American Transmission Company LLC

Northern Umbrella Plan
Annual Update

July 19, 2005

Premiere Center

Iron Mountain, Michigan

Agenda

- **Welcome & Introductions**
- **Issues**
- **NUP Benefits**
- **Plan Update & Project Status**
- **Q&A and Wrap-up**

AMERICAN TRANSMISSION COMPANY LLC

Issues

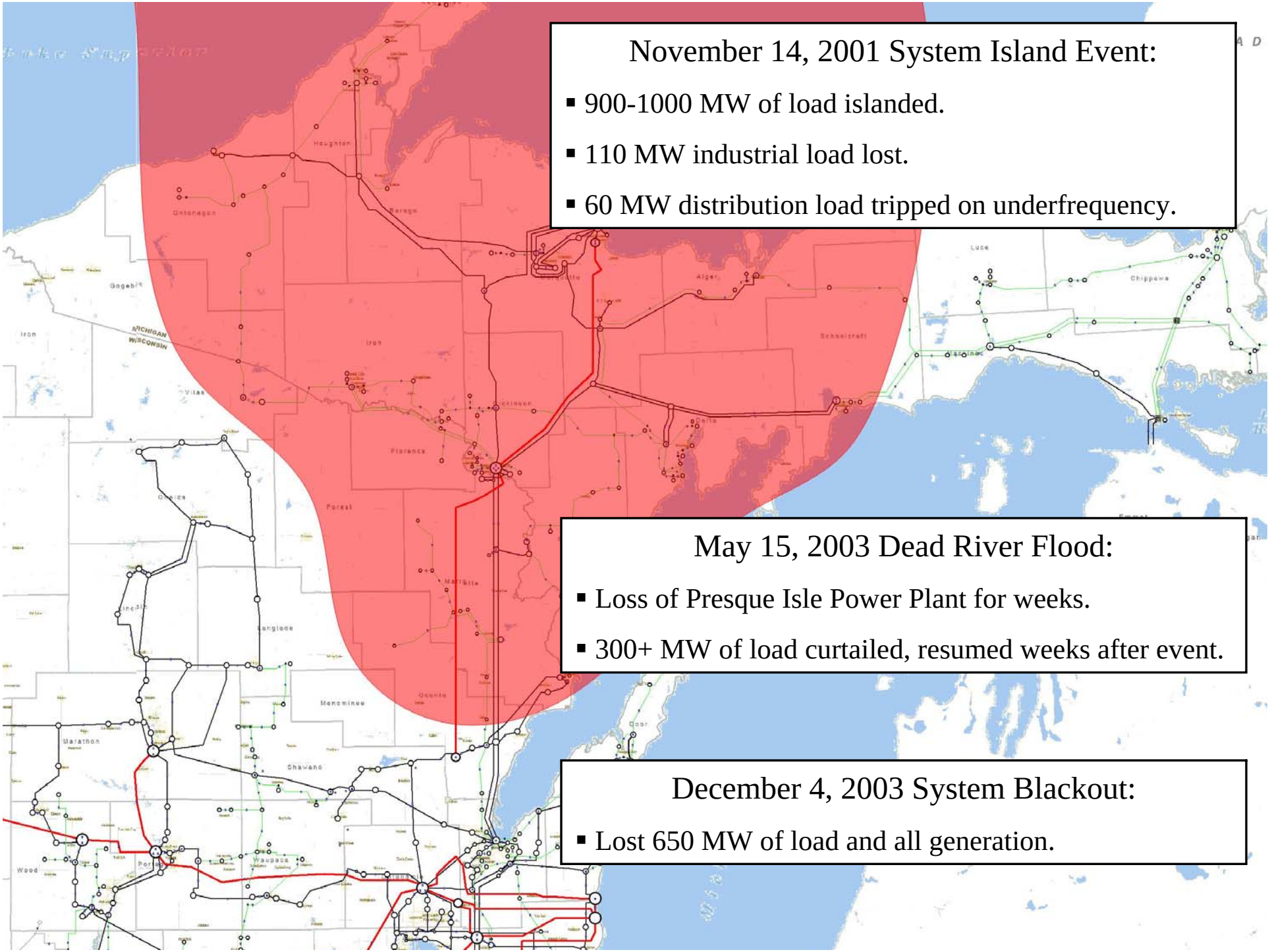
- Occurrence of Blackouts
- Redispatch costs/Binding constraints
- Rhinelander Loop load serving
- Limited import/export capability between WI and MI
- Transmission Service Requests
- Eastern U.P. reliability and operating flexibility
- Low voltages in the western U.P.

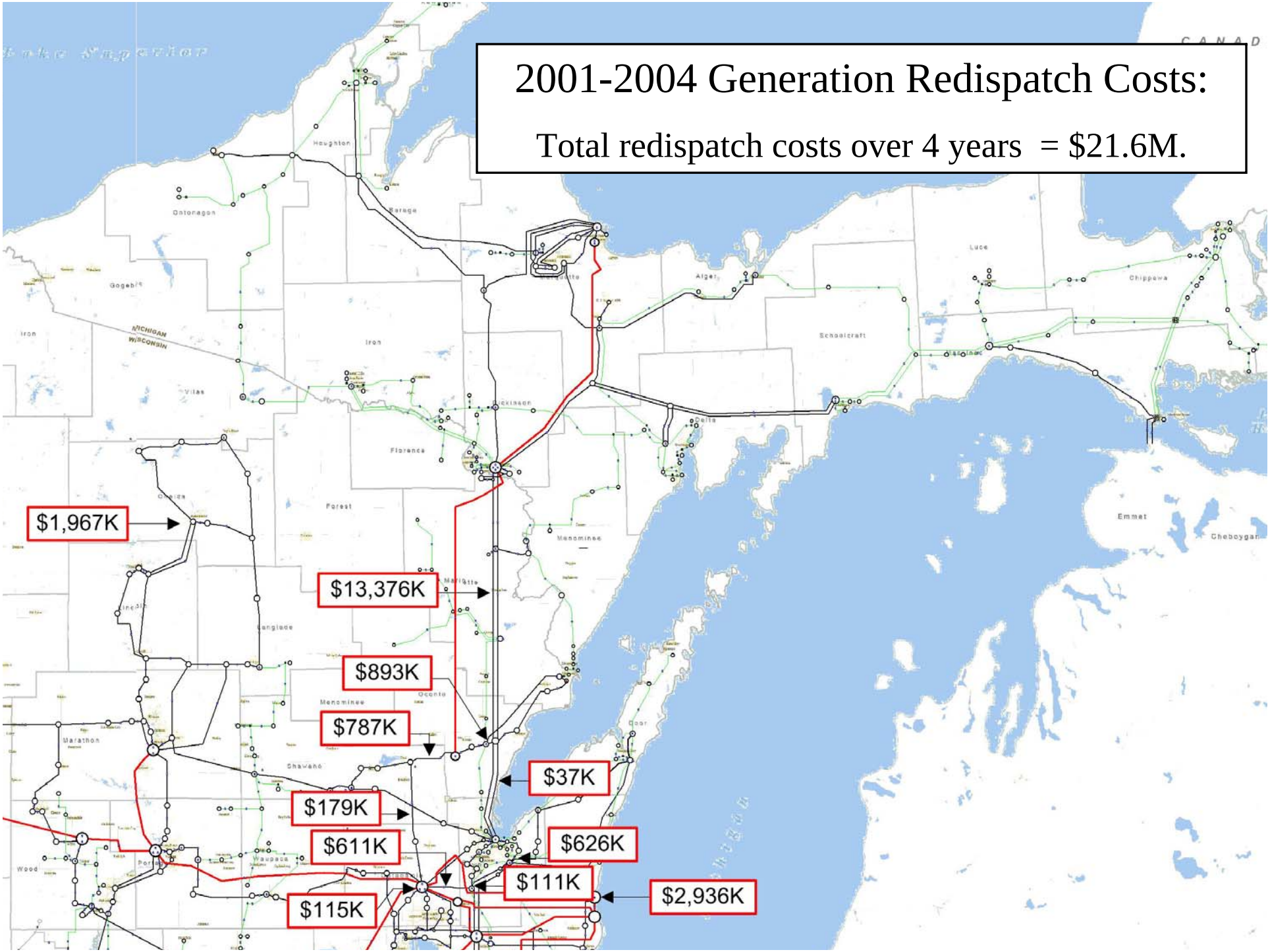
ATC
AMERICAN TRANSMISSION COMPANY LLC

Issues (cont'd)

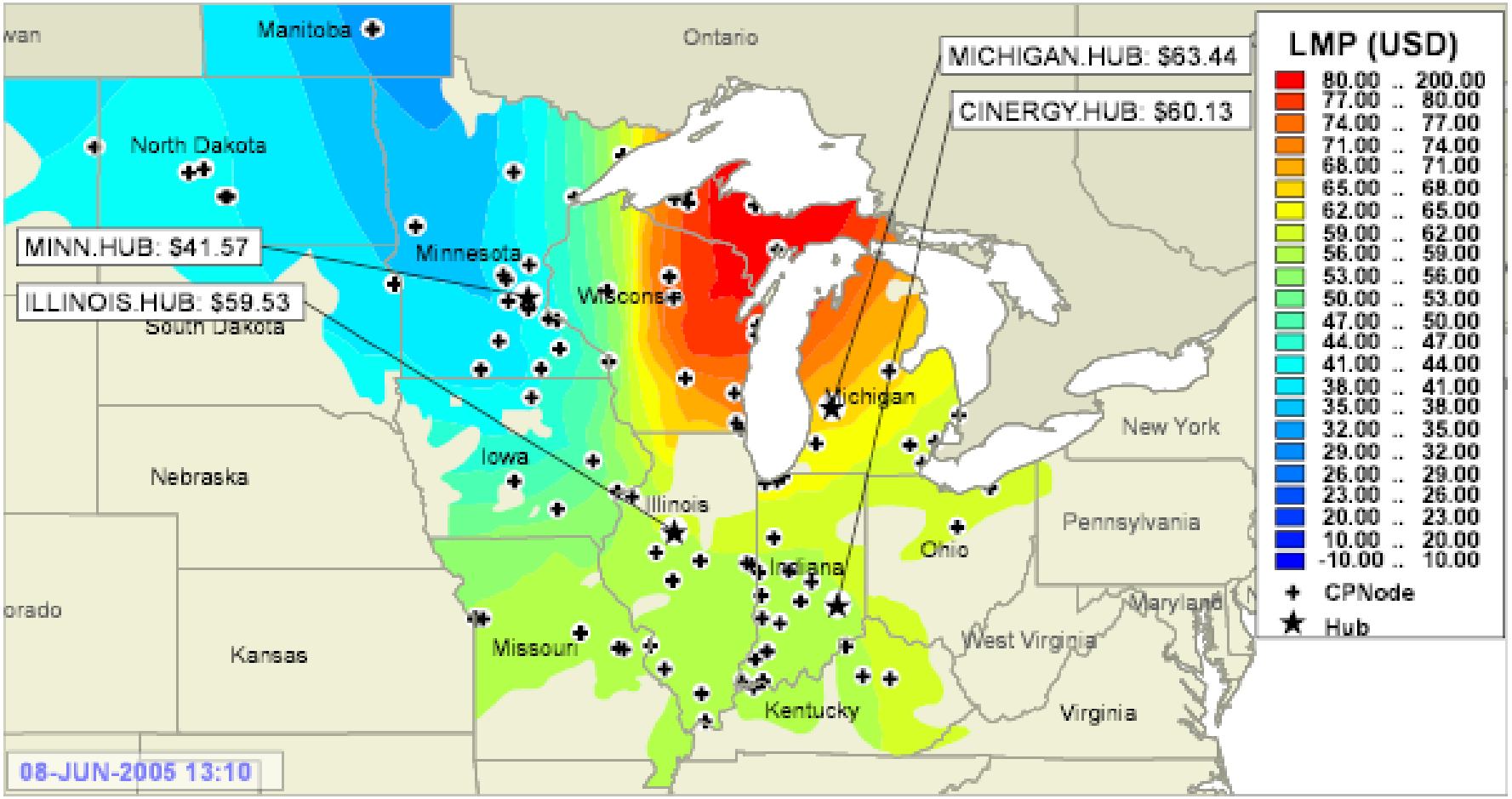
- Transformer loadings in the Fox Valley area
- Impact of proposed Weston generation
- Presque Isle stability/U.P. export limitations
- Age and condition
- Additional U.P. load or generation

ATC
AMERICAN TRANSMISSION COMPANY LLC


November 14, 2001 System Island Event:
▪ 900-1000 MW of load islanded.
▪ 110 MW industrial load lost.
▪ 60 MW distribution load tripped on underfrequency.
May 15, 2003 Dead River Flood:
▪ Loss of Presque Isle Power Plant for weeks.
▪ 300+ MW of load curtailed, resumed weeks after event.
December 4, 2003 System Blackout:
▪ Lost 650 MW of load and all generation.


2001-2004 Generation Redispatch Costs:
Total redispatch costs over 4 years = $21.6M.
$1,967K
$13,376K
$893K
$787K
$37K
$179K
$611K
$626K
$111K
$2,936K
$115K

Constraints Impact on Price



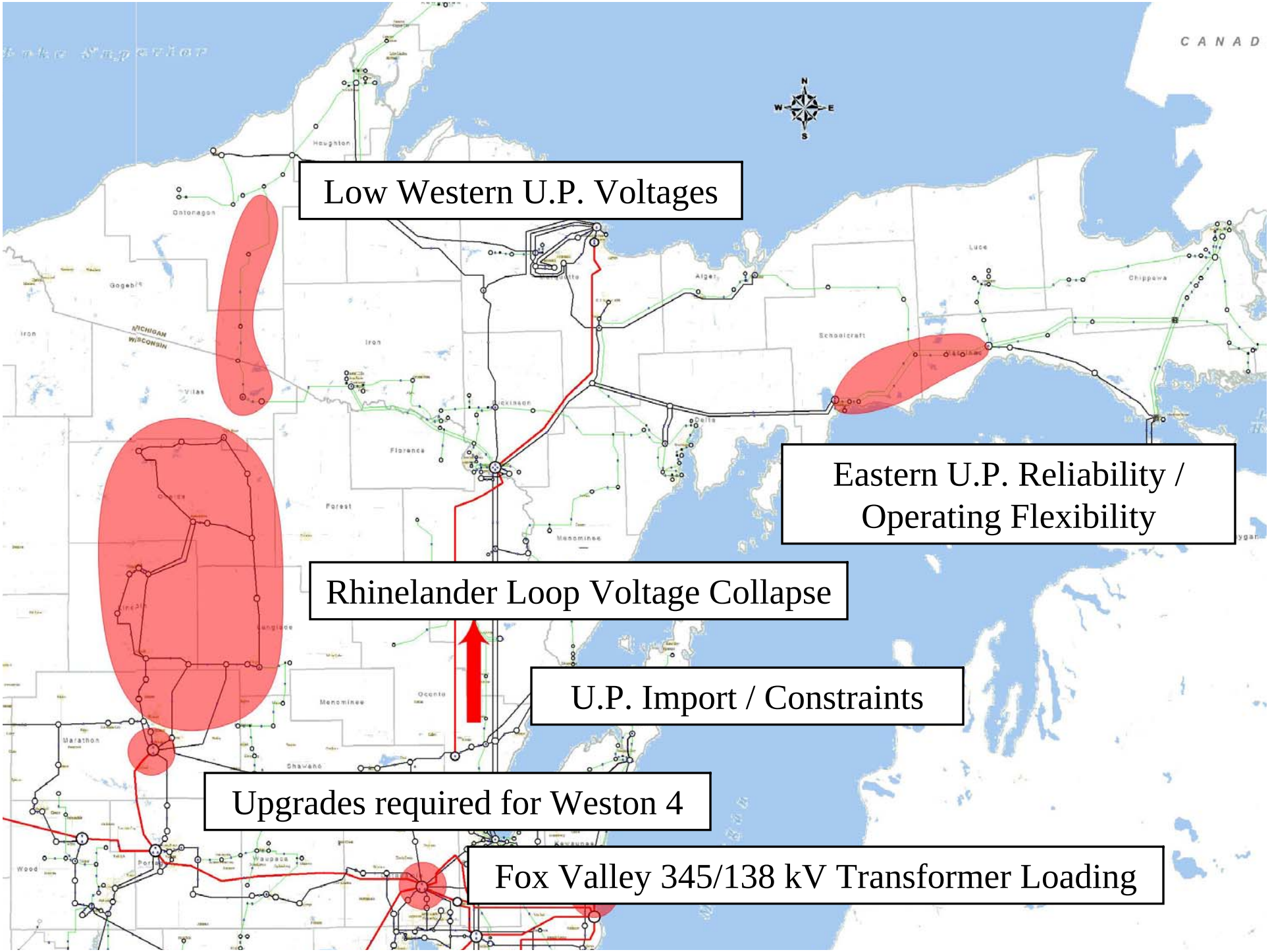
AMERICAN TRANSMISSION COMPANY

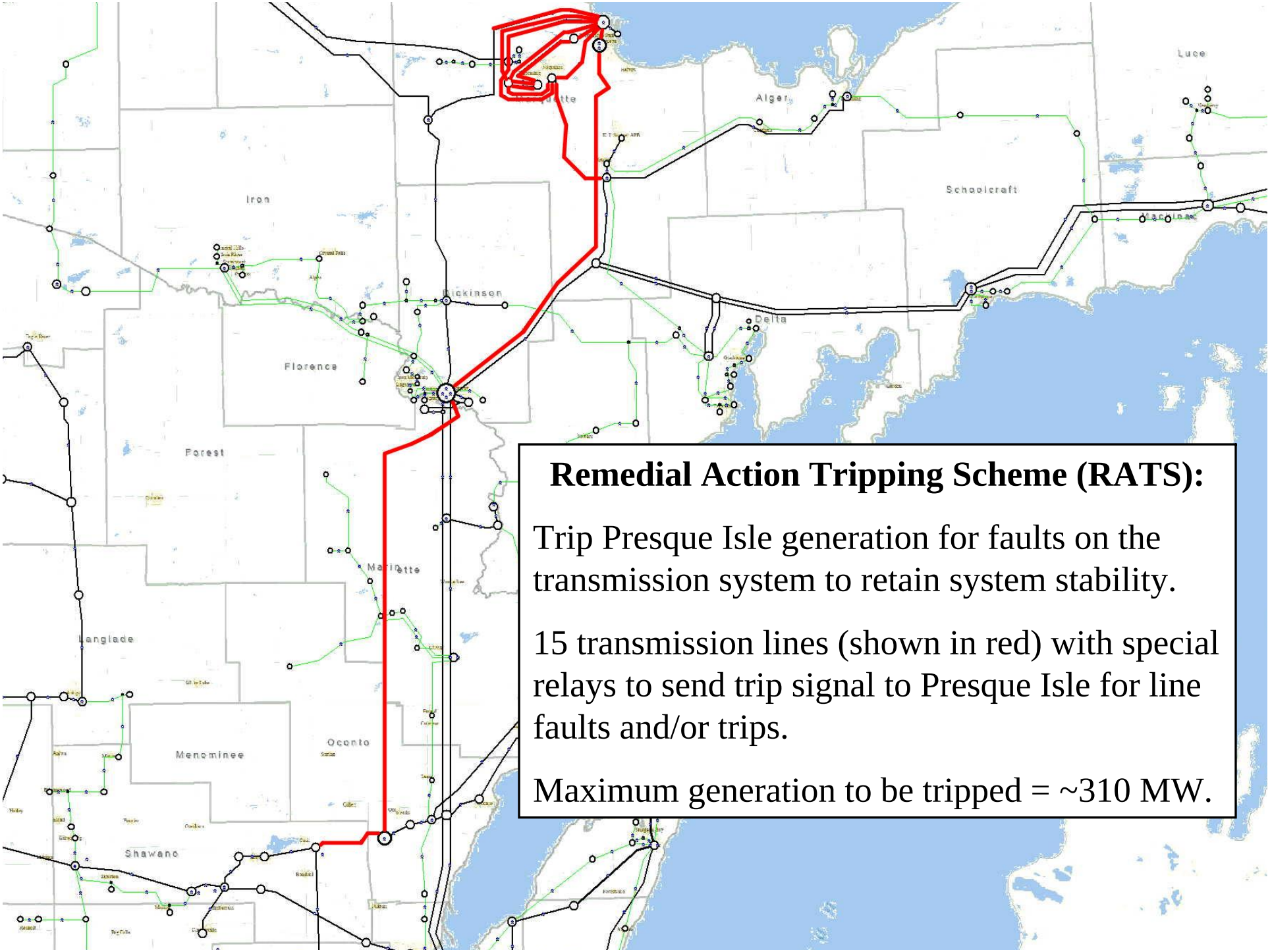
Insufficient Capacity

- **Before MISO Day 2 - Transmission Loading Relief (TLR) events**
  - 268 TLR categories 3A to 5 on Flow South between January 1, 2003 and February 28, 2005

- **Under MISO Day 2 (April 1, 2005 through June 14th)**
  - Real-time market:
    - 24 instances - Flow South is binding constraint.
      - nearly two straight days in mid-May.
      - Over 191 hours during the first 75 days (10.6% of the time).
  - Day-ahead market:
    - 33 instances of Flow South as a binding constraint.
  - Local Generation Deficiency Emergency:
    - At least two instances for the U.P.
      - Required emergency dispatch of generation
      - Events 12 and 20 hours in length.

ATC AMERICAN TRANSMISSION COMPANY LLC


Low Western U.P. Voltages
Eastern U.P. Reliability / Operating Flexibility
Rhinelander Loop Voltage Collapse
U.P. Import / Constraints
Upgrades required for Weston 4
Fox Valley 345/138 kV Transformer Loading



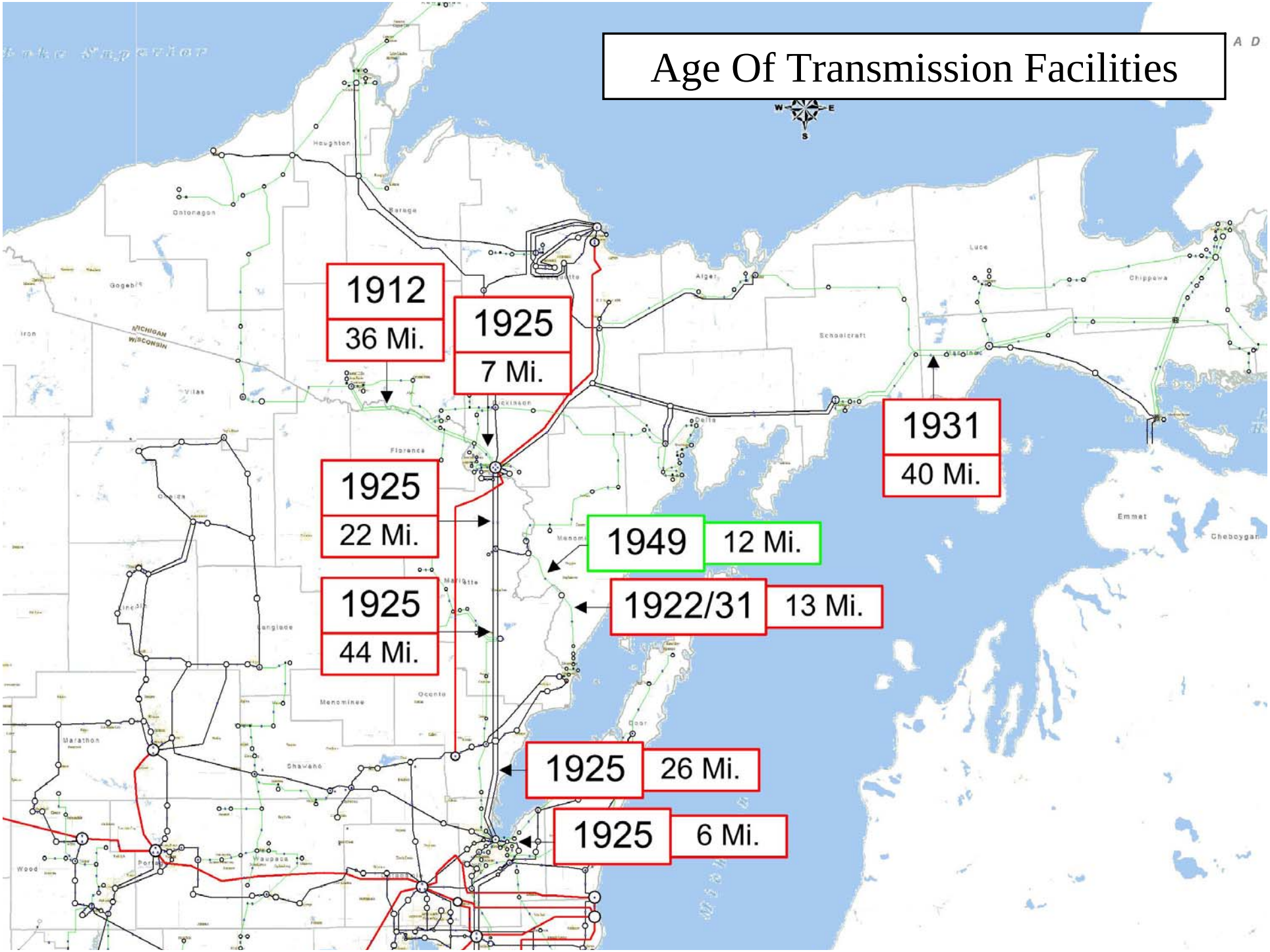
Remedial Action Tripping Scheme (RATS):

Trip Presque Isle generation for faults on the transmission system to retain system stability.

15 transmission lines (shown in red) with special relays to send trip signal to Presque Isle for line faults and/or trips.

Maximum generation to be tripped = ~310 MW.

Age Of Transmission Facilities



Generation Solutions

- **Presque Isle Stability**
  - Existing stability problem at Presque Isle
  - New north-central U.P. generation of any appreciable size likely would require substantial transmission system upgrades
- **Weak transmission system south of the Iron Mountain area**
  - Restricts the addition of new generation in that area.
- **Lack of high capacity lines in the eastern and western U.P.**
  - Few locations will accommodate significant new generation.
- **Summary**
  - Adding new generation in the U.P. will likely require new or upgraded transmission.

ATC
AMERICAN TRANSMISSION COMPANY LLC

NUP Projects

- **A**: Plains – Stiles 138 kV Rebuild
- B: Indian Lake – Hiawatha 69 kV to 138 kV Rebuild
- **C**: Morgan – Stiles 138 kV Rebuild
- **D**: Morgan – White Clay 138 kV uprate
- **E**: Add 2nd Plains transformer
- **F**: New Werner West 345/138 kV Substation
- **G**: Cranberry – Conover – Plains Project
- **H**: Morgan – Werner West 345 kV line (including Clintonville – Werner West 138 kV)
- **I**: New Weston – Central Wisconsin 345 kV line (For generator interconnection)

AMERICAN TRANSMISSION COMPANY LLC

NUP Benefits

- **Greatly reduce the likelihood of blackouts.**
  - Provides parallel transmission path around Green Bay area transmission system.
  - Capacity limitation removed north of Green Bay.
- **Reduce or eliminate the binding constraints.**
  - U.P. import capability increased from existing 220 MW to 525 MW.
- **Serve the Rhinelander Loop.**
  - Provides adequate load-serving capability until 2018.
  - Establishes foundation for adding support beyond 2018.
- **Allow ATC to approve Transmission Service Requests in this area.**
- **Increase reliability in the Eastern U.P. and reduce or eliminate operating guides that split the U.P. system.**

ATC
AMERICAN TRANSMISSION COMPANY LLC

NUP Benefits (cont'd)

- **Improve western U.P. voltage profiles.**
  - Provide acceptable voltages in the western U.P. 69 kV system until 2016+.
  - Improve the Copper Country voltages.
- **Substantially relieve transformer loadings at North Appleton and Kewaunee (over 200 MW).**
- **Flexible enough to accommodate Weston 4 deliverability and stability issues**
- **Reduce Presque Isle generation tripping scheme**
  - Line outage exposure reduced, 15 lines to 2 lines
  - Reduce amount of generation to be tripped (310 MW to ~140 MW max.)

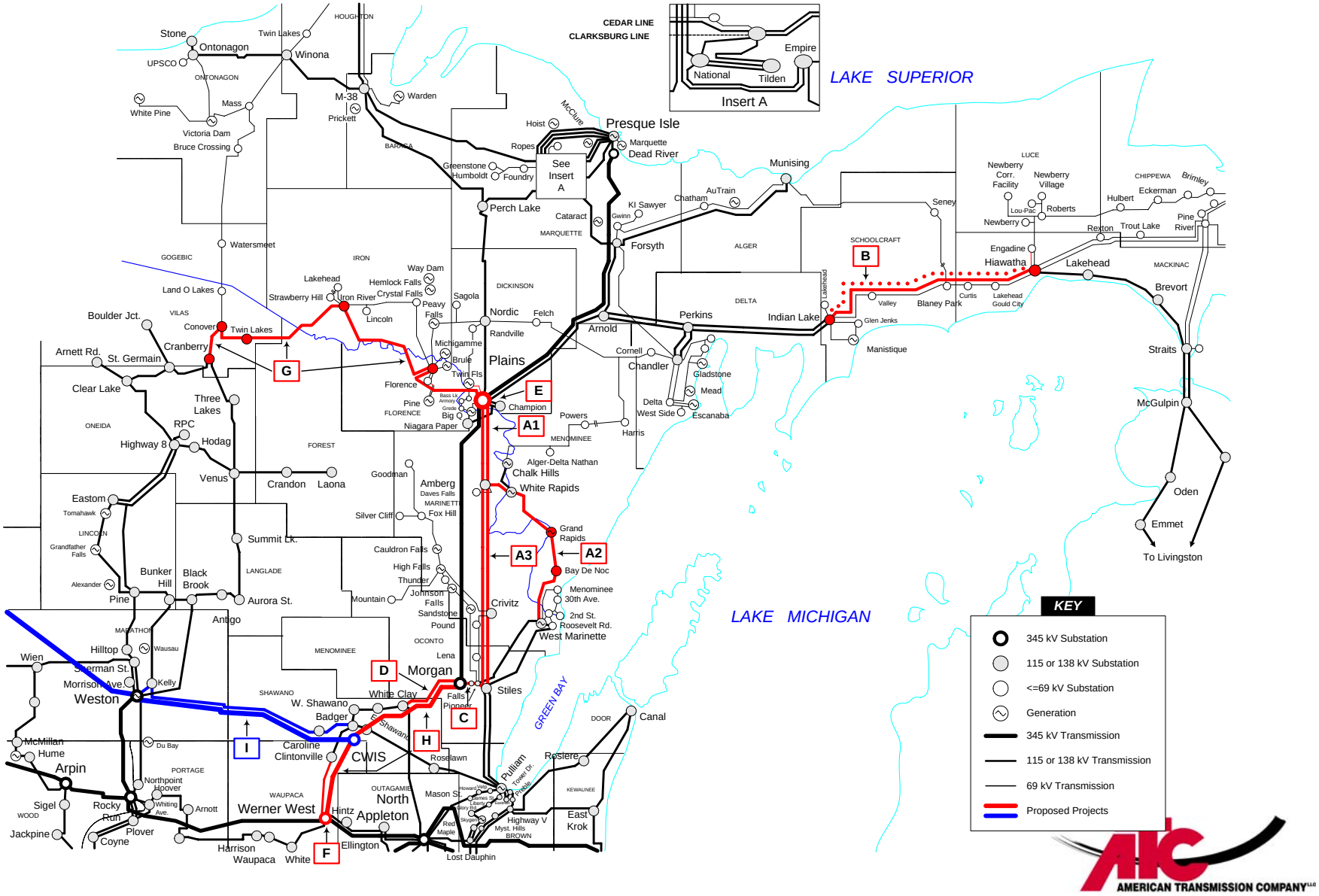
ATC AMERICAN TRANSMISSION COMPANY LLC

NUP Benefits (cont'd)

- **Replace older transmission facilities on existing R-O-W**
  - 194 miles of transmission that is 80+ years old.
  - 12 miles of transmission that is 55+ years old.
- **Create a robust system to more easily accommodate new generation, load growth, or new large loads**

AMERICAN TRANSMISSION COMPANY LLC

Plan Update/Project Status



Plan Update/Project Status

Project	Key Need Drivers	Projected In-Service Date	Projected Cost	Status
A: Plains – Stiles 138 kV Rebuild	Physical condition; transfer capability; solution also results in a more robust parallel path for 2/3 of P-S corridor		$100.4M	**Project approved and under construction**
•A1: Plains – Amberg		October 2005		Temporary line in service; reconstruction of permanent double-circuit line underway
•A2: Amberg – West Marinette		October 2005		Rebuild/conversion underway
•A3: Amberg – Stiles		October 2006		Scheduled to start when A1 and A2 are complete.
B: Indian Lake – Hiawatha 69 kV to 138 kV Rebuild	TLR mitigation; voltage support; physical condition; local load-serving in Manistique area; required operating guide that splits the U.P. system			**Phase I complete; Phase II in progress**
•Phase 1 – Rebuild Indian Lake – Glen Jenks		August 2004	$6.1M	**Complete**
•Phase 2 – Rebuild as double circuit 138 kV, operate at 69 kV		June, 2006	$41.2M	Construction underway
•Phase 3 – Convert to 138 kV operation		2009	Under review	Scheduled for 2009, but need and scope is being reviewed
C: Morgan – Stiles 138 kV Rebuild as double circuit	Transfer capability	August, 2005	$7.1M	**Project approved and under construction**

ATC AMERICAN TRANSMISSION COMPANY LLC

Plan Update/Project Status

Project	Key Need Drivers	Projected In-Service Date	Projected Cost	Status
D: Morgan – White Clay 138 kV uprate (eventual rebuild as part of Element H)	Transfer capability	March, 2005	$0.4M	**No PSCW approval required. Project Complete.**
E: Add 2nd Plains transformer (250 MVA 345/138 kV)	Transfer capability	2008	$5.4M	No PSCW approval required. Scheduled for 2008, but need/timing is being reviewed.
F: New Werner West Substation with 345/138 kV transformer	TLR mitigation, system security	June, 2006	$15.0M	**CA submitted to PSCW in February 2005**
G: Cranberry - Conover – Plains Project	Transfer capability; Transmission service; Reliability, physical condition		$118.2M	CPCN to be submitted to PSCW in August 2005
•Rebuild 69 kV Conover - Plains to 138 kV		2009		Work scheduled to begin in *early* 2008
•New 115 kV Cranberry - Conover		2007		Work scheduled to begin in 2007
H: New Morgan – Werner West 345 kV line (includes Clintonville – Werner West 138 kV)	Transfer capability, reliability	2009-10	$116.5M	**CPCN submitted to PSCW in March 2005**
I: New Weston – Central Wisconsin 345 kV line	Required for new Weston 4 generation	2009-10	$117.0M	**CPCN submitted to PSCW in March 2005**

ATC AMERICAN TRANSMISSION COMPANY LLC

Project Cost Estimate Increases

Project	Original Estimated Project Cost	Revised Estimated Project Cost
A: Plains – Stiles 138 kV Rebuild	$59.7M	$100.4M
•A1: Plains – Amberg		
•A2: Amberg – West Marinette		
•A3: Amberg – Stiles		
B: Indian Lake – Hiawatha 69 kV to 138 kV Rebuild		
•Phase 1 – Rebuild Indian Lake – Glen Jenks	$5.0M	$6.1M
•Phase 2 – Rebuild as double circuit 138 kV, operate at 69 kV	$24.4M	$41.2M
•Phase 3 – Convert to 138 kV operation	$8.0M	Under review
C: Morgan – Stiles 138 kV Rebuild as double circuit	$6.9M	$7.1M

ATC
AMERICAN TRANSMISSION COMPANY LLC

Project Cost Estimate Increases

Project	Original Estimated Project Cost	Revised Estimated Project Cost
D: Morgan – White Clay 138 kV uprate (eventual rebuild as part of Element H)	$0.5M	$0.4M
E: Add 2nd Plains transformer (250 MVA 345/138 kV)	$4.6M	$5.4M
F: New Werner West Substation with 345/138 kV transformer	$9.6M	$15.0M
G: Cranberry – Conover – Plains Project	$36.9M	$118.2M
•Rebuild 69 kV Conover – Plains 138 kV		
•New 138 kV Cranberry – Conover		
H: New Morgan – Werner West 345 kV line (includes Clintonville – Werner West 138 kV)	$68.1M	$116.5M
I: New Weston – Central Wisconsin 345 kV line	$100.0M	$117.0M
Estimated Project Cost Totals:	$323.7M	* $527.3M

* Revised estimate includes precertification costs

AMERICAN TRANSMISSION COMPANY LLC

Cost Increase Drivers:

- **Project Complexity and Constructability**
  - Wetlands (increased use of construction matting)
  - Foundations (increased cost when rock is encountered.)
  - Facility accessibility

- **Regulatory/Environmental Requirements**
  - Beyond those previously seen for other ATC projects
  - Increased costs for mitigation plans (invasive species, lead paint)
  - To change construction methods

- **Changing Construction Market Conditions**
  - Between cost estimate time and procurement time
  - Construction services
  - Equipment/Materials

AMERICAN TRANSMISSION COMPANY LLC


05/03/2005


05/03/2005


05/03/2005

Cost Control Initiatives, Including

- Standardize Processes
- Process Control
- Define Performance Indicators
- Improve Estimating and Forecasting
- Continuous Improvement, including
  - Reorganize
  - Strategic sourcing
  - Strategic alliances
  - Long term demand planning
- Prioritization
- Managing to Budget
- Risk management

AMERICAN TRANSMISSION COMPANY LLC

Plan Reconfirmation

- Major Project Review
  - Plains-Stiles
  - Indian Lake-Hiawatha
  - Plains-Conover-Cranberry
- Confirmed Needs
- Considered Practical Alternatives, including generation
- Concluded Projects are still appropriate, except those noted as under review.

AMERICAN TRANSMISSION COMPANY LLC

Conclusions

- Reliable and Economic Transmission Service is critical to Michigan's Upper Peninsula and Wisconsin.
- The northern ATC system is severely constrained and must be upgraded.
- ATC has developed plans to improve reliability and increase capacity. ATC will invest approximately 500 Million dollars over ten years improving service to the U.P.
- ATC has reconfirmed these investments are critical if the needs of our region are to be met.
- ATC process improvements will be addressing project cost issues.

ATC
AMERICAN TRANSMISSION COMPANY LLC

Wrap Up

QUESTIONS & FEEDBACK

AMERICAN TRANSMISSION COMPANY LLC