Welcome to ITC Midwest 2009 Planning Meeting

September 2008

Facility and Meeting Accommodations:

Registration for meeting: Sign in….Win a PRIZE

Rest Room Locations: Facility accommodations

Cell Phone – on stun or vibrate

Lunch – Menu- Sandwich Buffet, light pasta salads

Partners in Business: Web Site Located at www.itctransco.com

Today's Agenda

- ***Welcome – Mike Dabney, Manager – Stakeholder Relations***
- ***Opening Remarks – Doug Collins, Executive Director***
- ***Manager Introductions and Overview***
  - Ken Cackoski, Manager – Design
  - Dwayne Boelter, Manager – Project Engineering
  - Terry Gucciardo, Manager – Asset Management
  - Lisa Stump/Dave Grover, Manager – Regulatory Strategy
  - Dick Coeur, General Manager – Community and Customer Relations
  - Tom Petersen, Director – Communications
  - Mike Dabney- Manager, Stakeholder Relations
  - Jeff Eddy, Manager – Planning

Today's Agenda Continued

- ***Planning Outlook – Tom Vitez, Vice President – Planning***
- ***Lunch***
- ***2009 ITC Midwest Project Plan – Jeff Eddy Manager, Planning***
- ***Generator Interconnections- Dan Barr PE. Senior Engineer-System Planning***
- ***Questions and Answers***
- ***Wrap-up and Close – Mike Dabney-Manager Stakeholder Relations***

Project timing and overviews

While the following slides identify general timetables for line and substation construction projects, several factors could impact the company's ability to complete projects according to those timetables.

Those factors include, but are not limited to, regulatory approvals, access to construction resources, availability of materials, and even weather.

The dates and schedules identified in these slides represent our best estimates for projects to be initiated and completed, but please understand that many factors could alter those schedules.

Welcome

Doug Collins, ITC Midwest

Executive Director

Welcome To ITC Midwest

- ***Purpose: To openly communicate our plans to improve and construct transmission assets within ITC Midwest territory during 2009 calendar year.***

- ***To communicate our strategy in establishing priorities for improving our system reliability from a Corporate to local application***

- ***To introduce you to our Team of Transmission/Utility experts who will be planning, engineering and managing projects at ITC Midwest***

- ***To Get To Know You Better-Our stakeholders who depend on our planning successes to build better reliable systems for your customers***

Manager Introductions and Overview

Design Overview

Ken Cackoski, Manager – Design Engineering

Role of Design

- Ken Cackoski has been in the energy industry for 28 years in various levels of engineering and management
- Design is responsible:
  - Transmission Line Design
  - Substation Design
- Design has a staff of 14 employees
  - 2 Civil Engineers
  - 4 Electrical Engineers
  - 8 Designers

Role of Design

Major Design activities for 2008-9 and beyond

- **Support Capital Construction Plan**
- **Support Maintenance of Transmission Infrastructure**
- **Support Local Distribution Company Projects**
- **Support Generator Interconnection Requests**
- **Support Relocation Requests from City, County, DOT and other Customers)**

Project Engineering Overview

Dwayne Boelter, Manager – Project Engineering

Project Engineering

- ***Dwayne Boelter – Manger of Project Engineering has been in the Electric Utility Industry for 39 years***
  - 2 years engineering design
  - 26 years in managing construction and operations of electric system from distribution voltages to 345 KV systems both underground and overhead
  - 3 years in field construction management of distribution and transmission projects
  - 8 years in project management for both distribution and transmission substation and line construction

Project Engineering

Project Engineering Responsibilities

- Manage capital construction projects from the time they are released from planning until they go into service and turned over to the maintenance
- Provide finance with the projected cash flow of the capital construction projects
- Provide operations with projected substation and transmission outages
- Manage ITC construction contractors

Project Engineering

Project Engineering Staff

- Cedar Rapids Office
  - 1 - Manger Project Engineering
  - 2 – Project Engineers
- Dubuque, IA. Office
  - 1 – Project Engineer
  - 2 – Field Supervisor
- Iowa City Office
  - 2 Field Supervisors

Project Engineering

Project Engineering Staff Con't

- Perry, IA. Office
  - 2 – Field Supervisors
- Albert Lea, MN. Office
  - 2 – Field Supervisors

- Project Engineering group has an average of over 25 1/4 years experience in the Electric Utility Industry!!

Project Engineering

- ***Mitchell County 345 KV Switch Station to interconnect 300 MW of wind generation (G-172 Mitchell County Wind)***
- ***Story County 115 KV Switch Station to interconnect 150 MW of wind generation (G-612 Fernald)***
- ***Barton County 161 KV Switch Station to interconnect 160 MW of wind generation (G-540/548 Worth County Wind)***
- ***Lime Creek 161/69 KV substation breaker addition to interconnect 150 MV of wind generation (G-595 Crystal Lake)***
- ***Rebuild 27 miles of 161 KV between Barton 161 KV Switch Station and the Adams 345/161/69 KV Substation (G-595 Crystal Lake)***
- ***Rebuild 22 miles of 161 KV between Worth County 161 KV Switch Station and the Hayward 161/69 KV Substation (G-595 Crystal Lake)***

Project Engineering

- ***Construct 75 Miles of 345 KV line from Hazleton 345/161/69 KV substation and the Salem 345/161 KV substation***
- ***Rebuild 50 Miles of 161 KV line between MEC Washburn 161 KV substation to ITC DEAC 161 KV substation with upgrades at the ITC Vinton Substation and the ITC Dysart 161 KV substation***
- ***Rebuild Sutherland to Stoney Point 115 KV at 161 KV standards***
- ***Rebuild 800 miles of 34.5 KV line to 69 KV standards***

Asset Management Overview

Terry Gucciardo, Manager – Project Engineering

Role of Asset Management

- Terry Gucciardo has been in the energy industry for 36 years in various levels of engineering and management
- Asset Management is responsible:
  - Transmission Line and Substation Maintenance Planning
  - Vegetation Management Planning
  - Protective Relay Design and Coordination
  - Relay Operations Performance, including Lightning Analysis
- Asset Management has 15 employees with an average of 18 years experience in the energy industry
  - 12 Degreed Engineers
  - 3 Experienced Field Personnel

Role of Asset Management

Major activities for 2008-9 and beyond

- **Transition of the line and substation maintenance management data base from Alliant Energy to ITC Midwest**
- **Transition of the vegetation management plans from Alliant Energy to ITC Midwest**
- **Implementation of the vegetation and maintenance plans for ITC Midwest**
- **Protective relay design support for new substation and enhancement projects, including generation interconnection facilities**
- **Protective relay coordination and fault studies**
- **Review of system operations to support regulatory reporting and recommending reliability enhancements**

Regulatory Overview

Lisa Stump, Manager - Regulatory

Iowa Regulatory Staff

- ***Manager – Regulatory Strategy***
  - Lisa Stump

    ITC Midwest, LLC
    100 Grand Ave., Suite 230
    Des Moines, Iowa 50309
    (515) 282-5300, Ext. 460 (Office Phone)
    (248) 421-1368 (Cell Phone)

  - Background
    - Twenty-six years of utility experience including:
      - Fourteen Years – Iowa Utilities Board (various staff and management positions)
      - Six Years – Alliant Energy Company (Regional Manager – Regulatory Relations)
- ***Attorney - TBD***
- ***Administrative Assistant - TBD***

Role of Regulatory

- ***Build Relationships of Mutual Trust and Respect with Key Iowa Stakeholders***
  - Customers
  - Iowa Utilities Board
  - Iowa Office of the Consumer Advocate
  - Iowa Office of Energy Independence
  - Iowa Global Climate Change Council
- ***Ensure Compliance with Iowa's Regulatory Requirements***
  - Franchising Transmission Facilities (New, Amended, or Extended Franchise)
  - Required Regulatory Filings
    - Inspection and Maintenance Plan
    - Safety Program
    - Accident Reporting
    - Outage Reporting
    - Annual Reporting
- ***Advance Regulatory Policies and Practices that Encourage the Efficient Expansion of the Transmission System***

Major Near-Term Projects

- ***Complete Regulatory Integration and Compliance Work***
- ***Meet Commitments Made to Regulators***
  - Acquire Franchises to Enable the Upgrade of All 34.5KV Systems by December 31, 2014
  - Acquire Franchises to Enable the Construction of the Salem-Hazelton 345KV line by December 31, 2011
- ***Meet Customer Needs***
  - Acquire Franchises to Interconnect Major Wind Facilities
  - Acquire Franchises that Interconnect and Enable Advancement of Iowa's Biofuels Industry
  - Acquire Franchises to Interconnect New Traditional Generation including the Sutherland Generating Station

Local Government & Community Affairs Overview

Dick Coeur, General Manager – Local Government & Community Affairs

Local Government & Community Affairs Overview

- ***Locations & Staff***
  - Cedar Rapids, IA
    - Dick Coeur – General Manager
    - Mike Ivester – Area Manager
    - Chad Levi – Permit Coordinator
  - Perry, IA
    - Troy Weary – Area Manager
    - Dan Hagan – Permit Coordinator
  - Albert Lea, MN
    - Open – Area Manager
    - Open – Permit Coordinator
- ***Experience***
  - Over 65 years of combined community relations and permitting/zoning work with utilities and land development

Local Government & Community Affairs Overview

Strategic Objectives

- Establish and manage municipal and community relations within the ITC Midwest footprint
- Act as the “frontend” to develop community support for capital improvement projects identified by ITC Planning
- Obtain needed permits and approvals for projects
- Coordinate with ITC Real Estate, Design, and Project Engineering Groups to ensure all governmental requirements for projects are met
- Act as the liaison with communities for ITC maintenance activities such as vegetation management and tree clearing
- Partner with municipalities through sponsorships to educate others about ITC and to support needed community improvements
- Represent ITC on community and state boards such as Economic Development Groups

Communications Overview

Tom Petersen, Director - Communications

Communications Overview

- ***Tom Petersen, Director – Communications for ITC Midwest***
  - 22 years of communications experience with Nebraska and Iowa utilities
- ***Focus: Communicate ITC Midwest's plans and priorities***
  - Company priorities – our "soundbites"
    - Investing to improve reliability
    - Creating an open, accessible system and the benefits that follow
    - Facilitate a transmission system that supports regulatory and legislative priorities
  - Getting the word out
    - News media
    - Materials
    - Sponsorships
  - Outreach
    - General information
    - Direct communications to "people who care"
      - Support capital projects and vegetation management

Stakeholder Relations Overview

Mike Dabney, Manager – Stakeholder Relations

Stakeholder Relations

Mike Dabney-Manager, Stakeholder Relations

Background:

Graduate of Graceland University: BS in Business Administration

28 years Utility Experience

Began in 1980 Iowa Southern Utilities thru April 2008 Alliant Energy

Held positions in Engineering, Marketing, Human Resources, Customer Relations, Account Management and Sales

Stakeholder Relations:

Account Representative: Position Open

Territory Responsibility: Iowa/Minnesota

Role of Stakeholder Relations

- ***ITC Stakeholders***
  - Transmission customers, energy suppliers, marketers, generators, electric distributors, industrial energy users, municipalities, cooperatives, regulators, legislators, and energy advocacy groups are all key stakeholders in our transmission operation
  - Provide stakeholders a conduit to open and honest communication within ITC.
  - Establish, maintain and improve effective relationships with stakeholders.
  - Participate with stakeholder activities that enhance joint credibility and support.
- ***ITC Partners in Business***
  - All interested stakeholders are encouraged to register and sign-up www.itctransco.com
  - Provides a common link for all stakeholders to receive timely and efficient information.
  - Tool to better communicate specific agendas about transmission activities and news worthy events with stakeholder interest.
- ***Goal: Stakeholder Satisfaction***
  - Define how transmission service satisfaction becomes a deliverable
  - Understand stakeholders goals and their commitment to service and reliability
  - Measure current level of satisfaction with ITC's commitment to service and delivery of reliability

Role of Stakeholder Relations

Understand Stakeholder's Interest in Managing their Customer Concerns

- Provide Timely – Outage and Restoration Information
- Maintain Accurate Customer Contact Directory and Functional Authority
- Follow Established Protocol when Communicating with Stakeholders Customers
- Coordinate Planning & Forecast Discussions relative to Transmission Development

Develop Annual & Quarterly Meetings to Benefit Stakeholder Business Demands

- Wind-Ethanol-Bio-mass energy legislation
- MISCO Updates
- New Technology to Improve Transmission Service or Reliability
- Business Partners-Highlights

Planning Overview

Tom Vitez, Vice President - Planning

ITC Planning Department

Vision for ITC Planning

- Identify synergies and leverage competencies
  - Unify systems, practices and philosophies across all operating companies with “local” differences as needed
- Provide service to transmission customers
  - Bring interconnection and service studies in-house where appropriate - appropriate study turn-around times
  - Meet transmission customer expectations in reliability
- Be a leader in advocating solutions to regional needs of the transmission grid
- Strive for efficiencies in long term (avoid “disposable” transmission)
- Be active participants in planning forums
  - Regional (MISO, MRO)
  - Local
- Keep stakeholders informed of our thinking
  - Partners in Business Meetings
  - MISO project database and MTEP process
  - Other “ad hoc” meetings
- Maintain appropriate balance between information availability and security/confidentiality requirements
- Comply with spirit (and letter) of all applicable rules, regulations and laws.

ITC Planning Department

- ***Staffing***
  - 27 Staff Members
    - 7 Based in IA, working wholly on planning ITC-MW system
    - Novi provides additional support to ITC staff in Iowa
      - Includes staffing devoted to economic analysis
      - Specialist in dynamics

Lunch

Planning for ITC-Midwest

Jeff Eddy, Manager - Planning

OVERVIEW

ITC Planning Department in Iowa

- ***Department Responsibilities***
- ***Staffing***
- ***Initiatives***
- ***34/69kV Upgrades and Conversions***
- ***Other Planned Projects***
- ***Generator Interconnections***

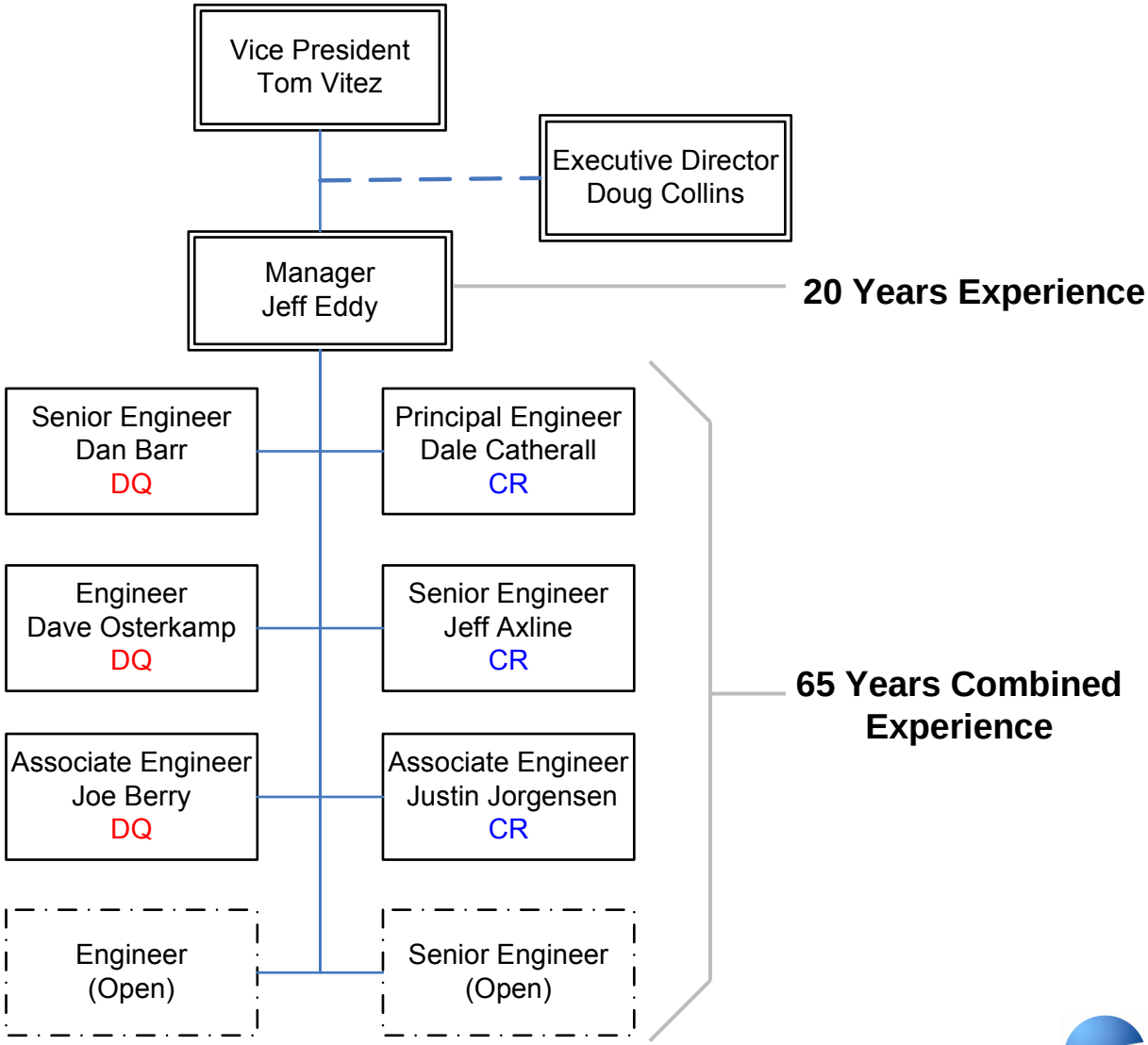
Responsibilities

ITC Planning Department in Iowa

- ***Grid Development***
  (Long Range Planning)
- ***Long Term Assessments***
- ***Seasonal Assessments***
- ***MRO, Inter-regional, NERC Interactions***
- ***Non-MTEP MISO Interactions***
- ***Base Case Development***
- ***MISO Interactions on MTEP***
- ***Capital Forecasting & Budgeting***
- ***Lead on System Reinforcement Projects***
- ***Standards***
  (NERC-MRO, Planning Criteria)
- ***Data Management***
  (Ratings, Impedance, Con Lists)
- ***Project Scoping***
- ***Regulatory Support***
- ***Operational Planning Support***
- ***Transmission Service Requests***
- ***Compliance***
- ***Interconnections*** ***(T-G, T-D, T-T)***

Staffing

ITC Planning Department in Iowa



Near Term Initiatives

ITC Planning Department in Iowa

- ***Less Than 1 Year***
  - Identify and Scope 2009 and 2010 Capital Projects
  - Increase staffing levels
  - Develop plan to rebuild/convert the 34kV system
  - Establish processes in the Planning Department
  - Identify synergies within the organization
- ***0-2 Years***
  - Increase the Planning horizon
  - Perform comprehensive and well documented Planning
  - Strengthen communications with stakeholders
  - Strengthen competencies

ITC Midwest Transmission Projects

1. *Salem 345/161kV 480 MVA Transformer*

- In service date 6/01/2009
- Replace existing 336 MVA transformer to increase system capacity

2. *Marshalltown-Stoney Point (Cedar Rapids) 115kV Rebuild*

- Rebuild 61 miles of 115kV to 161kV primarily to address age & condition concerns.
- Marshalltown-Toledo-Belle Plaine 34 miles completed by 12/31/2009
- Belle Plaine-Stoney Point (Cedar Rapids) 27 miles completed by 12/31/2010

ITC Midwest Transmission Projects

3. *Mason City Armour-Emery North 69kV Rebuild*

- In service date 6/01/2009
- Rebuild 4.5 miles of 69kV to increase capacity.

4. *New 6th Street-Beverly 161kV Line*

- In service date 6/01/2009
- Build a new 6.25 mile 161kV line to serve new customer load.
- Improves contingency voltage & capacity in the Cedar Rapids area.

ITC Midwest Transmission Projects

5. *Grand Mound 161kV Area Upgrades*

- In service date 12/31/2009
- Adds second transformer to address capacity.
- Loops 161kV in & out of Grand Mound to address severe contingency 69kV voltage & line capacity deficiencies.
- Removes 3-terminal 161kV line and Grand Mound-E. Calamus T-Davenport multi-terminal contingency.
- Project resulting from joint planning with CIPCO.

6. *Waterbury 69kV Switching Station*

- In service date 12/31/2009
- Required to address 69kV contingency voltage.
- Project resulting from joint planning with GRE.

ITC Midwest Transmission Projects

7. *Ottumwa 161kV 50 MVAR Capacitor*

- In service date 6/01/2009
- Required to address voltage concerns with the Ottumwa Generation (OGS) offline.

8. *Arnold-Vinton-Dysart-Washburn 161kV Rebuild*

- In service date 12/31/2009
- Rebuild 38.95 miles of 161kV to increase system capacity.

9. *North Centerville 69kV 7MVAR Capacitor*

- In service date 6/01/2009
- Addresses 69kV voltage concerns in the Centerville area.

ITC Midwest Transmission Projects

10. Decorah Mill St.-Cresco Double Circuit 69kV Rebuild

- In service date 12/31/2009
- Retires Mill St. 69kV tap which is no longer needed.
- Support customer plans/connections.

11. Hazleton 345/161kV 335 MVA Transformer

- In service date 12/31/2010
- Replaces the 224 MVA transformer to increase transformation capacity.

ITC Midwest Transmission Projects

12. Hiawatha-New Lewis Fields 161/115kV

- In service date 12/31/2010
- Build a new 8.5 mile 161kV line from Hiawatha to a new Lewis Fields 161/115kV substation northeast of Cedar Rapids.
- Required to address contingency capacity & voltage in the Cedar Rapids area.

13. Heron Lake-Lakefield Junction 161kV Rebuild

- In service date 12/31/2010
- Rebuild 17 miles of 161kV line to increase system capacity.
- Allows for increased generation outlet in SW Minnesota.

ITC Midwest Transmission Projects

14. Anita 161kV 24 MVAR Capacitor

- In service date 12/31/2010
- Required to address 161kV voltage concerns in the Anita area.
- Primary concern is with the Ottumwa Generation (OGS) offline.

15. Grand Junction 161kV 24 MVAR Capacitor

- In service date 12/31/2010
- Required to address 161kV voltage concerns in the Grand Junction area.
- Primary concern is with the Ottumwa Generation (OGS) offline.

34kV Upgrades and Conversions

34kV Upgrades and Conversions

- **Commitment to the state of Iowa to rebuild 34kV system in 5 to 7 years**
- **Convert to 69kV where and when appropriate.**
- **The existing system:**
  - ***Typically characterized as older lines constructed in the mid fifties***
  - ***No static wire***
  - ***Radial***
  - ***Limited ability to meet voltage and loading requirement during contingencies***

34kV Upgrades and Conversions

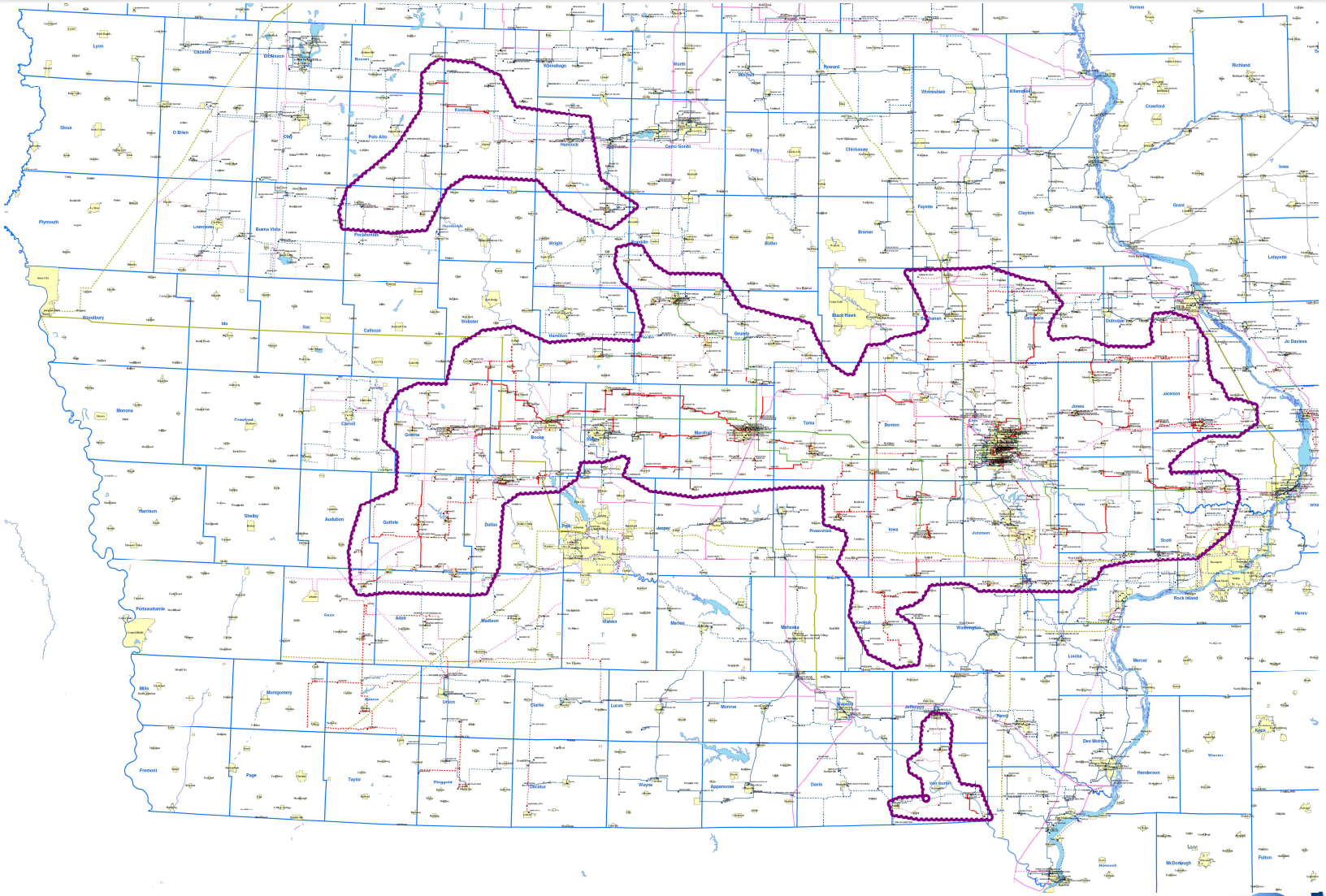
- **The Process**
  - ***Identify projects that build on previous plans and address immediate system needs for 2009 and 2010***
  - ***Develop Conceptual Plans for regions (2008-2009)***
  - ***Work with stakeholders to complete detailed studies (2008-2009)***
  - ***Work with stakeholders to develop conversion timelines***

34kV System

2270	34kV system existing miles
- 943	Miles already rebuilt to 69kV standards
= 1327	Miles remaining

Potentially 400-500 miles of existing 34kV line can retired when areas are converted to 69kV operation.

34kV System



34kV Rebuild Plan

Example Project Schedule

- 2009 Rebuild 126 miles, Retire 12 miles
- 2010 Rebuild 126 miles, Retire 146 miles
- 2011 Rebuild 150 miles, Retire 75 miles
- 2012 Rebuild 150 miles, Retire 75 miles
- 2013 Rebuild 150 miles, Retire 75 miles
- 2014 Rebuild 154 miles, Retire 88 miles

34kV Rebuilds - 2009

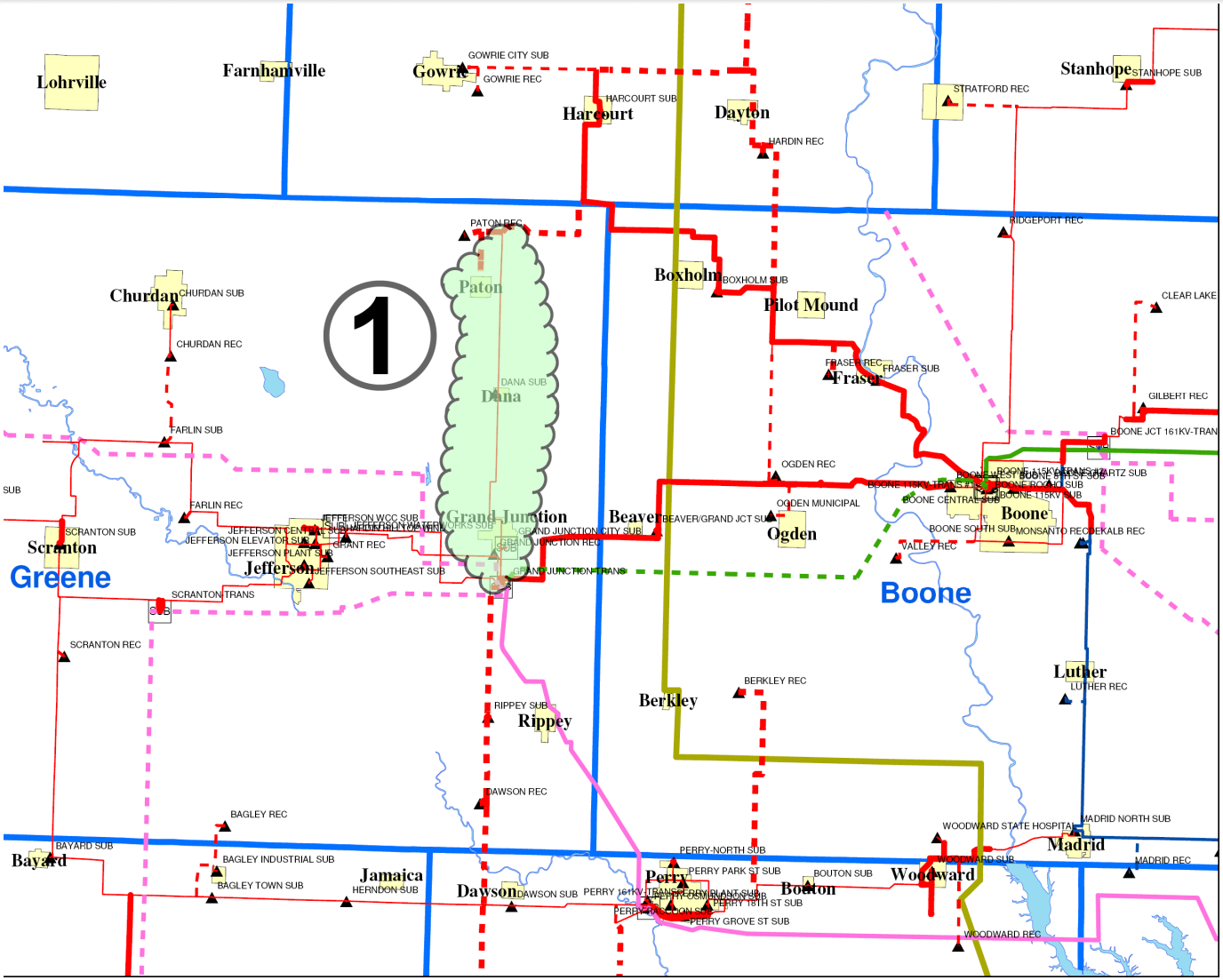
1. Grand Jct – Paton REC Tap (13.8 miles)
2. Boone – Jewell (25.3 miles)
3. Hubbard – New Eldora Switch Station – Gladbrook Tap (50 miles)
4. West Branch – West Liberty (15.1 miles)
5. Monticello – Amber and East Lovell REC Tap (10.7 miles)
6. Wyoming – Massillon (12 miles)

34kV Retirement Plan - 2009

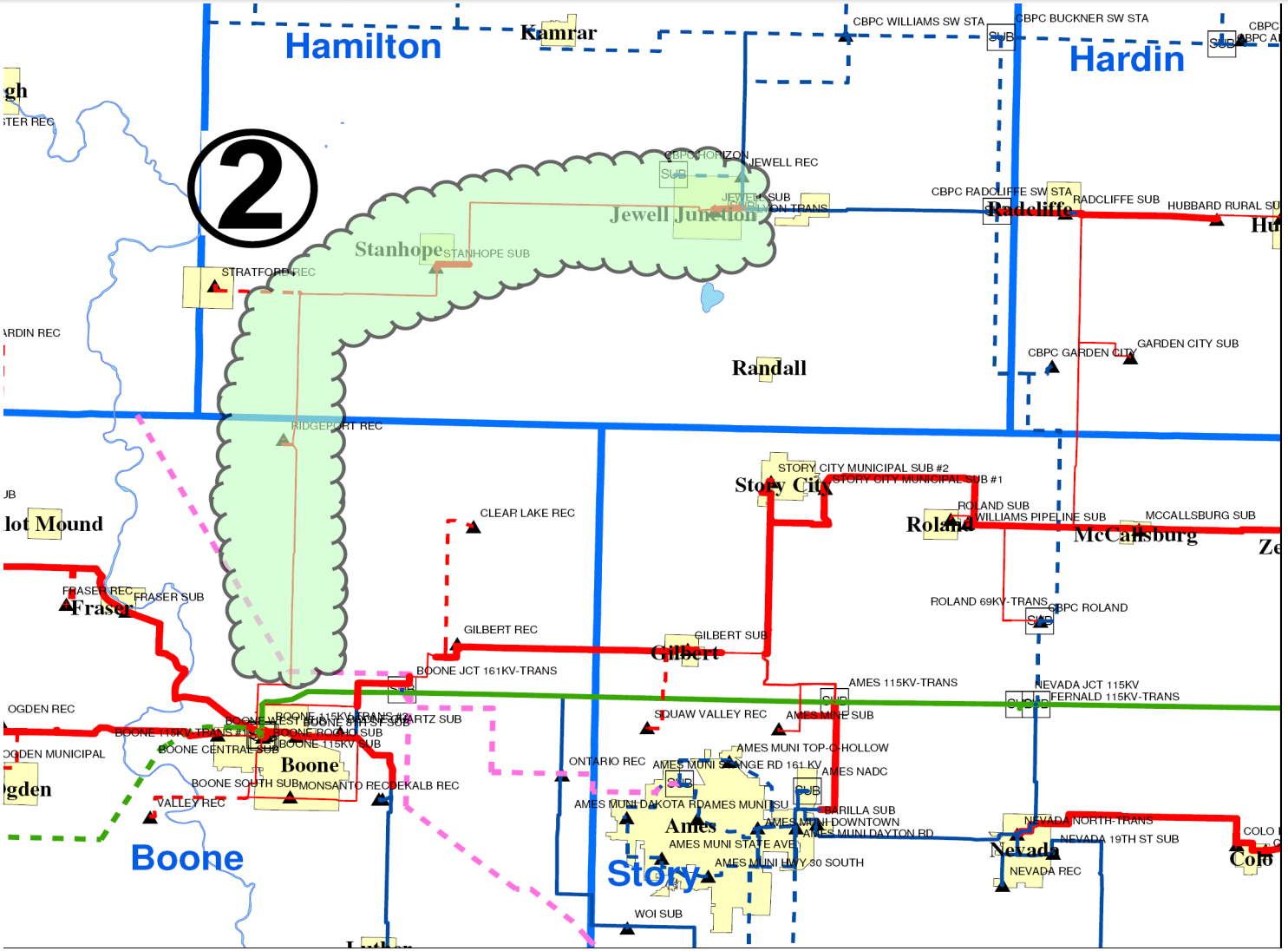
7. Welton Area (3.6 miles)
8. Bonaparte – Farmington (8.1 miles)

34kV 2009 Rebuild Details

1. Grand Jct – Paton REC Tap (13.8 miles)

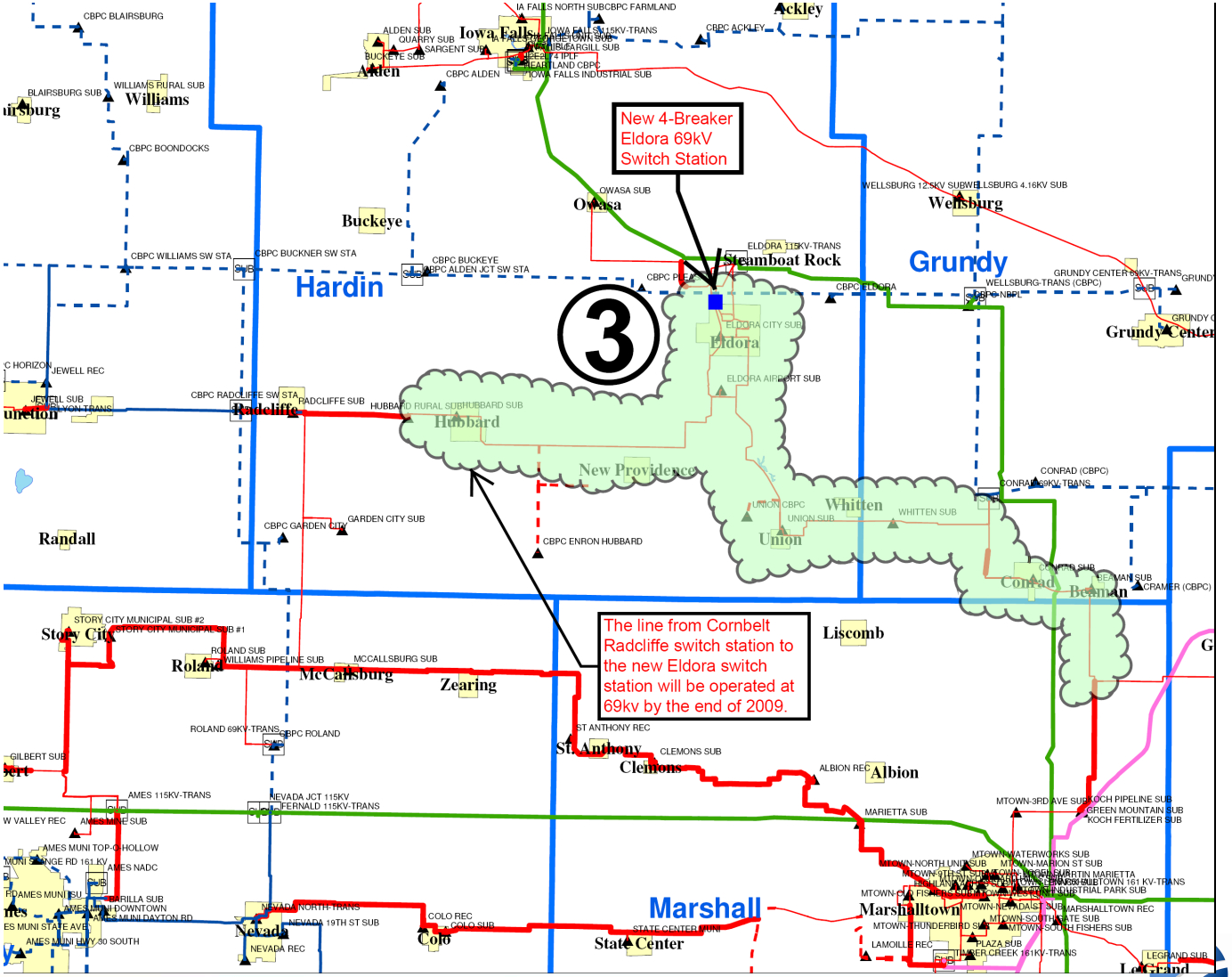


34kV 2009 Rebuild Details
2. Boone - Jewell (25.3 miles)



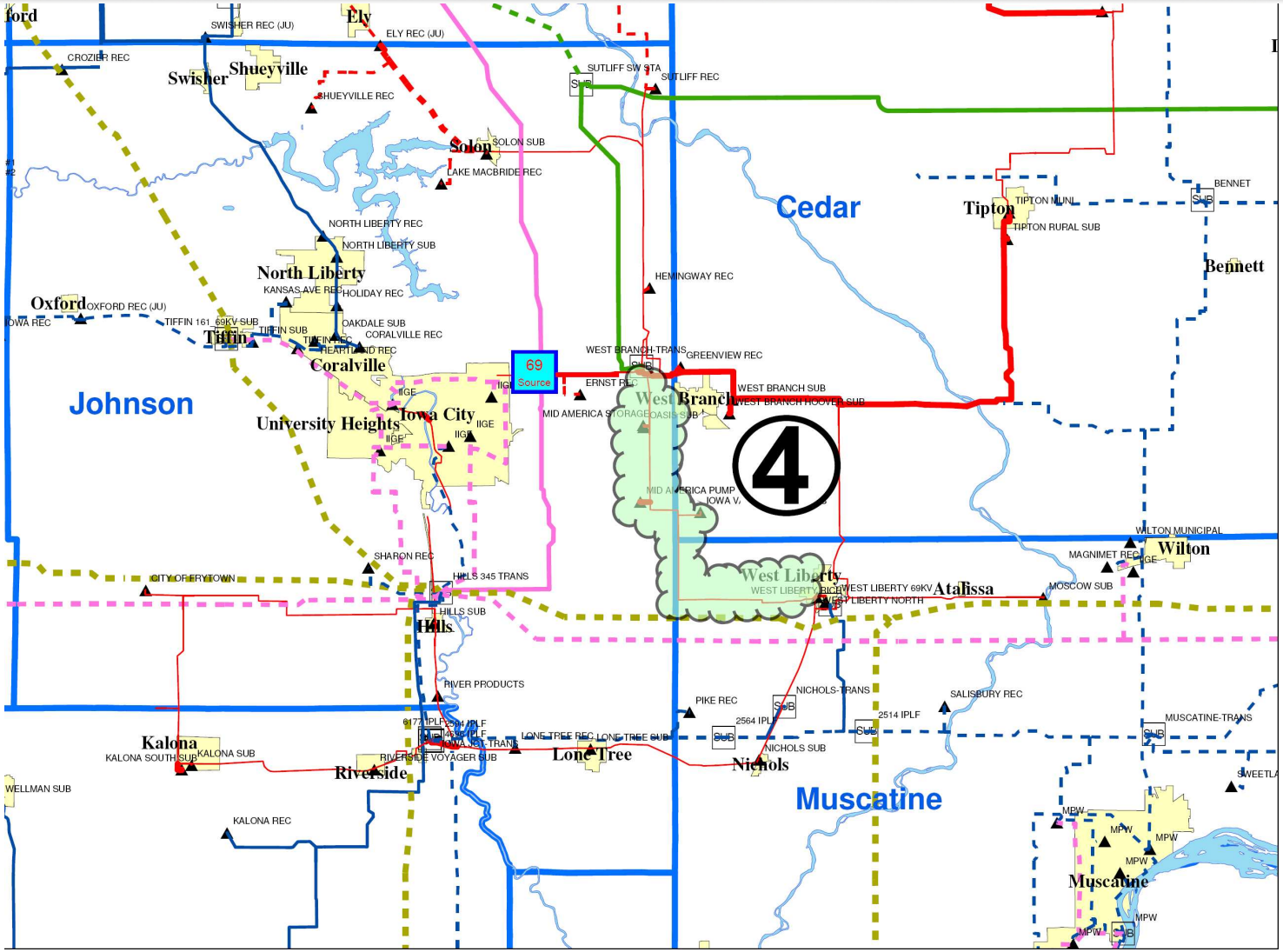
34kV 2009 Rebuild Details

3. Hubbard –Eldora Switch – Gladbrook Tap (50 miles)



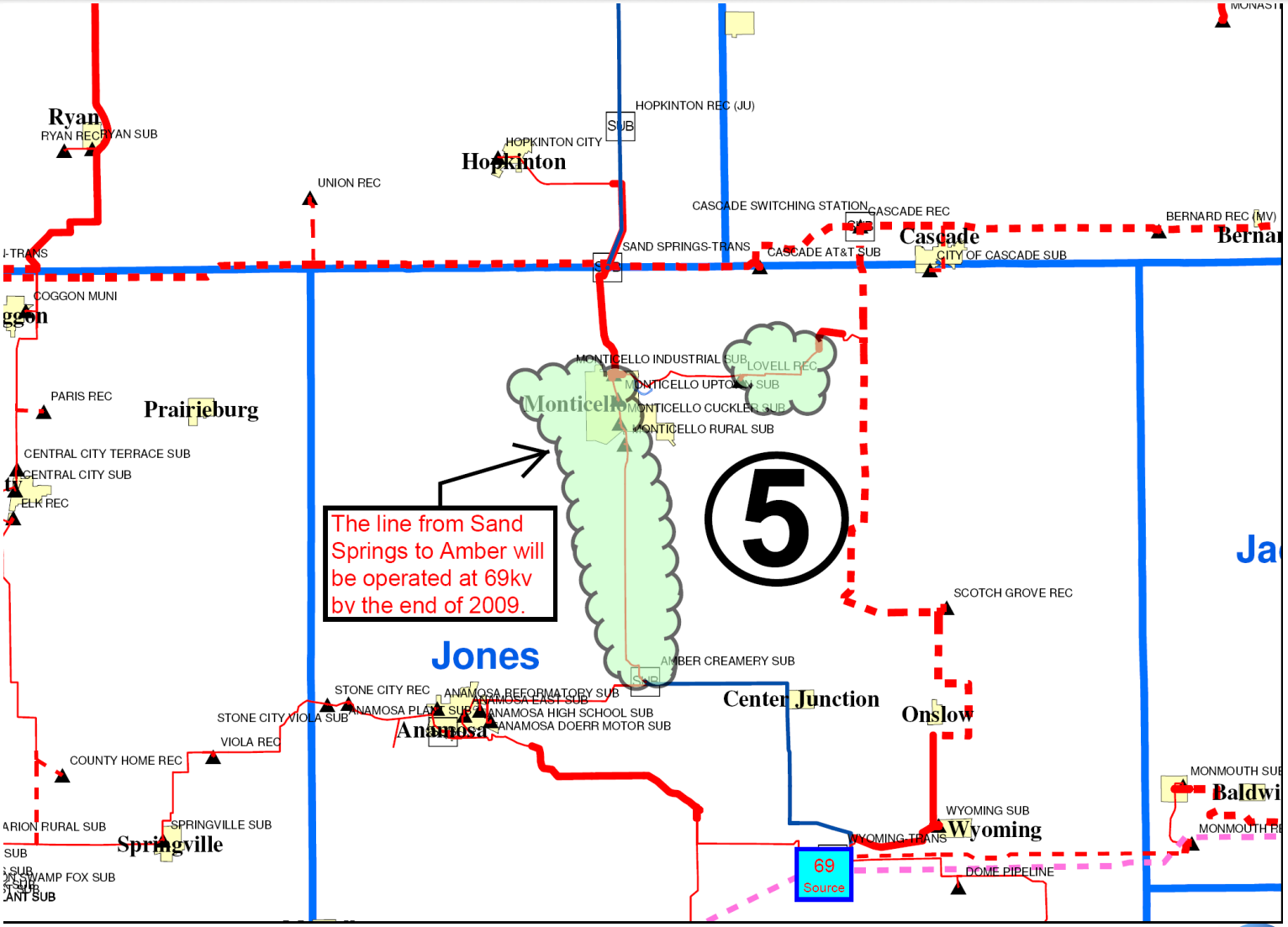
34kV 2009 Rebuild Details

4. West Branch – West Liberty (15.1 miles)



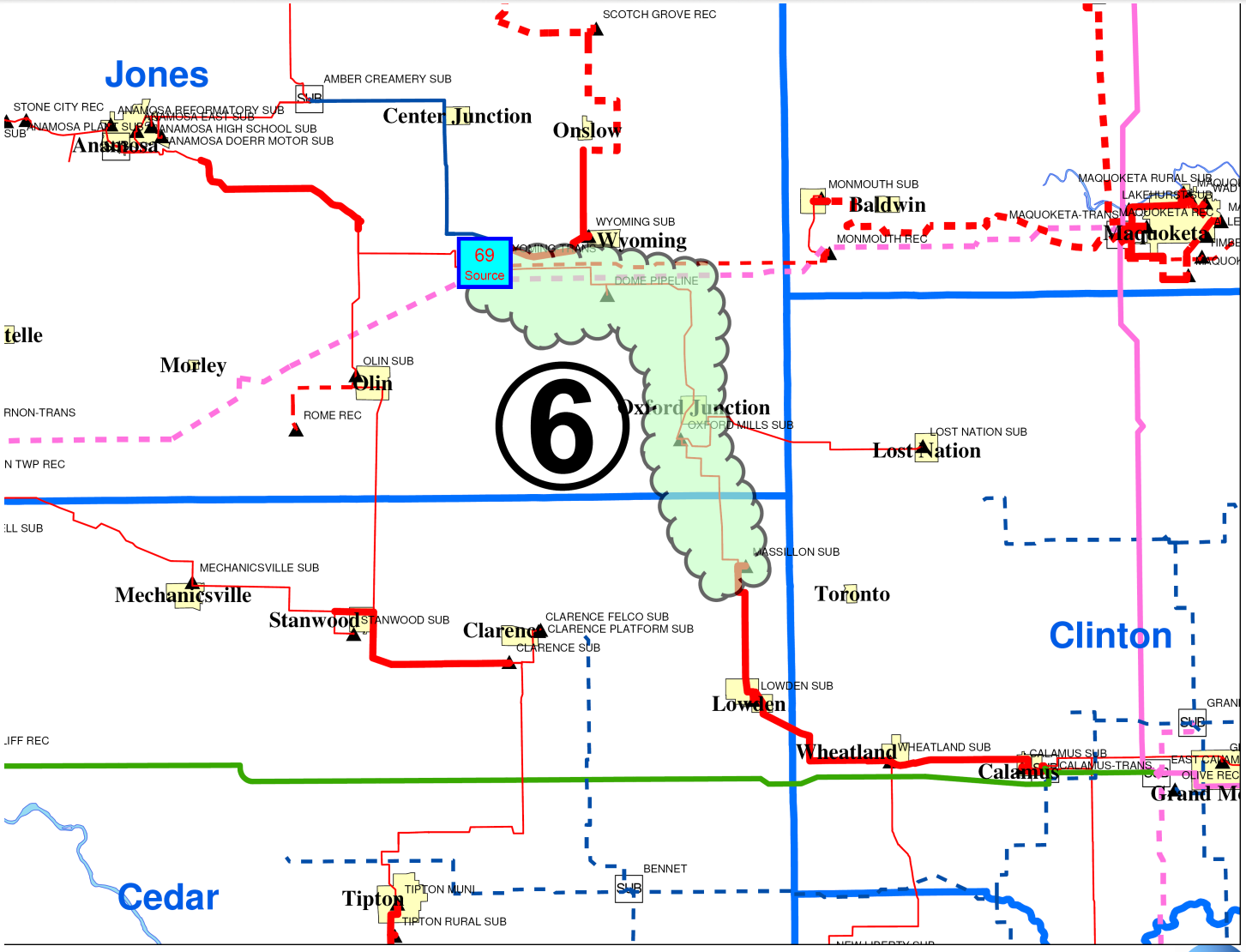
34kV 2009 Rebuild Details

5. Monticello – Amber & East Lovell REC Tap (10.7 miles)



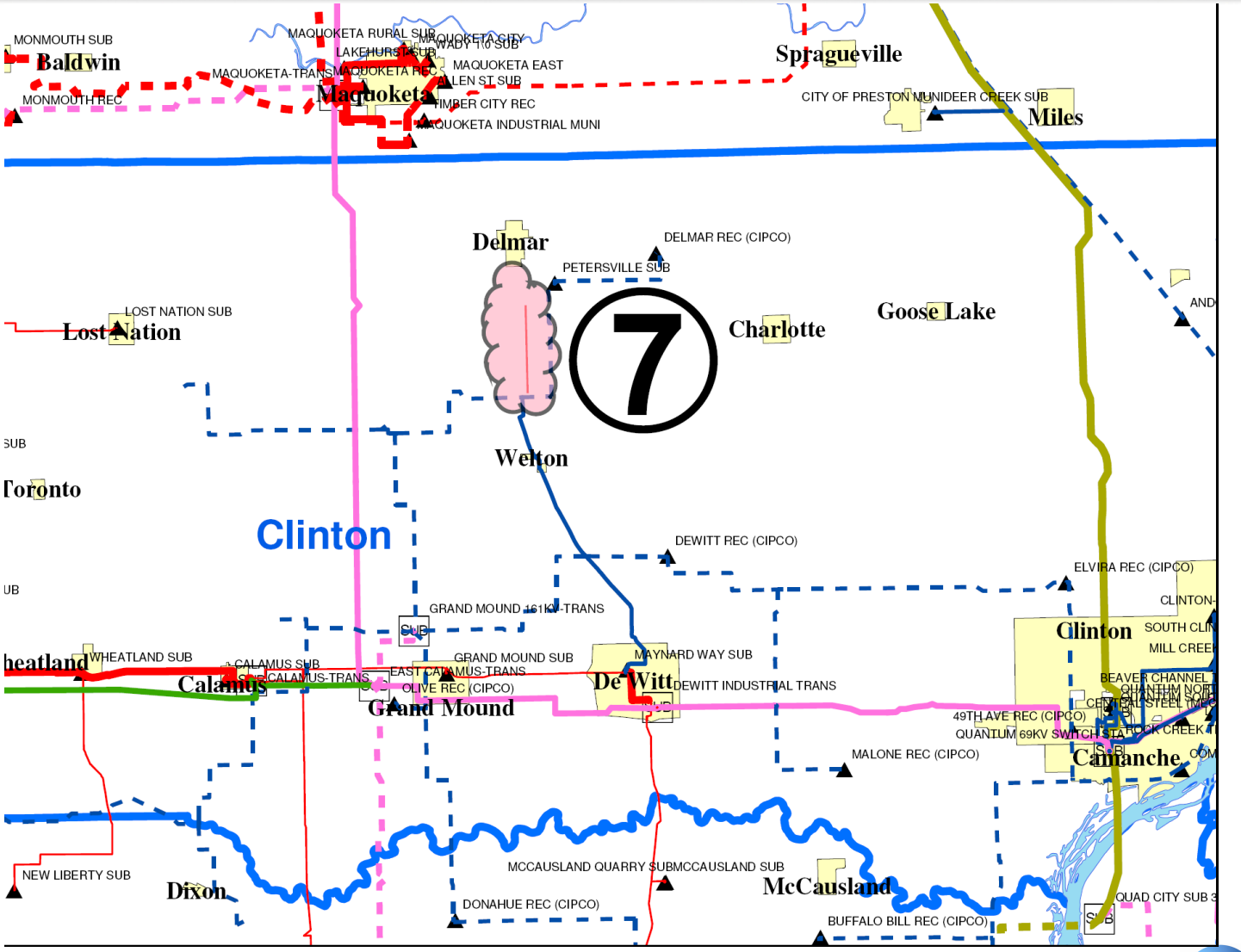
34kV 2009 Rebuild Details

6. Wyoming – Massillon (12 miles)



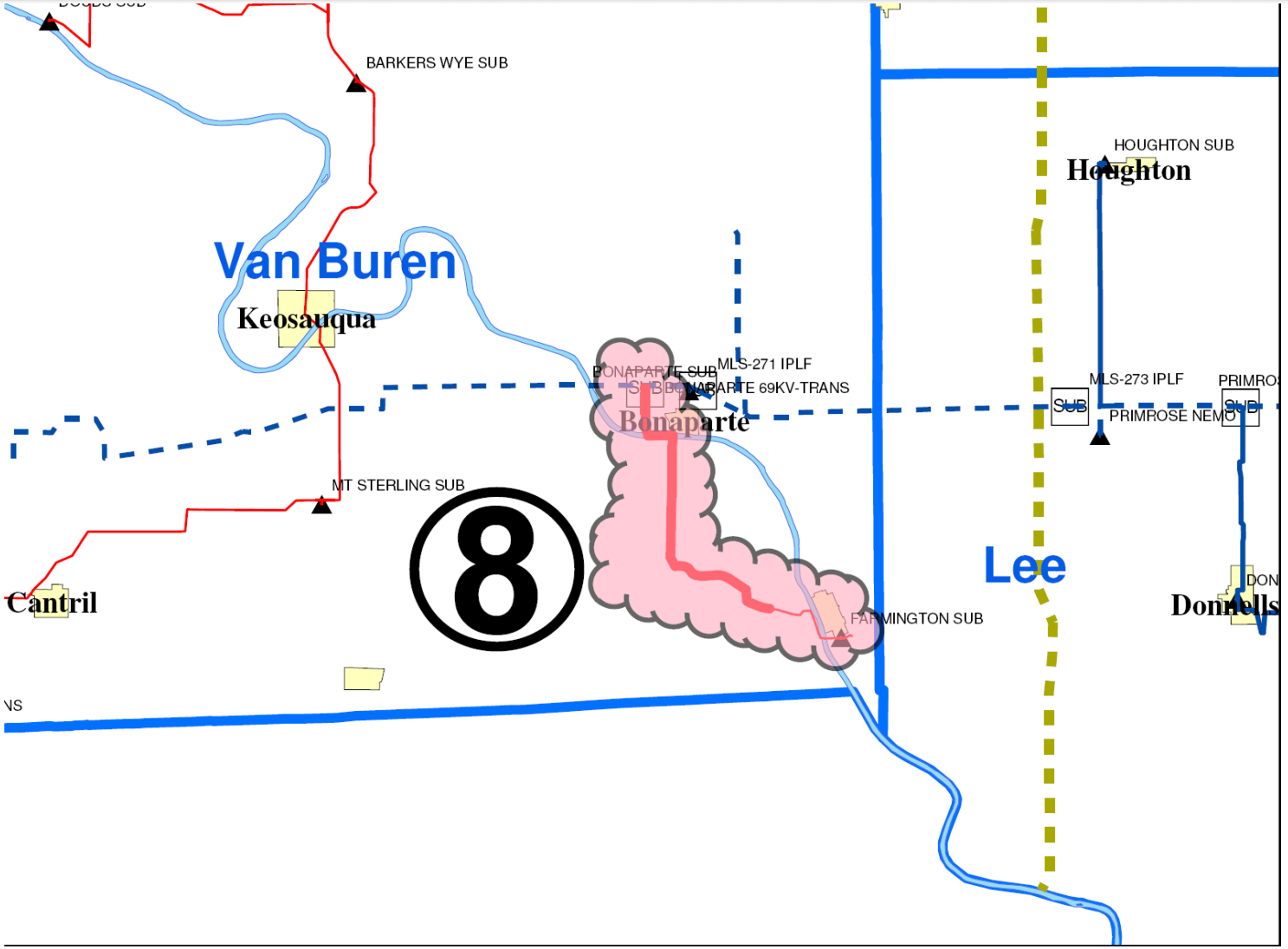
34kV 2009 Retirement Details

7. Welton Area (3.6 miles)



34kV 2009 Retirement Details

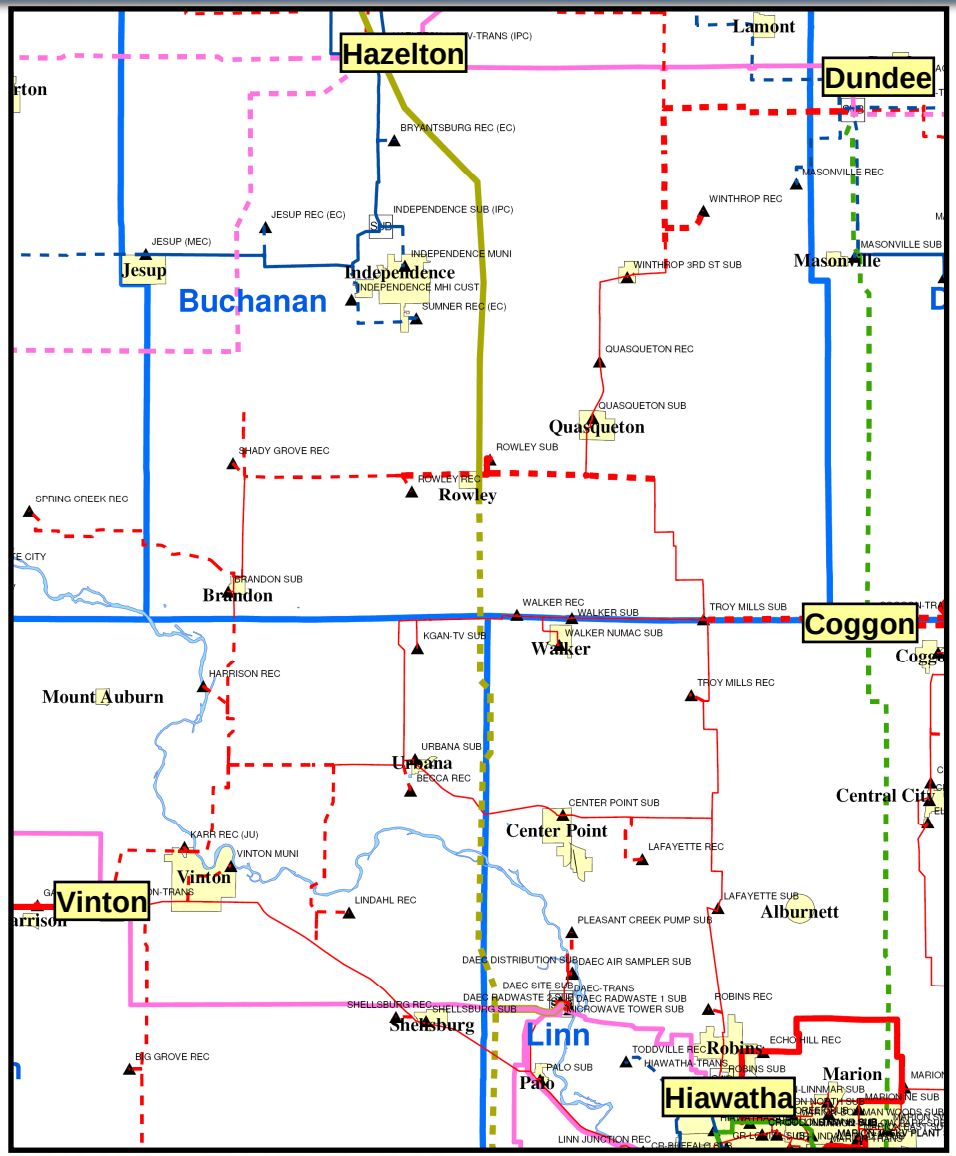
8. Bonaparte – Farmington (8.1 miles)



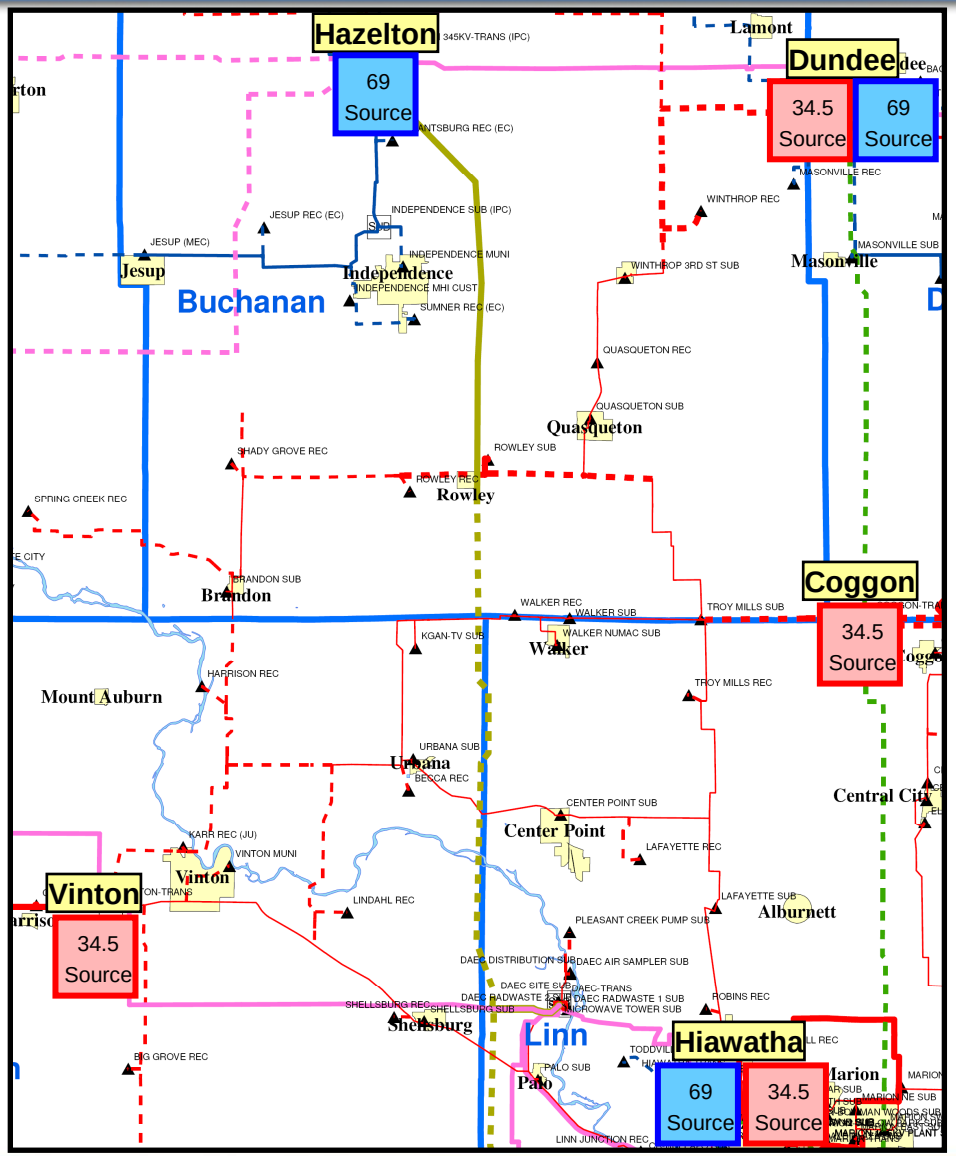
34kV 2008 Conceptual Plans

- Vinton- Hazleton Area – Nearly Complete
- Cedar Rapids – 80% Complete
- Anita – Boone Area – Not Started
- Boone – Ames - Marshalltown – Not Started

Vinton – Dundee Area

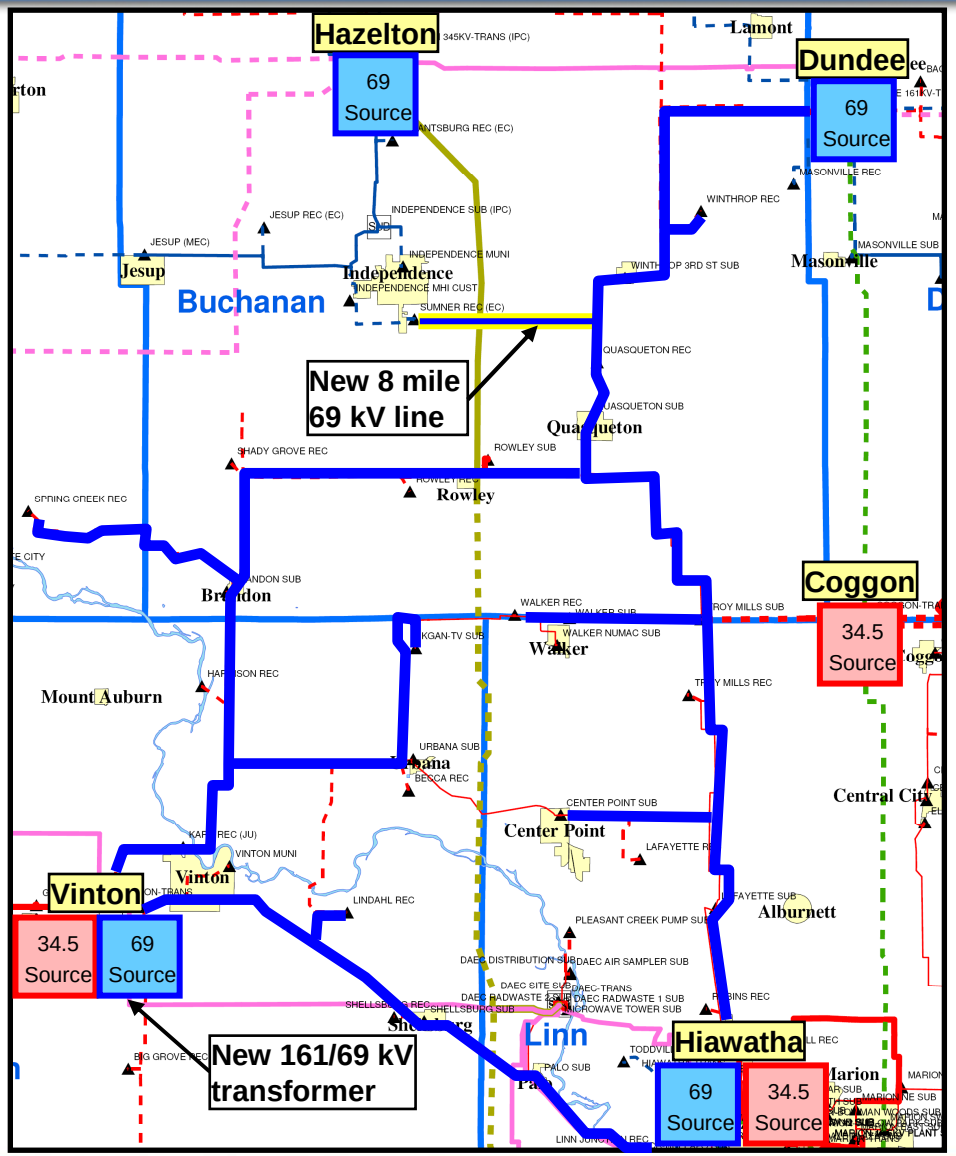


Vinton – Dundee Area
Existing 34kV & 69kV Sources



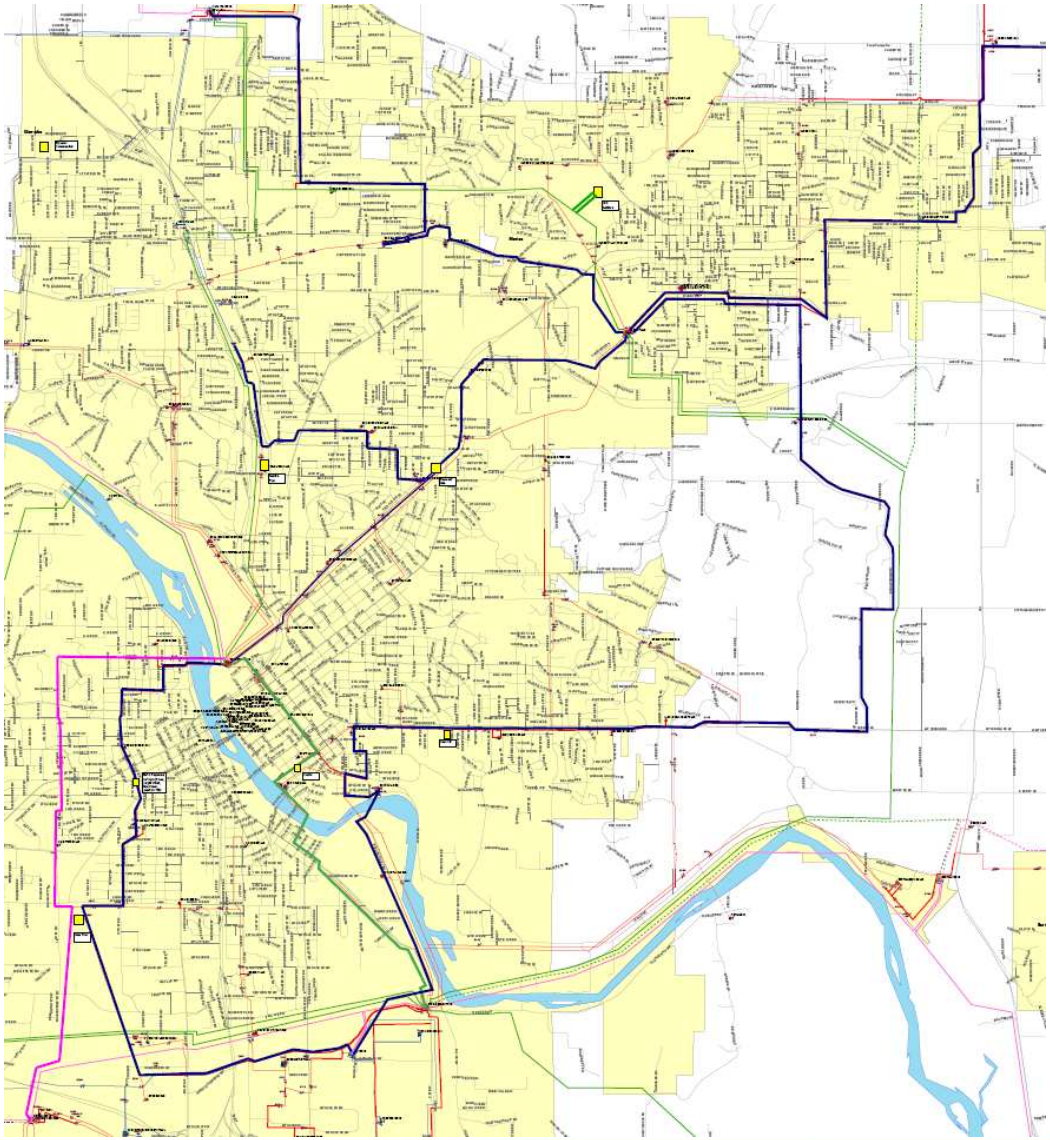
- **Currently four 34kV sources in the area**
  - **Vinton**
  - **Hiawatha**
  - **Coggon**
  - **Dundee**
- **Currently three 69kV sources in the area**
  - **Hazelton**
  - **Dundee**
  - **Hiawatha**

Vinton – Dundee Area
Proposed Plan



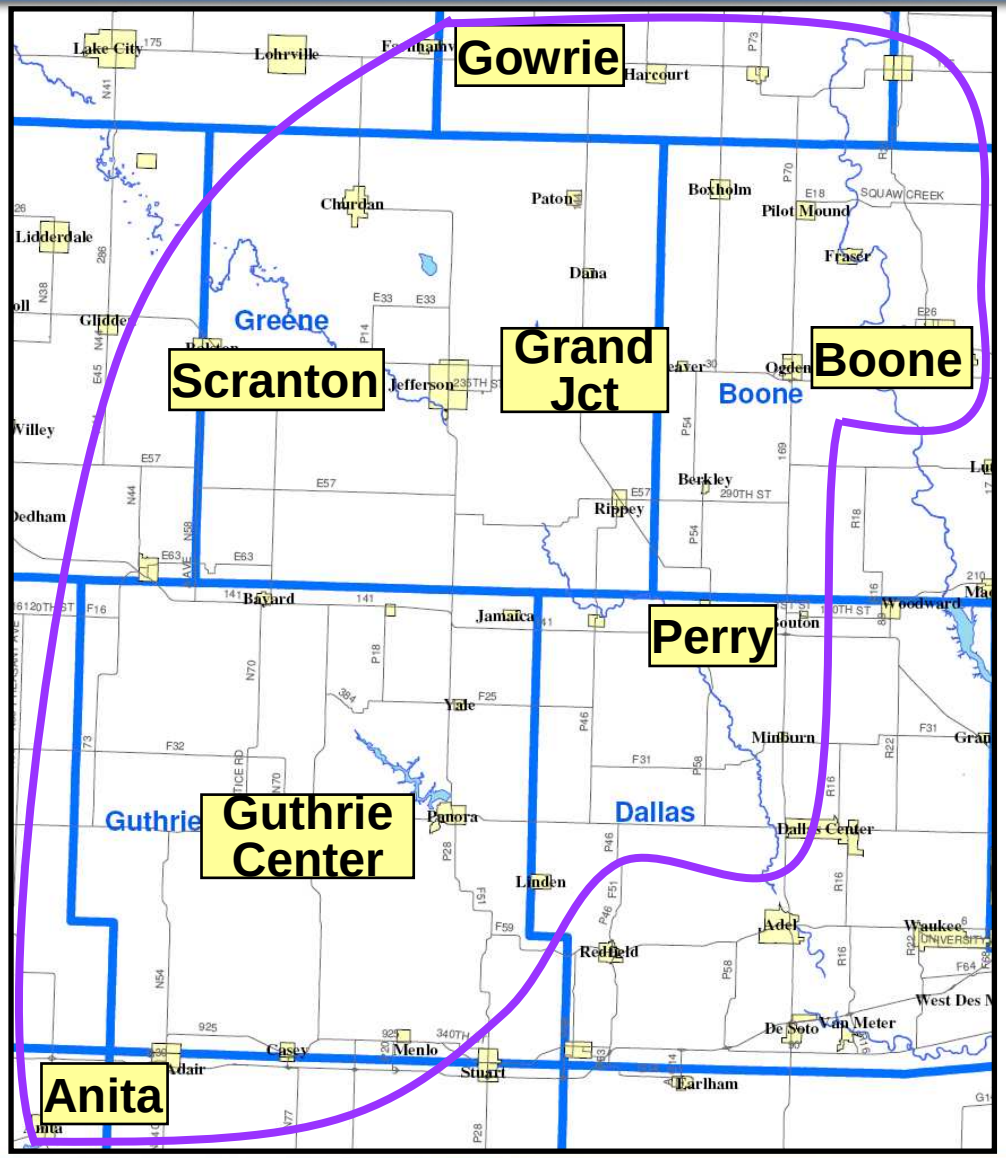
- Add 161/69 kV transformer at Vinton
- Build an approximately eight mile line from Sumner REC to Quasqueton REC area
- 34kV source no longer needed at Dundee
- Initial studies show that a 69kV source at Coggon is not needed

Cedar Rapids Conceptual Plan



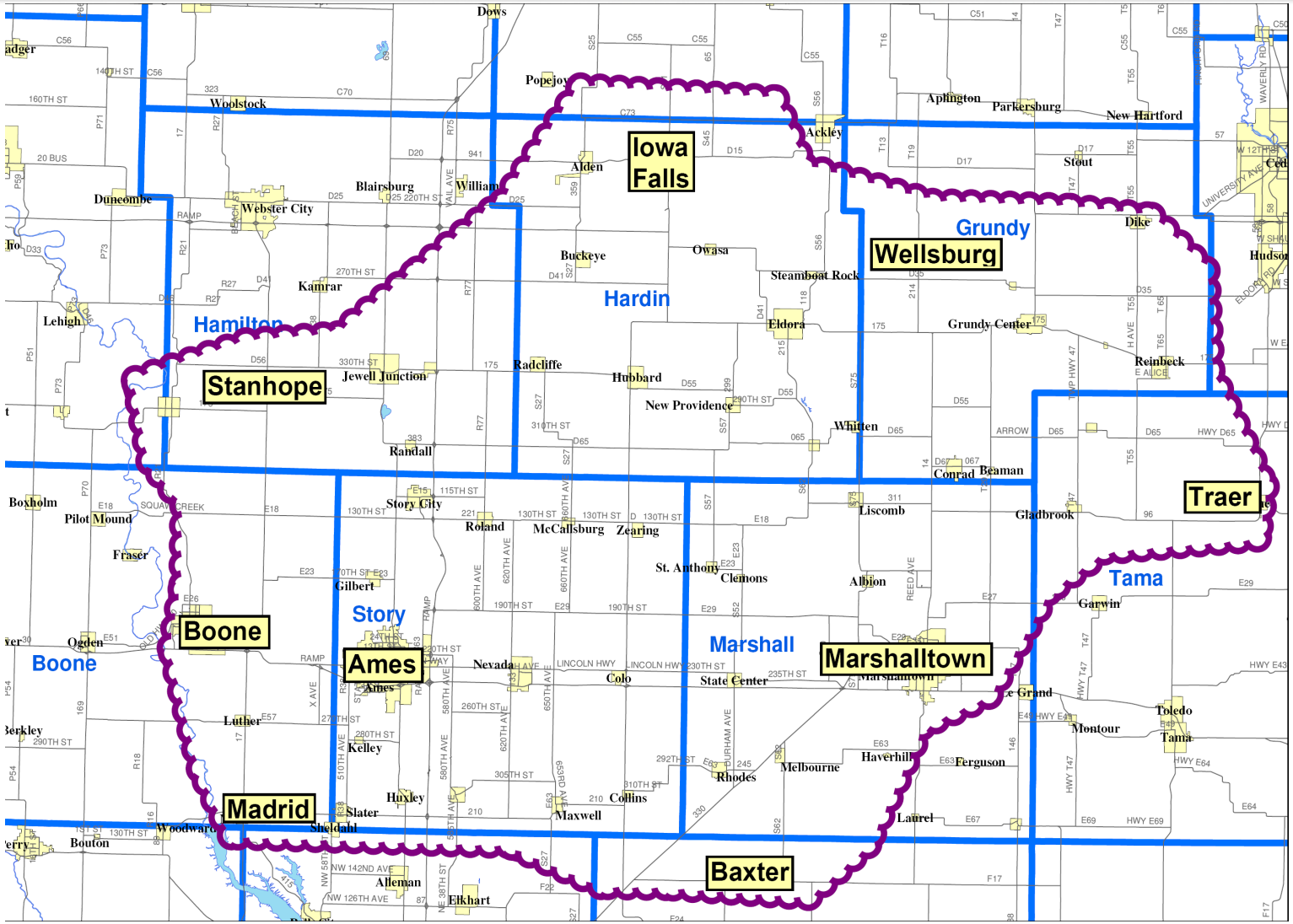
- Cedar Rapids area plan accelerated due to flood of 2008
- Over 35 miles of 34kV line will be retired in the Cedar Rapids area
- Much of the Cedar Rapids area load added to the 115kV system

Anita – Boone Area



- **Approximately 150 miles of ITC 34kV line left to rebuild or retire**

Boone – Ames – Marshalltown



- **Approximately 310 miles of ITC 34kV line left to rebuild or retire.**
- **75 miles already planned for 2009**

Generator Interconnections

Dan Barr, PE

Senior Engineer - System Planning

September 2008

Overview

- ***ITC Midwest Interconnections***
  - By the Numbers
  - Current Projects 08 and 09
  - Interconnection and Outlet
  - MISO and non-MISO
- ***Current Efforts***
  - Interconnection Process Task Force
  - Joint Coordinated System Plan
  - Regional Generation Outlet Study
  - Narrowly Constrained Area
  - EHV Overlay

Overview (cont.)

- ***Challenges with Interconnections***
  - Group Studies and Resource Limitations
  - Tariff Obligations
  - What Capacity?
  - RES legislation
  - Generation driving Transmission Planning

ITC Midwest Interconnection Projects

Active Projects

- **80 projects in construction or under study**
  - **Iowa – 46 projects**
  - **Minnesota – 31 projects**
  - **Illinois – 3 projects**
- ***11,000 MW of new generation***
  - **Iowa 8,000 MW**
  - **Minnesota 2,500 MW**
  - **Illinois 500 MW**
- ***Renewable Projects***
  - **Iowa 83%**
  - **Minnesota 99%**
  - **Illinois 78%**

Current Projects

G172 – 300 MW Wind Interconnection at Adams to Hazelton 345 kV

- Under Construction

G298 – 100 MW Wind Project

- Recently unsuspended

G356 – 36 MW Wind Project

- Recently Unsuspended

G517 – 130 MW Wind Project

- LGIA filed unexecuted

G538 – 50 MW Wind Project

- LGIA under negotiation

G540/G548- 160 MW Wind Project

- GIA under negotiation

Current Projects (cont.)

G573, 574, 575 – 200 MW Wind Interconnection on new Franklin to Iowa Falls 161 kV

- Preliminary design underway. LGIA negotiations expected in September

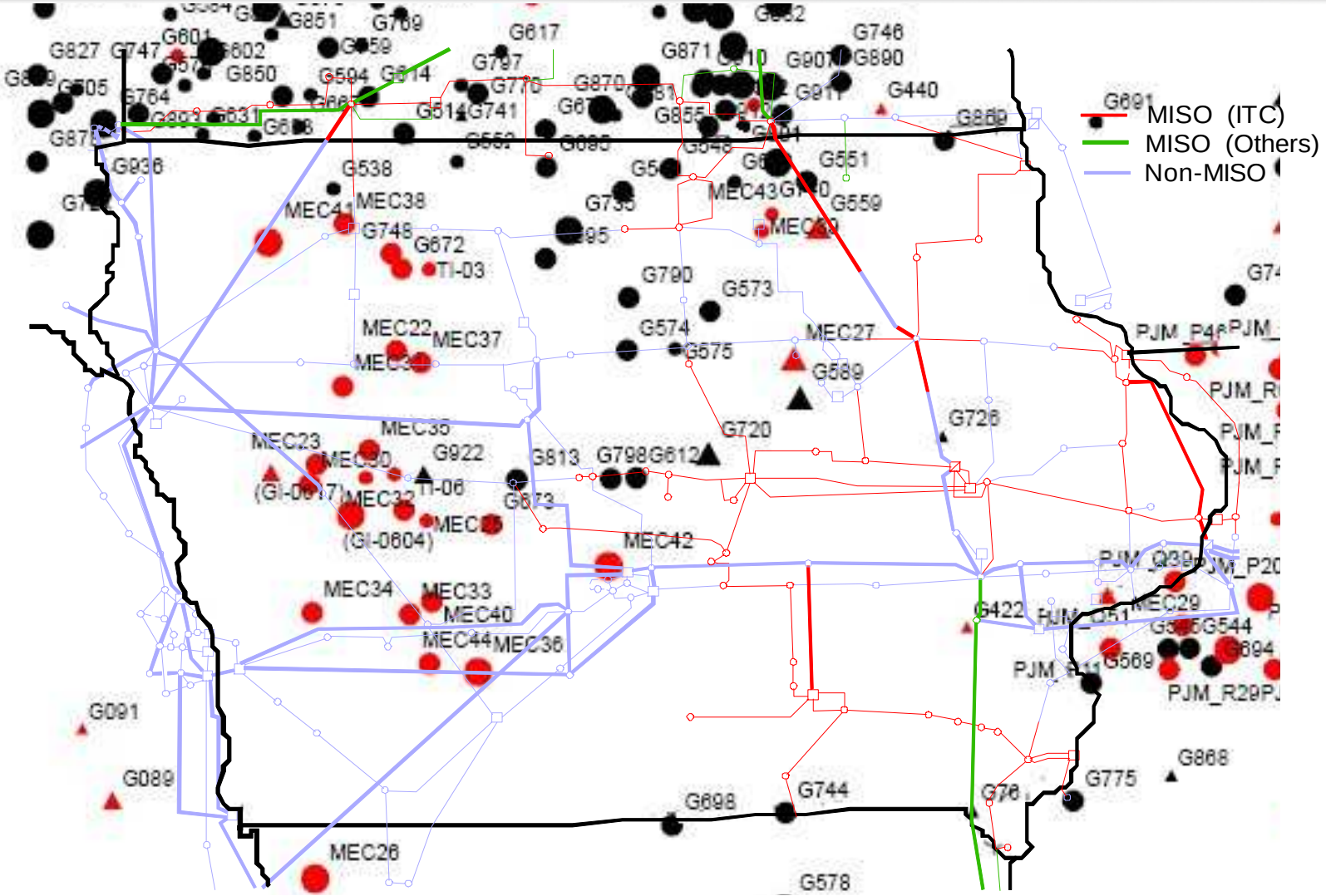
G595– 150 MW Wind Interconnection at Lime Creek

- Group 5 project - Under construction
- Rebuild of approximately 50 miles of 161 kV

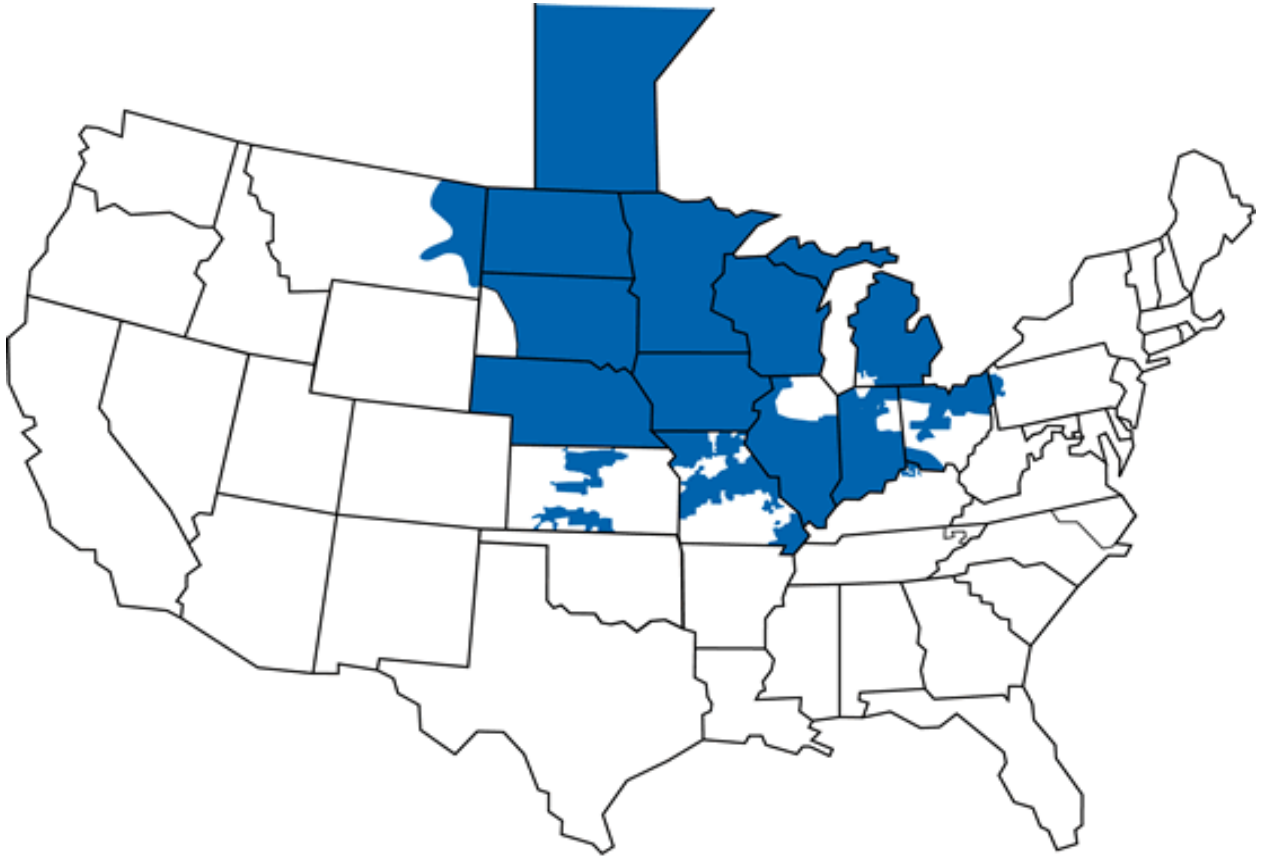
G612 – 150 MW Wind Interconnection near Fernald

- Group 5 project – Under construction
- Project will include voltage conversion at 4 subs and conversion of approximately 50 miles of 115kv to 161 kV

Interconnection Queue incl. inactive requests

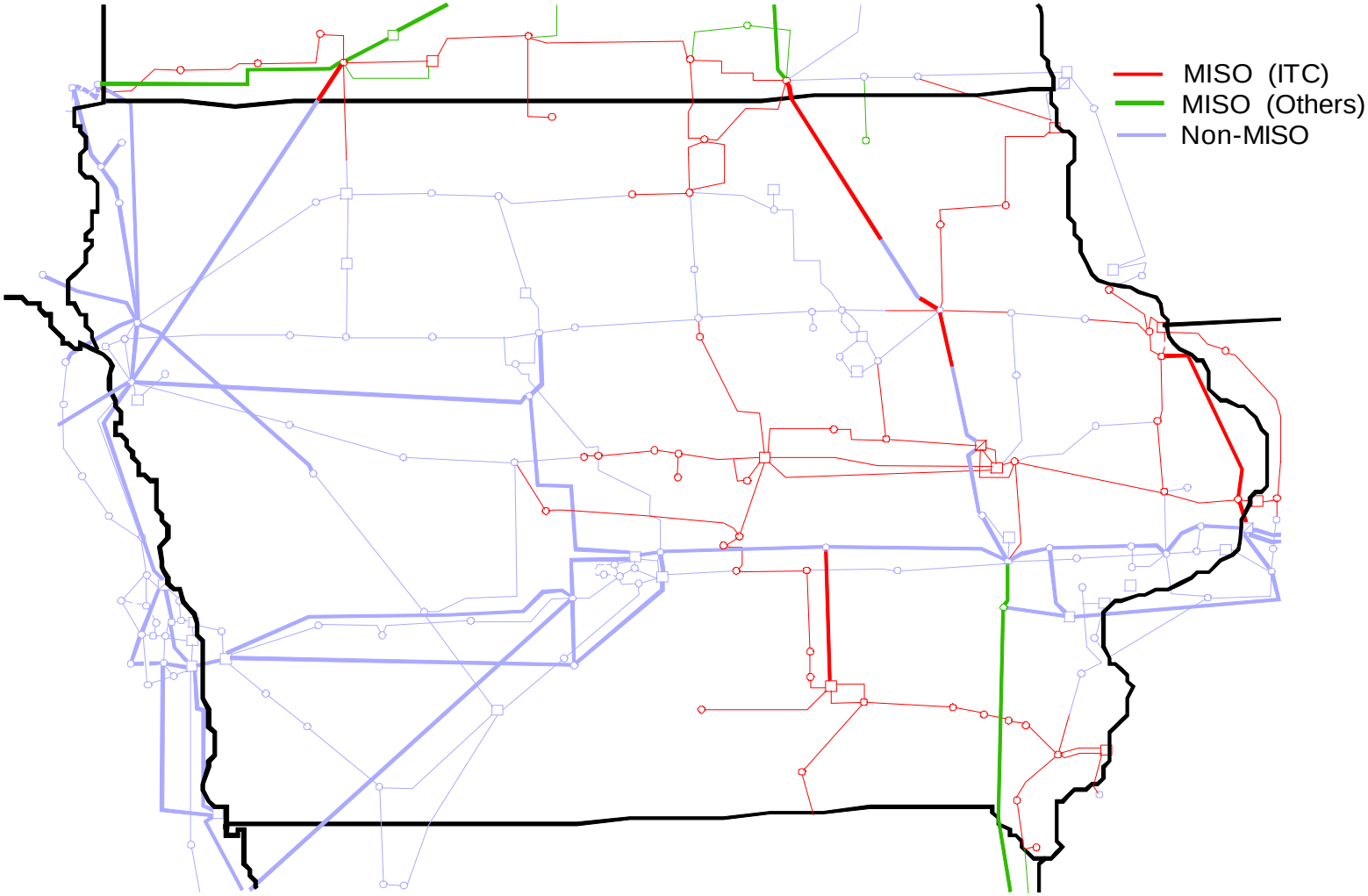


MISO Footprint

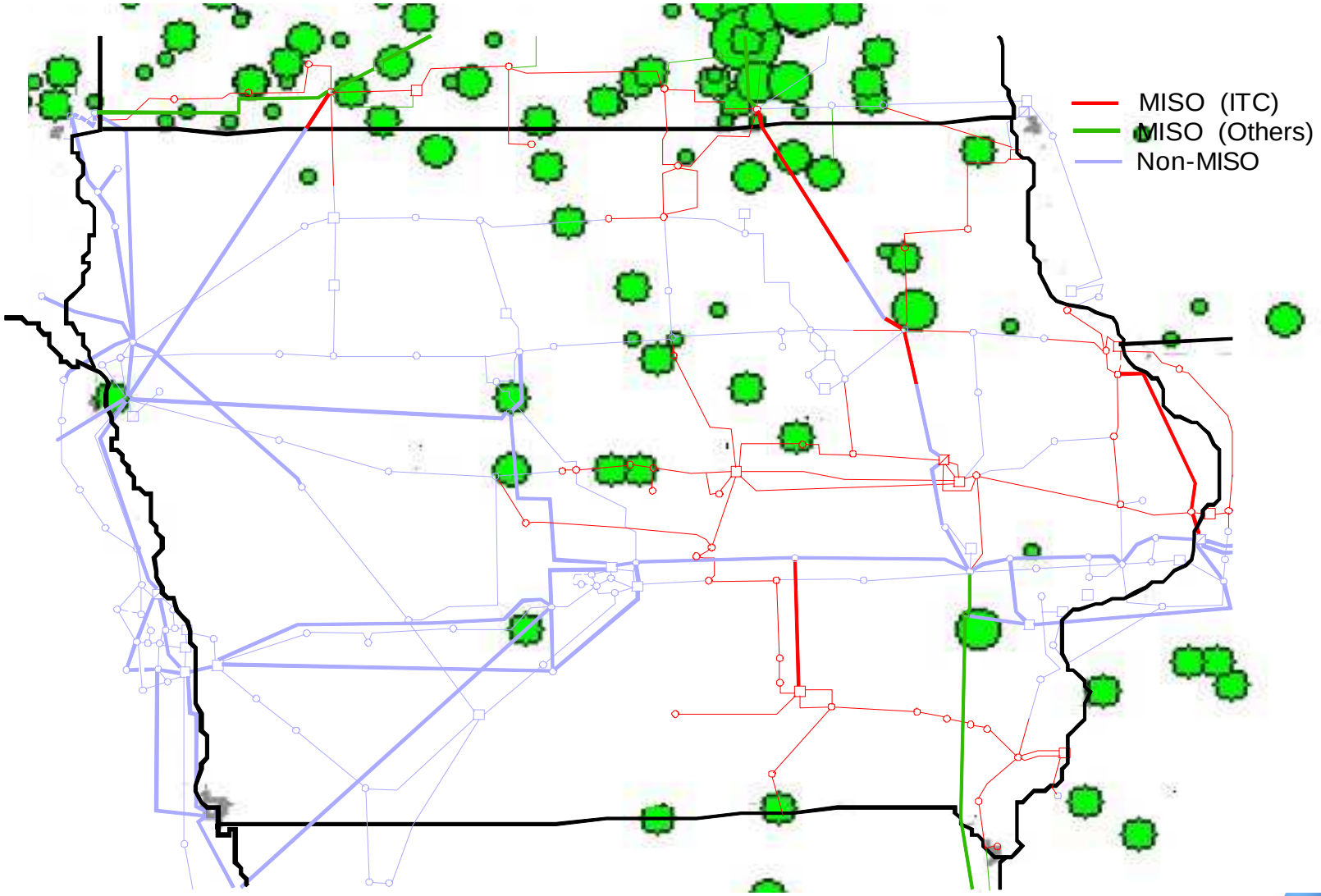


Midwest ISO Regional Reliability Area

MISO vs. non-MISO Transmission in Iowa



Wind Interconnections with Signed IA's



Current and Future Efforts

MISO

- ***Interconnection Process Task Force***
- ***Joint Coordinated System Plan:***
  - MISO, PJM, SPP, and TVA are currently evaluating/developing a transmission plan to integrate wind into the transmission system. The plan is based upon a minimum of 20% penetration of wind in the interconnected four systems.
  - The study began in March of 2008 and is scheduled to be completed by the end of 2008. It will include specific reliability needs/issues in the 10 year horizon.
  - The process involves stakeholders and includes a specific focus on transmission needs with increased renewable energy scenarios from North Dakota to Pennsylvania.

Current and Future Efforts

- ***Generation Outlet Study***

  - MISO has initiated a Generation Outlet Study that is working with stakeholders to identify a collector system approach to facilitate transmission expansion. The level of outlet will be based on the renewable portfolio standard (RPS) requirements of Minnesota, Wisconsin, Illinois, and Iowa.

  - The study will look to identify an incremental (5 to 10 year) bridge between the MISO queue and long term planning efforts. The effort will coordinate with projects in the MTEP process and long term planning efforts.

Current and Future Efforts

- ***Narrowly Constrained Area (NCA) Study***

  - The NCA will estimate the cost of congestion (using PROMOD analysis) and test potential solutions for mitigation for years 2008, 2011, and 2016. The level of mitigation will be developed with respect to cost arising from congestion in the NCAs. An NCA is defined as an electrical area identified by the Independent Market Monitor (IMM) that is defined by one or more Binding Transmission Constraints that are expected to be binding for a least 500 hours during a 12 month period.

  - A review of NCA congestion and flows will began in May. MISO staff performed the analysis with input from a stakeholder technical review group. NCA mitigation plans will be recommended for inclusion in MTEP Appendix A.

Current and Future Efforts

- ***Extra High Voltage (EHV) Conceptual Overlay Reliability Screening Study***
  - The screening study will utilize existing and new transmission upgrades as identified in MTEP Appendices A (approved), B (planned projects), and C (proposed projects). The case developed for the Joint Coordinated System Plan will be used for the screening. The reliability and performance screening will be evaluated to determine issues which occur with and without the EHV overlay.
  - The evaluation will be based on forecasted load and generation at a 5 and 10 year horizon. The future generation considered in the model will take into account generators with signed interconnection agreements and the MISO derived MTEP 08 reference future generation portfolio, which considers MISO States' RPS or renewal energy standard (RES) mandates.
  - The results will be used to recommend refinements to the MTEP 09 long term study efforts. MISO staff will perform the analysis with input from a technical review group.

Challenges

- ***Lack of Available Capacity***
  - **Interconnection requirements versus outlet**

- ***Insufficient Resources for Necessary Planning Studies***
  - **Group 5 Study**
  - **Iterative Studies**

- ***Individual Project and Group Studies within the GIP will not rise to the level of need for regional fix***
  - **G517**

- ***What capacity for Network Upgrades?***
  - **Lakefield Transformers**

- ***States' mandated Renewable Energy Standards***
- ***Production Tax Credit and Carbon Tax***
- ***Preserving low rates and maximizing benefit to ratepayers.***

- ***Generation driving Transmission Planning***

QUESTIONS??