AMERICAN TRANSMISSION COMPANY®

Helping to keep the lights on, businesses running and communities strong®

Reinforcement Guidelines

Preliminary Needs

Stakeholder and Customer Presentation – February 26, 2013

Outline

- Purpose
- Potential Guidelines
- Assumptions
- Preliminary Needs
- Next Steps

Purpose

- Summarize Preliminary Needs for Potential Reinforcement Guidelines
- Review Next Steps Schedule

NERC TPL Standards - Outages

A. Intact: stable, within limits, no load shed

B. Singles: stable, within limits, no load shed

C. Select Multiples: stable, within limits, planned load shed

ATC System must meet these criteria

ATC Traditional Guidelines

A. Intact: reinforce if out of criteria for likely dispatch
B. Singles
   – Peak Load dispatch: reinforce if out of criteria
   – Sensitivity dispatches: reinforce if economic benefits
C. Select Multiples: rely on system adjustments and load shedding

How much load shed might be needed for C?

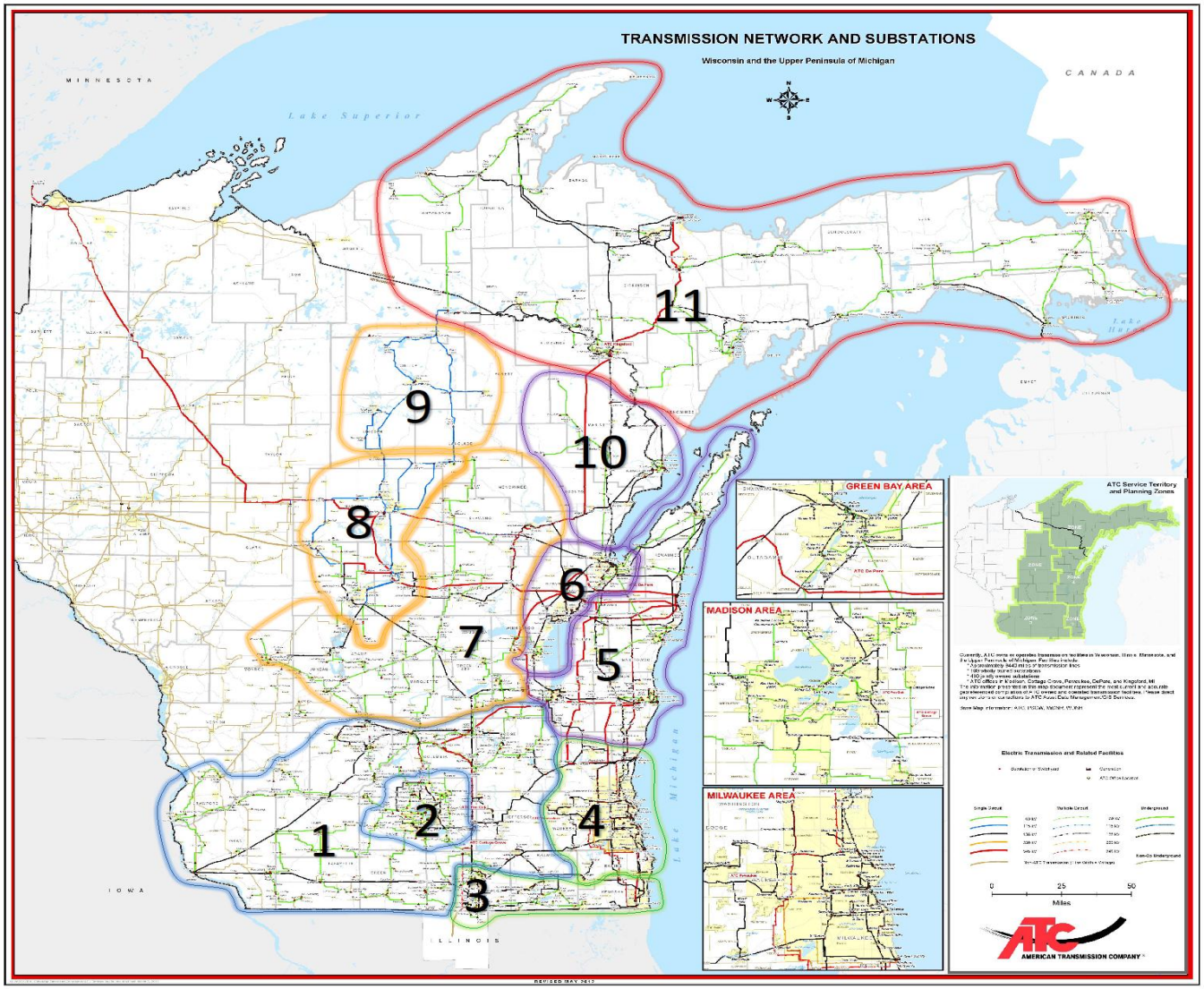
What potential projects would avoid load shed?

What guidelines do we need to reinforce for C?

Analysis Assumptions - Models

- Peak: 2012 TYA, 2022 Summer
- Off-Peak: 2012 TYA, 2022 70% Load
  - West-to-East Flow bias
  - Adjusted for maintenance load level

Maintenance Load Level - Areas



Area Maintenance Load

Area Number	Part of Zone	Maintenance Window % of peak	Model Maintenance Load % of Peak
1	3	61%	70%
2	3	58%	70%
3	3 + 5	62%	70%
4	5	58%	70%
5	4	69%	70%
6	4	65%	70%
7	1	61%	70%
8	1	72%	70%
9	1	68%	70%
10	4	79%	80%
11	2	87%	90%

Analysis Assumptions - Outages

- Peak
  - bus section (C1 and 69 kV)
  - breaker failure (C2 and 69 kV)
  - More severe doubles (C3 some 69 kV)
  - Doubles on common tower (C5 and 69 kV)
- Off-Peak
  - All of peak outages
  - More severe Prior Maintenance +
    - B, C1, C2, more severe C3, C5 and some 69 kV

2022 Peak: Outages & Load Shed

Outage type	> 300 MW Load Shed	100-300 MW Load Shed	< 100 MW Load Shed
A and B	0	0	0
C1 and C2	0	0	18
C3	5	24	152
C5	1	0	3
Total	6	24	173

2022 Off-Peak: Outages & Load Shed

Outage type	> 300 MW Load Shed	100-300 MW Load shed	< 100 MW Load Shed
A and B	0	0	0
Prior + B	0	15	117
Prior + C1 & C2	2	19	106
Prior + C5	2	6	102
Total	4	40	325

Preliminary Conclusions

- More severe outages, measured by load shed, are distributed across all Zones
- Number of limitations - majority of limitations exist in the following areas:
  - Rhinelander and Waupaca areas (Zone 1)
  - Sheboygan and Green Bay areas (Zone 4)
  - western and eastern Upper Peninsula (Zone 2)
    - May be addressed by other ongoing efforts
- Will focus on developing solutions and cost estimates for the > 300 MW load shed

Next Steps

- **Phase 1** (2013 Assessment): within Emergency Limits
  - Needs compiled by end Q4 2012 **DONE**
  - Preliminary solutions developed for those needs exceeding 100 to 300 MW load shed by end Q1 2013 **IN PROGRESS**
  - Cost Impact of potential solutions by end of Q2 2013
- **Phase 2** (2014 Assessment) within Normal Limits
  - Assess additional Needs to stay within normal limits, Q4 2013
  - Preliminary solutions developed for needs exceeding 100 to 300 MW load shed by end Q1 2014
- **Phase 3** (2015 assessment) Planning Criteria?
  - Assess need for Reinforcement Criteria, Q3 2014

Questions?

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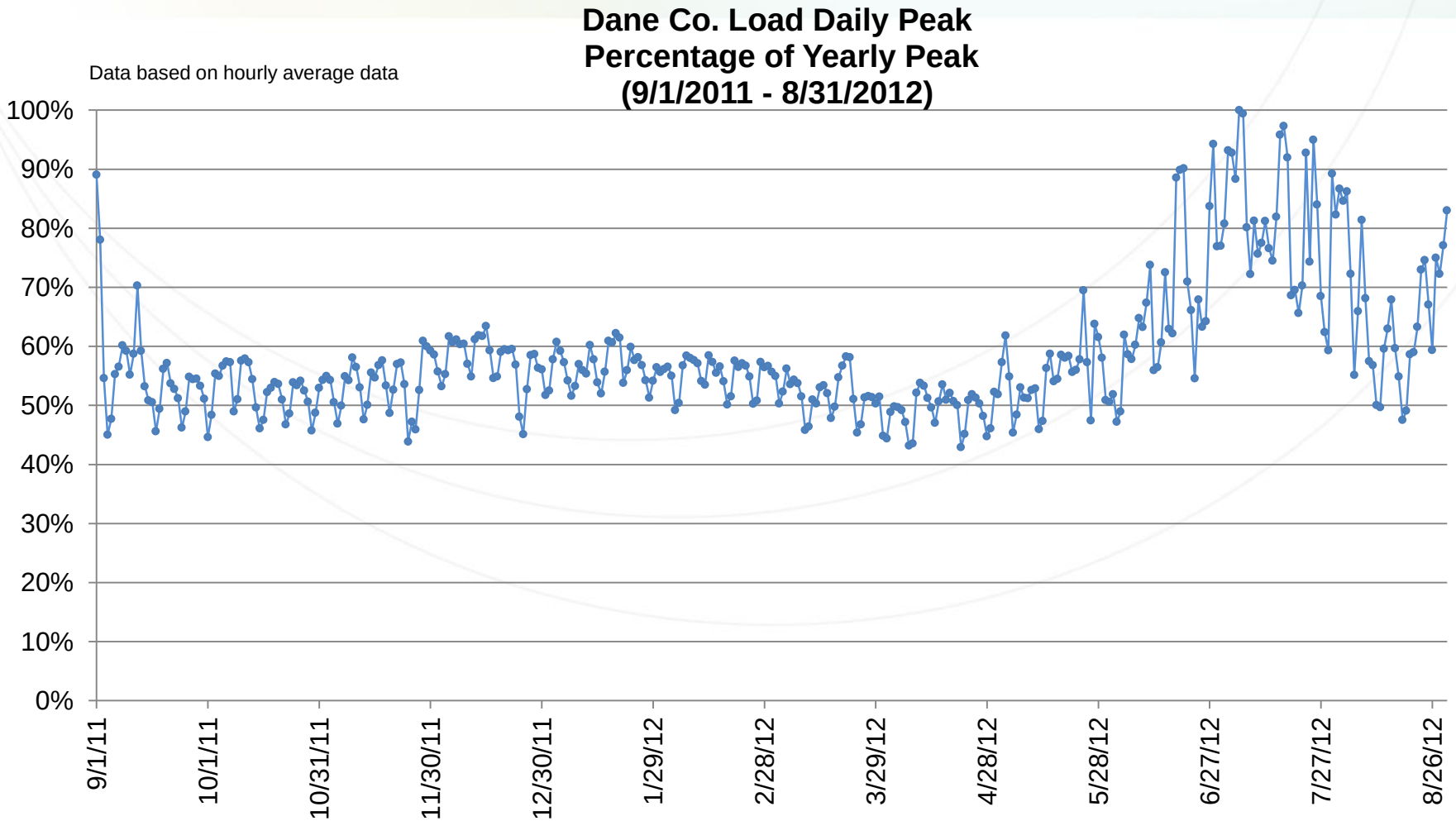
Example: Area 2 (Dane County)



Example: Area 11 (Zone 2)