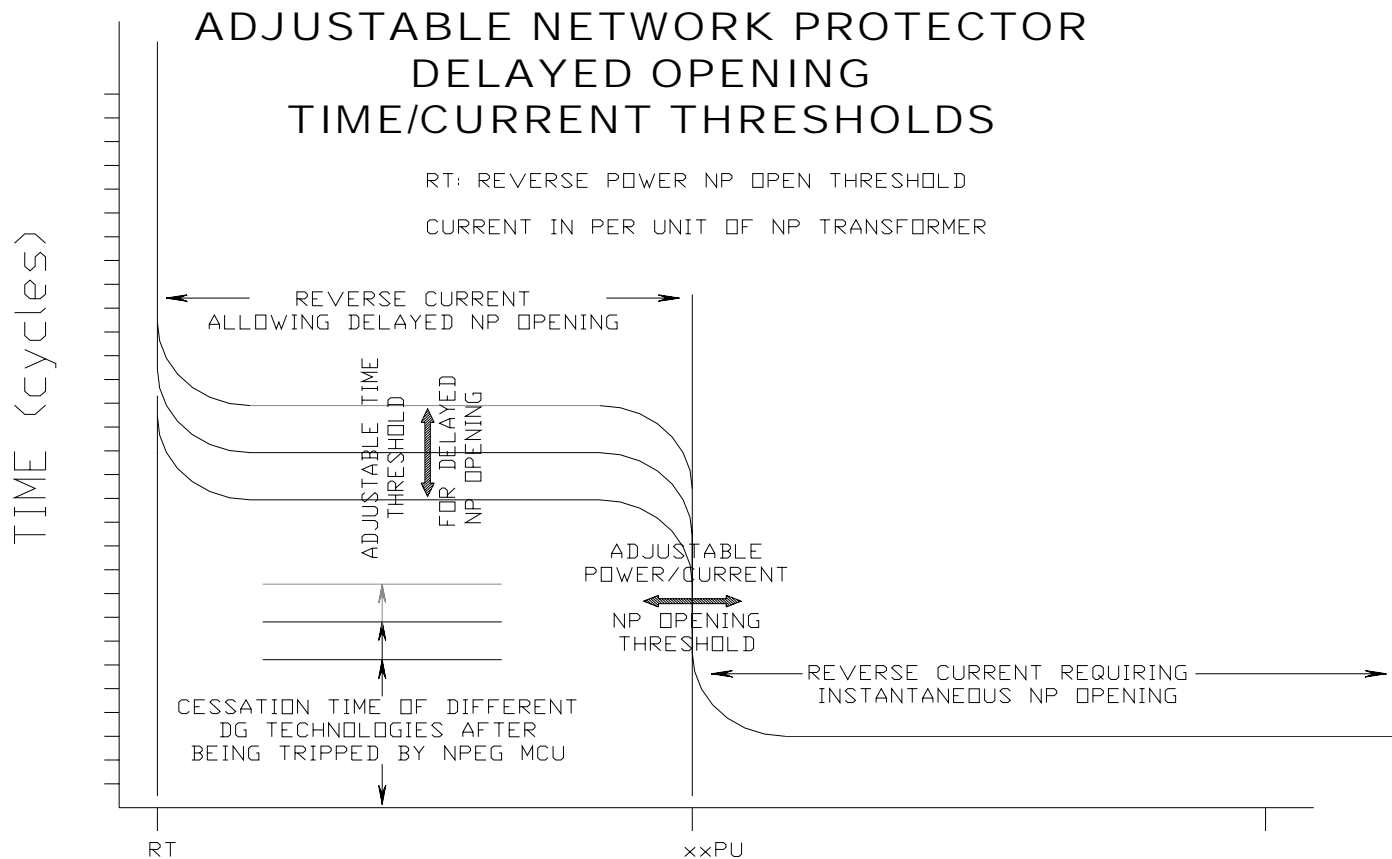
- Reverse power clearing time practices
- “Read Only” network protector I/O
- NPEG supervisory signal configuration
- DG directional power trip thresholds
- DG cease to energize times

# Adaptation to Utility Operational Practices

## NPEG ZONES OF PROTECTION



# Feero NP Operational Timing Analysis



# Material Performance Specification

- Sample Material Specifications
  - Fiber optic cable construction spec
  - Physical signal spec
  - Component temperature specs
  - Component physical security spec
  - DG communications interface spec
- Driven by Stakeholder Capabilities and Operational Requirements

# Future Work & Developments

## CEC program

- Massachusetts initiatives
  - Ongoing interest at state level
  - DG Collaborative update
- Regular meetings every 6-8 weeks
- Possible presentation of NPEG to CADER conference February 08

# References

- Website:
  - [www.masstech.org/dg/interconnect/network-rfp.htm](http://www.masstech.org/dg/interconnect/network-rfp.htm)
- Feero 5/05:
  - [http://www.masstech.org/renewableenergy/public\\_policy/DG/resources/Collab\\_2005Collab05\\_05\\_31\\_FeeroNetworkReport.doc](http://www.masstech.org/renewableenergy/public_policy/DG/resources/Collab_2005Collab05_05_31_FeeroNetworkReport.doc)
- MA DG Collaborative 6/06:
  - [http://www.masstech.org/DG/02-38-C\\_Attachment-F\\_Network\\_RFP.pdf](http://www.masstech.org/DG/02-38-C_Attachment-F_Network_RFP.pdf)
- Presentations to IEEE 1547.6 meetings:
  - [August 3, 2006 -- Bill Feero](#)
  - [February 1, 2007 -- Jim Bing](#)
- NPEG 2-page summary
  - [http://www.masstech.org/renewableenergy/public\\_policy/DG/resources/2007-06-NPEG-Collabortative-Intor.doc](http://www.masstech.org/renewableenergy/public_policy/DG/resources/2007-06-NPEG-Collabortative-Intor.doc)

# Questions & Follow-Up

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