# *Asset Management Program Improvement Project (AMPIP)*

Update

September 2014

# Topics

- AMPIP Basics
- AMPIP Assets
- AMPIP Data & Results
  - Need-to-Know
  - Equipment Risk Plots / Scatter Charts
- AMPIP Next Steps
- Q & A

# AMPIP Basics

- Guidance is coming from:
  - Project Plan signed by Senior Managers in Aug 2012
  - ISO 55000, 55001 and 55002
  - Strategic Roadmap 2024

- 3 Physical Assets (Long lead time and high dollar)
  - Power Xfmrs, Power Circuit Breakers, T-lines

- 2-yr AMPIP effort to develop Program quality results or "data driven risk analysis"

- Leverage Maximo to the maximum extent possible

# AMPIP Basics – Cont.

- Will provide better justification of capital funding requests and help prioritize projects
- Raises awareness of major asset risks
- Credible and consistent results
- Improved reliability
- AM is dynamic:
  - Add assets or asset classes
  - Retire or replace assets
  - Mitigate risky assets (add, repair, replace, design)
  - Learning & continuous improvement

# AM Basics – Risk

**Asset Risk** = Probability of Failure (POF)

x

Consequence of this Failure

POF: Probability that that asset will be out of service in the next year (Uses a Weibull analysis and combines Health Index "HI", and WAPA historical replacement statistics for that asset class)

Consequence: Measurement of the impact to Western if that asset is out of service

# Transformers

Asset Management

## Parameters:

- All oil-filled power transformers, including units with LTC's, and oil-filled reactors
- All mobile transformers (separate asset class)
- All phase-shifting transformers (separate asset class)
- Includes units owned or maintained by Western
- Excludes pole mounted
- Excludes station service

| Region | Quantity |
|---|---|
| DSW | 61 |
| RM | 122 |
| UGP | 179 |
| SN | 44 |
| CRSP* | 46 |

* Contains redundancy between CRSP/DSW and CRSP/RMR assets

Western AREA POWER ADMINISTRATION

# Breakers

Asset Management

## Parameters:

- Power circuit breakers, oil, air, vacuum, and SF-6
- 100-kV and above
- Excludes circuit switchers or other switchgear.
- Includes units owned (fully or partially) by Western
- Includes units maintained by Western

| Region | Quantity |
|---|---|
| DSW | 389 |
| RM | 390 |
| UGP | 572 |
| SN | 231 |
| CRSP* | 192 |

* Contains redundancy between CRSP/DSW and CRSP/RMR assets



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# Transmission Lines

Parameters:

- 100-kV and above
- Breaker to breaker
- No underground
- Segments that Western owns or maintains

| Region | Quantity |
|---|---|
| DSW | 167 |
| RM | 130 |
| UGP | 193 |
| SN | 68 |
| CRSP* | 60 |

* Contains redundancy between CRSP/DSW and CRSP/RMR assets

*Partial ownership (capacity only) does not qualify*

# Four Sub-Teams

- Equipment Condition Assessment (Power Transformers and Breakers)
- Transmission Line Condition Assessment
- Consequence of Failure Processes and Analysis
- IT (Maximo) Design and Development

# AMPIP Results & Data

- Critical Decision CD-4A (Initial Reports, Regional Staffing, Western Order) Approved Sept. 2015
- Consequence Scores and Risk Scores deemed OUO
- Reports are coming from Maximo/Crystal
  - Access rights to produce these reports restricted internally via assigned permissions

# Official Use Only - OUO

Asset Management

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NAME/ORG: TRANSMISSION ASSET MANAGEMENT DATE: 6/2/2014

**WESTERN REVIEW REQUIRED BEFORE DISSEMINATION OR PUBLIC RELEASE**

- DOE Requirements for OUO (DOE O 471.3, DOE M 471.3):
  - Need-To-Know
  - Contractor requirements
  - Protected
  - Administrative Penalties
- Non-Disclosure Documents

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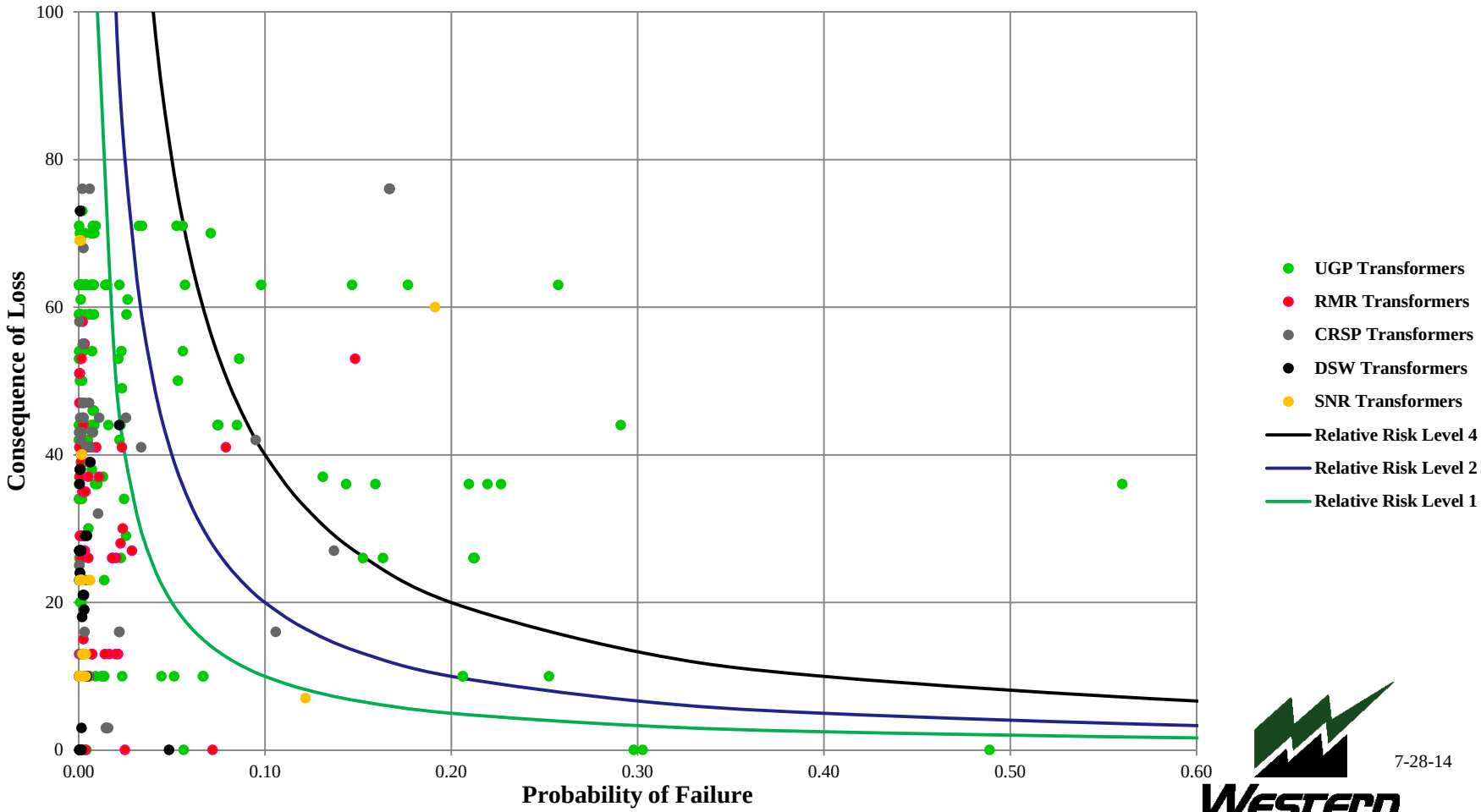
# Western Transformer Risk

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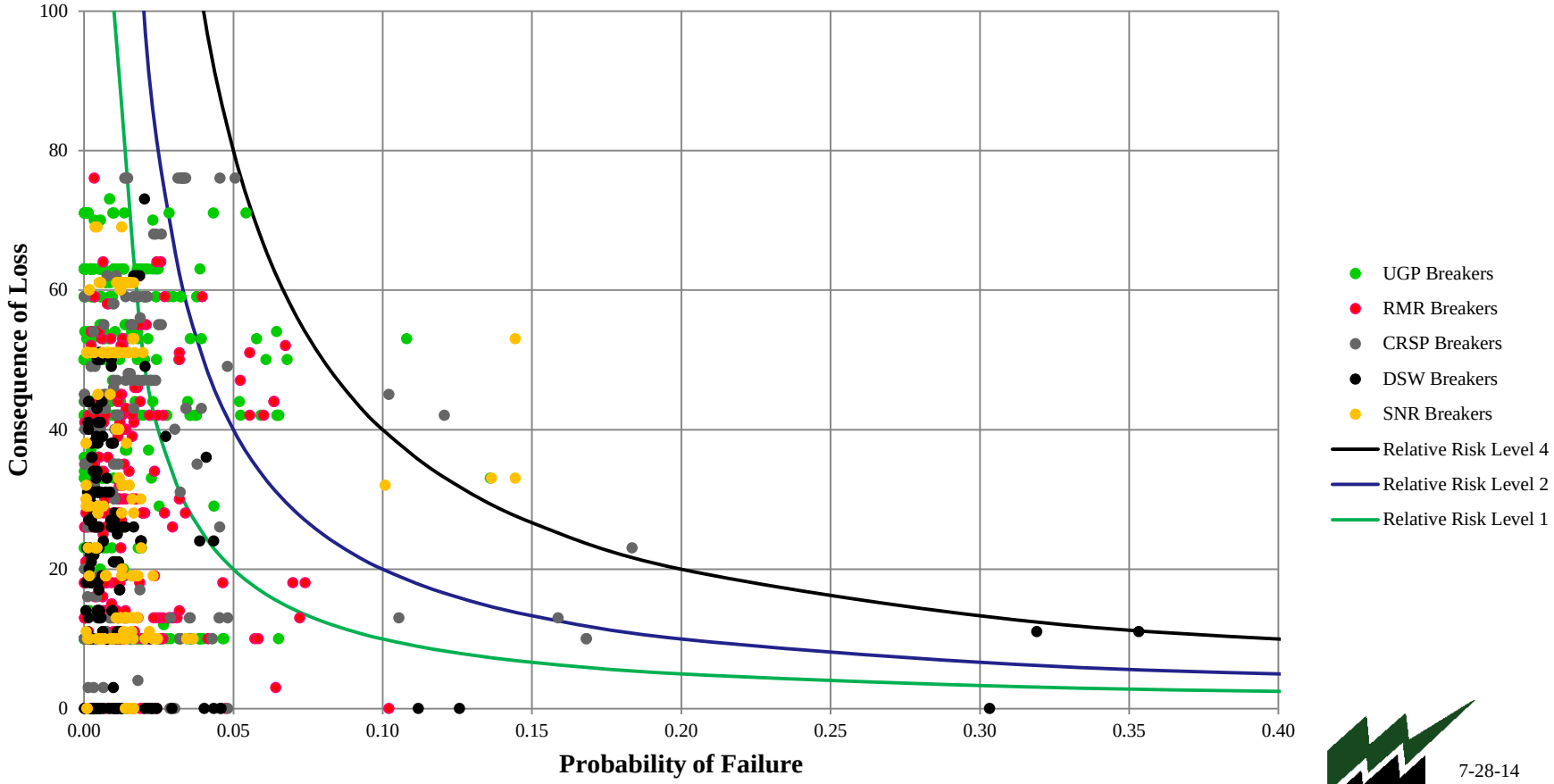
# Western Breaker Risk

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# Next Steps - AMPIP

- Continue w/ Maximo Enhancements
  - Robust Report Development
  - Update Maximo Business Rules and Procedures
  - Automate Condition Data Acquisition where possible (DGA, Doble, bus fault duty, loading data)
  - Develop Metrics and Build Analytics for T-line Structures & Conductors
  - Eliminate “0” Consequence Scores
- Complete Western order and manual for “Transmission Asset Management” (TAM)
- Design, develop and implement asset risk register
- CD-4B (Project completion ande closeout)

# Next Steps – Program(s)

- TAM Program:
  - TAM support added to COO responsibilities
    - Unions and DOE approval
    - Hire 2 FTE in FY 15
    - Develop Strategic Asset Management Plan (SAMP)
  - Approve manual
  - Start up Transmission Asset Management Stakeholder Committee (TAMSC)
  - Regions continually update asset condition and consequence data, and produce annual reports for analysis, trending and as input to the 10-yr plan updates

# Next Steps – Program(s)

- Strategic Roadmap 2024: Technology Roadmap
  - Design, develop, link IT systems and data:
    - Maximo/GIS/T-Line Inspection/Substation Inspection
    - TAM: Asset risk scoring and risk register
- MDCC and AM Specialists coordinate 10-yr Plans and project development to mitigate riskiest assets
- WAPA Orders with training and guidance
- OSEM preparing physical security plan with AMPIP asset consequences as one input