Partners in Business Meeting

January 31, 2007
Lansing Center
Lansing, MI

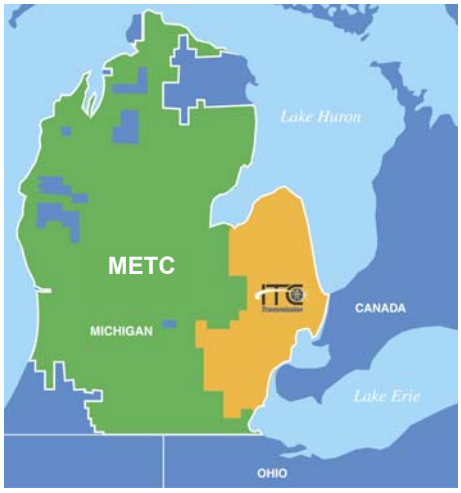
Agenda

- Introduction to ITC*Transmission* and Michigan Electric Transmission Company (METC) – Tom Wrenbeck
- ITC Holdings General Update – Joseph Welch
- Operations Update – Jon Jipping
- METC 2007 Capital Projects – Ruth Kloecker
- Lunch – Rooms 102-104 – down the hall on the left
- Regulatory / Legislative Update – Gregory Ioanidis
- Transmission Investments for Michigan's Future - 765kV Project Update – Richard Schultz
- Meeting Wrap-up – Tom Wrenbeck

Partners in Business Meeting Introduction

- **Purpose of meeting**
- **Contact information:**
  - Tom Wrenbeck – Manager, Stakeholder Relations
  - Email: twrenbeck@itctransco.com
  - Work phone: 248-274-7243
  - Cell Phone: 734-812-1808
  - Mailing Address: 39500 Orchard Hill Place, Novi, MI 48375
- **Feedback – fill out survey – get a prize!**
- **If you're not on the ITCTransmission/METC Partners in Business Email distribution list**
  - Go to www.itctransco.com
  - Select the "Partners in Business" tab on top row
  - Select the "Sign up" option in the drop down window then fill out and submit the form

The METC Transaction



- **ITC Holdings Corp. signed a definitive agreement to acquire all of the ownership interests in Michigan Electric Transmission Company, LLC (METC) in May 2006.**
- **Transaction was valued at approximately $866 million and was financed through a combination of cash and ITC Holdings common stock.**
- **Closing of transaction was on October 10, 2006.**

Who We Are - Operating Company Statistics

	ITC Transmission	METC an ITC company
Predominant Generation Location	East – Lakes and Detroit River	West – Lakes and Saginaw Valley Predominant location of major IPPs and QF's
System Characteristics	Mostly Urban and Dense	Some Urban but Separated by Significant Distance
2006 System Peak Load	12,745 MW	9,469 MW
Michigan Service Area	Southeast (7,600 mi^2)	Lower Peninsula (18,800 mi^2)
Total Transmission Miles	More than 2,700	Approximately 5,400
Stations – Owned and/or Housing 120kV > Equipment	155	80
Transmission Structures	16,000+	43,000+
Interconnections	16	21
Transmission Infrastructure	Mostly steel structures	Substantial wood structures
RTO Membership	Midwest ISO-Appendix I	Midwest ISO-TO Agreement
2005 Ratebase	$613 million	$396 million

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ITC Transmission

METC an ITC company

ITC Holdings General Update

— Joseph L. Welch, President & CEO

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Management Team

Joseph L. Welch - President & Chief Executive Officer

- Responsible for the overall strategic direction and vision of the first independently owned and operated electricity transmission company in the United States.

Linda H. Blair - Senior Vice President, Business Strategy

- Responsible for short- and long-term strategic planning, regulatory affairs, internal and external communications and the company's human resources function.

Larry Bruneel- Vice President, Federal Affairs

- Responsible for the development of federal regulatory strategies and advocacy before the U.S. Congress and federal agencies, including the Federal Energy Regulatory Commission (FERC).

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Management Team

Joseph R. Dudak - Vice President, Major Contracts and Special Projects

- Responsible for developing and implementing Transmission Company roles and transmission projects outside of Michigan for ITC Holdings and ITC Grid Development. Also responsible for negotiating major contracts.

Jon E. Jipping - Senior Vice President, Engineering

- Responsible for transmission system design, maintenance and project engineering.

Daniel J. Oginsky - Vice President, General Counsel

- Responsible for legal affairs, counseling the company on legal matters, and managing the company's legal department.

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Management Team

Edward M. Rahill - Senior Vice President, Chief Financial Officer

- Responsible for financial operations including Accounting, Financial Reporting, and Treasury Management, Tax and Planning and Analysis functions

Richard A. Schultz - Senior Vice President, Asset Planning

- Responsible for transmission planning, engineering and system optimization.

Elizabeth Howell – Executive Director, Operations

- Responsible for the operation of the transmission system, operational engineering, training, compliance, safety and security .

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Goals and Visions

- **Focus on ownership, operation, maintenance, and construction of transmission facilities as a single line of business.**
  - **No internal competition for capital – it is dedicated for prudent transmission investment.**
- **Improve reliability**
- **Reduce congestion**
- **Increase access to generation**
- **True independent transmission company business model provides the real benefits to the customers, market and infrastructure.**
- **Goal is best-in-class system performance for all ITC subsidiaries.**
  - **ITC*Transmission* achieved best-in-class status for "Ratio of Preventative Maintenance vs. Corrective Maintenance" based on 2004 data through a study by the PA Consulting Group.**
  - **ITC*Transmission* delivers top quartile performance in key reliability measures.**

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Overview – ITC Midwest

ALLIANT ENERGY
Interstate Power and Light

- ITC Midwest LLC, a newly-formed ITC Holdings Corp. (NYSE: ITC) subsidiary, has signed a definitive agreement to acquire all of the transmission assets of Interstate Power and Light Company (IP&L), a subsidiary of Alliant Energy.
  - All assets 34.5kV and above will be transferred in the transaction.
- Transaction valued at approximately $750 million; no debt will be assumed.
  - Anticipated to be financed through a combination of cash on hand and equity and debt financings.
- Transaction requires approvals from FERC, state commissions in Iowa, Minnesota, Illinois and Missouri, and anti-trust review.
- Transaction is anticipated to close in the fourth quarter of 2007.
- Transaction represents another significant milestone for ITC Holdings.
  - First proposed acquisition by ITC Holdings of transmission assets integrated within a vertically integrated utility.

Benefits of Transaction

- **The acquisition of the IP&L assets will enable ITC Holdings to leverage off of its experience and resources to develop the necessary infrastructure to support continued load growth as well as the development of a renewable resources market.**
  - **Ethanol production facilities and additions to generating capacity, especially in renewables, will represent an important component of the region's economy in the future.**
- **Supports Energy Policy Objectives**
  - **Consistent with FERC policy and 2005 Energy Policy Act to increase investment in transmission.**
- **Increased Industry Presence**
  - **Over 25,000MW combined peak load, more than 18% of Midwest ISO peak load**
  - **With acquisition would create 6th largest transmission serving entity in the country.(1)**

(1) Based on annual electric retail sales in the service territory as found in "Edison Electric Institute Profile: Rankings of Shareholder-Owned Electric Companies", May 2006.

Questions?

Operations Update

— Jon Jipping, Senior VP Engineering

Operations Integration Overview

- Since the closing of the METC transaction, Operations employees have been actively engaged in the integration of ITC and METC operations
- The METC transmission system is currently operated under contract by Consumers Energy
  - Expiration of the contract is May 1, 2007
- On May 1, ITC will assume operational control of the METC transmission system
  - In general, the ITC business model will be applied
- A new Operations Control Room has been built at the former Michigan Electric Power Coordination Center (a.k.a. the Pool Center) in Ann Arbor
  - Now called the Ann Arbor Operations Center

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Operations Control Room (OCR)

- Approximately 1/3 of the large office area at the MEPCC has been modified to become the new OCR
  - Novi OCR was too small to incorporate METC system and didn't make sense to spend more money on leased space
  - Better security features at the Ann Arbor facility
- To save time and money, many items from METC's Grand Rapids operations center were re-deployed in the OCR
- On January 7, 2007, construction was complete and operational control of the ITC system was switched to Ann Arbor from Novi
  - Novi is now the backup OCR
- When the new headquarters and control room are completed in 2008, the Ann Arbor Operations Center will become the long-term backup

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Transmission Management System (TMS)

- A key element of operations integration is completion of an integrated TMS (a.k.a. EMS) which will model the entire State
  - Real time monitoring
  - State estimation
  - Contingency analysis
- Approach is to gradually add the METC model into the production ITC TMS
- Targeting February 5, 2007 to have the TMS integration substantially complete
  - Almost three months to work out any problems
  - Three months for the Control Room to monitor the system without having primary control

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Field Operations

- Project engineers have started working on METC high priority 2007 capital projects.
- Utility Lines Construction, METC's field operations and maintenance contractor, is implementing plans for operations in METC's service territory.
- Supply Chain personnel have developed plans for warehousing and distributing materials and supplies for capital and maintenance work.
- Document and data transfer is in progress from CE

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Regional Field Operations

- Proposed Regional Operations HQ and Warehouse
- ITC Headquarters (Novi, MI)
- Existing Headquarters
- Existing Warehouses

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Synergy Examples

- The decision to implement joint operation of the ITC and METC systems was driven by the many synergies achieved, for example:

Control Room Staffing (6 people per rotating shift position)

	Coordinators	Senior	Shift Engineer
ITC	2	1	
METC	2	1	1
MECS	1	1	
Combined OCR	3	1	1

Transmission Management System

	Primary	Backup	Offsite Backup
ITC	√	√	√
METC	√ (planned)	√	√
MECS	√	√	
Combined OCR	√	√	√ (X 2)

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What's Next?

- Complete the integration of the METC model into the ITC TMS.
- Intensive training program will continue until May 1, approach is to gradually add the METC model into the production ITC TMS.
  - Includes use of the simulator and scenarios practice with field personnel.
- Significant effort on interface procedures with METC interconnected generators, local distribution companies, and municipalities.
- Assume operational control of the METC transmission system May 1, 2007.

ITC Transmission

METC an ITC company

METC Capital Project Update

— Ruth Kloecker, Manager – System and Interconnection Planning, System Planning

Capital Projects Guiding Principles

ITC*Transmission and METC* follow a stringent planning process to ensure that the projects that are implemented provide the maximum value to our customers.

- The System Planning team develops contingency-based scenarios to identify where our system faces reliability risks.
- Additionally, ITC*Transmission* has used PROMOD software that performs modeling that not only provides visibility to the reliability benefits of the projects but also assists in identifying projects that provide economic benefits. This will also be used for the METC projects in the future.
- All system capacity projects proposed are based on at least one projected planning criteria violation. Postponing or eliminating these projects puts ITC*Transmission or METC* in violation of its Planning Criteria.

ITC*Transmission*'s and METC's 2007 Capital Project Budgets will provide the following benefits:

- Reliability in the form of increased system capacity and increased transfer capability;
- Reliability through infrastructure improvements; or
- Economic benefits to ITC*Transmission* customers by reducing congestion and/or losses.

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METC 2006 Capital Project Update

Oakland Substation

- Before the summer, the 138 kV capacitor was increased from 36 to 50.4 MVAR.

Gaylord Substation

- A project to install a 36 MVAR capacitor was completed prior to the end of the year.

Donaldson Creek Substation

- Project was completed and placed in service on May 27, 2006. This project not only facilitated the connection of a Consumers Energy Substation but also provided better reliability for the grid and other customers served from the transmission system.

North Belding Sanderson Eureka 138 kV line

- Project was completed and placed in service on April 13, 2006.

Tippy - Hodenpyl 138kV line

- Project was completed and placed in service on May 15, 2006.

Iosco Substation

- Work at Iosco was predominantly completed in 2006. Minor work to complete the project will be required in 2007.

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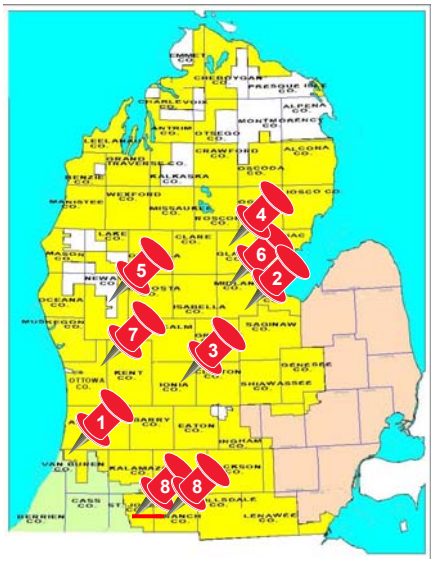
Capital Projects For 2007



System Capacity Improvements

1. Phase Transposition 345kV
2. HSC, Tittabawassee Substations & 138 kV Lines
3. Marquette Bingham 138kV Line
4. Bard Road Substation
5. Croton Substation
6. Spare Transformer
7. Tallmadge Substation
8. Batavia Simpson 138kV Line

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System Capacity Improvements

Phase Transposition 345 kV: Phase Transposition on Two 345 kV Circuits which affect the Reliability of Generation in Southwest Michigan.

- Transpose phases on both the Argenta Palisades and Cook Palisades 345kV Lines.
- Design started with construction to start in Spring 2007.
- Projected completion no later than Fall 2007.
- Benefits: Reduce negative sequence currents which trip a generator in the area during light load when customers in Michigan are importing a large amount of power.

HSC, Tittabawassee Substations & 138 kV Lines: Increase Capacity in Midland and Saginaw Counties.

- Build a new 15 mile 138 kV line from Tittabawassee to HSC Substation to create a third circuit into the substation, construct two miles of new double circuit 138 kV line to make the strongest two sources independent, and terminal equipment at both Tittabawassee and HSC Substations.
- Design started in 2006, with construction to start in early 2007.

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System Capacity Improvements

- Project completion toward end of 2007.
- Benefits: Reduces post contingency loading on HSC Lawndale 138kV Line; improves post contingency voltage at HSC Substation.

Marquette Bingham 138kV Circuit Upgrade: Increase Transmission Capacity and Reliability in Ionia County.

- Rebuild 9 miles of 138kV line.
- Projected completion date – May 2007.
- Benefits: Reduces post contingency loading on the Marquette to Bingham Circuit.

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System Capacity Improvements

Bard Road Substation : Increase Voltage in Gladwin County.

- Project scope to install a new 138kV capacitor.
- Design to begin in early 2007.
- Projected completion late - 2007.
- Benefits: Improves normal peak and post contingency voltage in the area. Provides additional spinning dynamic reserves in northern Michigan.

Croton Substation : Increase Voltage in Newaygo County.

- Project scope to install a new 138kV capacitor.
- Design to begin in early 2007.
- Projected completion late - 2007.
- Benefits: Improves normal peak and post contingency voltage in the area. Provides additional spinning dynamic reserves in Michigan.

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System Capacity Improvements

Spare Transformer: Replaces System Spare which is Presently Located at Tallmadge Substation.

- Construction completion – June 2007.
- Benefits: Provides for faster replacement of failed equipment thus reducing the likelihood of needing to interrupt customers served from the METC System.

Tallmadge Substation : Increase Capacity and Improve Reliability by adding additional Transformation at Tallmadge Substation in Ottawa County

- Install a 3rd 345/138kV transformer at Tallmadge Substation utilizing the existing system spare currently at Tallmadge.
- Design to start in 2007 with completion by June 2008.
- Benefits: Improves post contingency loadings on the Campbell and existing two Tallmadge transformers; raises post contingency voltages in the area.

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System Capacity Improvements

Batavia Simpson 138kV Line : Increase Capacity and Improve Reliability in St. Joseph and Branch Counties

- Install a 138kV line from Batavia to Simpson substations, creating a new circuit from Batavia to Morrow.
- Substation additions at Batavia to facilitate the termination of the new line.
- Line routing to begin in 2007. Project completion by December 2009.
- Benefits: Improves post contingency loadings on numerous 138kV lines in southern Michigan; improves post contingency voltages in St Joseph, Branch, and Calhoun Counties.

Over Duty Breakers Replacement

- Replace breaker equipment found to be over duty for fault conditions in either system normal configurations or in sparing breaker configurations across the METC footprint.
- Ongoing project to address found issues.

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Infrastructure Improvements

Gas Insulated Switchgear (GIS) Replacement

- Goss Substation
- Replaces aging and leaking equipment reducing maintenance costs and improving reliability
- Design to begin in 2007.

Breaker Replacements

- Improving overall reliability of the METC system by replacing aging circuit breakers which will reduce maintenance and testing costs and maintain safety.
- A total 12 replacements are planned in 2007 at various 345kVand 138kV substations.

Relay Betterment – Improving reliability by replacing end of life relays with state of the art microprocessor based relays.

- Ongoing program to replace aged equipment.

Wood Pole Replacement Program – Replace aging infrastructure

- Ongoing program to replace aged and condemned wooden poles across the METC system.

Customer Connection Requests

Customer Connections – METC strives to supply Best-in-Class service to all transmission customers

- New Distribution Interconnections
  - We currently have 18 distribution interconnection requests that are in various stages of the project cycle.
- New Generation Interconnections
  - We currently have 5 generation interconnection requests in the MISO Queue which could drive the need for further infrastructure improvement.
  - An Interconnection Agreement has been executed on one of these requests.

MISO Transmission Expansion Plan

METC participates in the MISO Transmission Expansion Plan (MTEP) process and submits its system projects to MISO for their review.

- The projects in the 2007 Capital Budget are in various stages in the MTEP Process.
- Some have been submitted and included as parts of previous MTEP. Others are being submitted for the first time as part of the current MTEP study.

ITC Transmission

METC an ITC company

Regulatory/ Legislative Update

— Gregory Ioanidis, Director – Regulatory Strategy

Regulatory/ Legislative Update

- **ITC*Transmission* responded to several questions posed in the National Electric Transmission Congestion Study.**
- **The Midwest Stand Alone Companies (MSATs) intervened in support of the Midwest ISO's (MISO) proposed Attachment JJ (ER06-1556).**
  - Provides for reimbursing transmission owners for rescheduling of planned transmission outages.
  - FERC accepted the filing.
- **FERC issued a Notice of Proposed Rulemaking (NOPR) proposing to adopt, with modifications, 83 of 106 reliability standards (RM06-16).**
  - ITC*Transmission* supported NERC in its new role as the Electric Reliability Organization (ERO), and shares the Commission's objective of having enforceable Reliability Standards applicable to all users of the bulk power grid in place as expeditiously as possible.

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Regulatory/ Legislative Update

- **MISO and Michigan Electric Transmission Company (METC) to adjust the implementation of METC's Attachment O formula rate to recover its expenses and investments in transmission on a current, rather than on a lagging basis (ER07-95).**
  - FERC conditionally approved the filing.
- **The MISO Transmission Owners (TOs) submitted minor revisions to Attachment O and Schedule 1 to conform with changes adopted in Order No. 668B - Accounting and Financial Reporting for Public Utilities Including RTOs (ER07-113).**
  - FERC conditionally approved the filing requiring a ministerial compliance filing.

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Regulatory/ Legislative Update

- **FERC issued a final rule implementing the supplemental "backstop" authority they received from Congress, in the Energy Policy Act of 2005 (RM06-12).**
- **FERC issued an order on the Regional Expansion Criteria Benefits (RECB) Proposal regarding Baseline Reliability Projects (ER06-18).**
  - FERC accepted a 20% regional postage stamp component for projects whose voltage is 345kV or greater.
  - FERC denied requests for rehearing on excluded projects list and of 50% participant funding requirement for generator interconnections.
- **ITC*Transmission* and METC protested MISO's "RECB II" proposal stating the filed proposal greatly underestimates the value of transmission expansions (ER06-18).**
  - The proposal retains an artificial distinction between economic and reliability projects.
  - The proposal ignores the vast majority of benefits associated with new transmission infrastructure.

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Regulatory/ Legislative Update

- **FERC issued its rehearing order for Order 679 Final Rule on Promoting Transmission Investment Through Pricing Reform (RM06-4).**
  - The rehearing order clarifies that applicants for a package of rate incentives must support the overall package of elements in their incentive rate request.
- **Public Hearings were held in front of an administrative law judge for the Genoa – Prizm application filed by ITC*Transmission* (U-14861).**
- **On January 19, 2007, METC and other parties filed with FERC a settlement resolving all matters in the METC rate case (ER06-56).**

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Regulatory/ Legislative Update

- **U.S. House of Representatives**
  - Democrats gained control of the House of Representatives. They picked up 33 seats to gain a working majority of 234 to the Republicans 201 seats.
  - Although it is unlikely that any legislation will take place during this Congress, there will be a stronger emphasis on oversight of federal energy policy (Department of Energy, Federal Energy Regulatory Commission and other agencies)
  - Congressman John Dingell (D-MI) returned to his position of Chairman of the Energy and Technology Committee which he held for 12 years before the Republicans captured the House in 1994. He is committed to examining how the key provisions of the 2005 Energy Policy Act are being implemented.
  - Congresswomen Nancy Pelosi (D-CA), Speaker of the House, has set an aggressive 100 Hours of legislation
    - She created a select committee that will not have legislative jurisdiction but will help develop information that will raise visibility of energy by June. Her goal is to have legislation on global warming and energy independence through the committees by July 4th referring to Independence Day as "Energy Independence Day".

Regulatory/ Legislative Update

- **U.S. Senate**
  - Democrats gained control of the Senate with 50 seats, Republicans with 49 seats
  - Senator Jeff Bingaman (D-NM) - Chairman of the Energy and Natural Resources Committee
  - Senator Bingaman supports issues wholesale electric competition and is very interested in Renewable Portfolio Standards.
- **Current Issues with Potential Impact on Our Industry**
  - New Rules on Lobbying
  - Renewable Portfolio Standards
  - Tax Issues

Regulatory/ Legislative Update - WIRES

- ITC*Transmission* is leading a group of the nation's leading electric companies in forming a national non-profit trade organization, Working Group for Investment in Reliable and Economic Electric Systems ("WIRES").
- WIRES' members are ITC*Transmission*, National Grid, Trans-Elect Inc., TXU Electric Delivery, and the electric utilities, cooperatives, and municipal utilities comprising the CapX 2020 consortium in the upper Midwest.
- WIRES' mission is to make strengthening the high-voltage transmission network a priority for the industry, investors, and policymakers.

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ITC Transmission

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Transmission Investments for Michigan's Future

Richard A. Schultz
Senior VP Planning

Agenda

- The Laws of Physics
- The Basics and Evolution of the Transmission System
- Michigan's Current Reliability Situation
- Transmission's Role: Current and Future
- Conclusions

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What is Reliability?

- **Voltage is as close to 100% of nominal, both instantaneously, and continuously.**
  - —Any deviations return to nominal as quickly as possible
- **Frequency is 60 Hz**
  - —Any deviations from 60 Hz are restored as quickly as possible

The interconnected grid functions as one giant, complex machine, to make this so.

- **The transmission system is redundant, made up of many individual transmission lines that are available 99.99% so that the system is always "up"**
  - —When a transmission line is outaged, all other parallel lines pick up the slack instantaneously and energy delivery is maintained at nominal voltage
  - —When a generator (typical FOR=5%) falls offline, the entire Interconnection acts in concert instantaneously to maintain frequency very close to 60 Hz.
    - Operators and automatic systems gradually restore the missing energy to bring frequency back to 60 Hz

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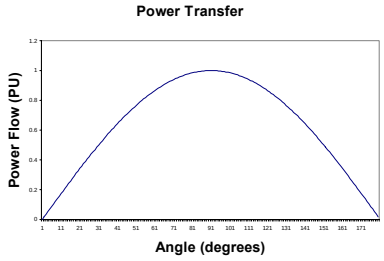
Unavoidable Physics Principles

$$P = V_1 \bullet V_2 \bullet \sin \delta / X$$

Where *the real power that can flow through a line* is approximately equal to the product of the voltages at the ends of a line times the sine of the angle between the ends of the line, divided by the reactance of the line. X is proportional to the length of a line. X is effectively inversely proportional to the square of the transmission voltage.

The grid is "self healing" up to about 30 degrees; operating transmission systems at the top of the curve is disastrous.



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Unavoidable Physics Principles

$$L_q = I^2 X$$

- Without reactive power, voltage drops and power transmission stops as capacity effectively disappears
- Gas pipeline analogy breaks down
- Displacement as a concept fails
- *Where the r*eactive losses are a product of the square of the current flowing through the line times the reactance of the line

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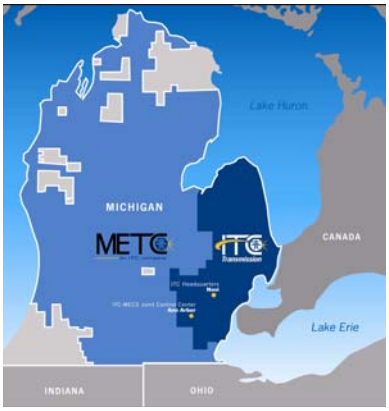
Who We Are

Service Territory Map



- ITC Holdings Corp. ("ITC"), through its two operating subsidiaries, International Transmission Company ("ITC*Transmission*") and Michigan Electric Transmission Company, LLC ("METC"), operates fully-regulated, high-voltage transmission systems covering most of Michigan's lower peninsula.
- A peninsular system but subject to substantial parallel flows to and from Canada
- Totally focused on transmission of electricity in the U.S.

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The Role of the Transmission System Has Changed Greatly

Pre 1920 (DECo load – 5 to 219 MW)

- There was no distinction between transmission and distribution.
- Power was delivered by low voltage direct current (DC) lines over very short distances
- Power plants were not interconnected.

1920s to late 1930s (DECo load – 527 to 830 MW)

- Power plants became larger.
- Alternating current (AC) power was delivered to customers over higher voltage lines.
- Utilities began to connect power plants together to reduce the impact of outages for reliability purposes and take advantage of load diversity to reduce costs.
- DECo began construction of the 120 kV transmission system that ultimately overlaid the lower voltage 24 kV and 40 kV systems.
- Lower voltage systems become substantially "local" in nature.

1940s and 1950s (DECo load – 850 to 1603 MW)

- New technology allowed for larger plants, located farther from the load they served.

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The Evolving Role of the High-Voltage Grid

1960s (DECo load – 2741 MW)

- Utilities began building large and very efficient baseload and nuclear plants, remote from population centers, and further relying on transmission to deliver to the load centers
- Detroit Edison and Consumers Power began coordinating generation construction and transmission planning and operation.
- 345 kV was selected as the transmission voltage to overlay the CPCo 138 kV and DECo 120 kV systems, and the Michigan 345 kV grid was constructed as a joint effort to allow for coordination operations.
- The higher transmission voltage levels permitted electricity transport over longer distances.
  - AEP constructed its interstate 765 kV system to interconnect its operations in multiple states. 765 kV was ultimately extended into Michigan at DC Cook Plant.
- Michigan utilities built interconnections to reduce generation reserves, reducing overall costs while providing for economic energy exchanges between companies. Michigan connected to AEP and NIPSCo in the west and to Toledo Edison in the east, fully integrating with the Eastern Interconnection.
- Michigan companies began consideration of the next higher voltage level overlay to maintain reliability and enhance economics

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The Evolving Role of the High-Voltage Grid

1960s – The Reliability Wake Up Call

- The 1965 NY blackout and the 1967 PJM blackout dramatically illustrated the need to consider risks to reliability when transporting power without sufficient transmission infrastructure and/or proper operating guidelines.
- NPCC was the first regional council to form to address reliability issues in NY and Ontario
- ECAR was formed in 1967 to address reliability issues in the Midwest, including Michigan
- NERC was formed in 1968 to promote reliability and provide planning and operating rules to ensure reliable operation over the entire continental US and Canada.
- Another NY blackout in 1977 reinforced the point.

The Evolving Role of the High-Voltage Grid

1970s (DECo load – 5465 MW)

- Detroit Edison and Consumers Power operated the Michigan electrical bulk power grid and generation fleet from the MEPCC in Ann Arbor and continued to coordinate generation construction and transmission planning.
- The Michigan Pool operated like an RTO with total economic dispatch of generation without regard to ownership, and without congestion because the grid was designed with capacity to function in that fashion.
- Substantial economies were obtained with the Ludington Pumped Storage plant that could access cheap off peak generation from companies such as Comm Ed. Comm Ed in turn leased 1/3 of the Ludington plant for it's own internal use. The grid provided the transport medium.
- EHV Grid capacity on the DECo side was robust and with some margin for growth. The longer lines inherent to Consumers footprint left less margin for future use, and some stability issues were addressed.
- The key was a robust transmission grid with appropriate capacity.
- Michigan utilities in 1972 determined that the most effective and economic transmission voltage overlay within Michigan should be 765 kV, which would function as a electricity "superhighway" due to its enormous reserve capacity and ability to safely transport energy over much greater distances.

The Evolving Role of the High-Voltage Grid

Early 1970s to 1990s

- Detroit Edison and Consumers Power jointly dispatched generation using the transmission system as a common carrier.
- In addition to improving reliability with reserve sharing over the transmission grid, utilities began to use interconnections to trade economic energy with other utilities.
- A wholesale competitive market began to develop allowing utilities to import and export large amounts of power.
- Independent Power Producers ("IPP") and cogenerators were constructed and connected to the grid.
- Investment in transmission infrastructure ended, notwithstanding continued load growth and rapidly increase use of the grid by many parties, eroding the reliability margin.
  - In the late 1970s, 765-kV construction was used for the Greenwood Energy Center transmission circuit, although the circuit has operated at 345-kV pending further grid development. An additional 345 kV tower was constructed to accommodate Belle River power plant.
  - Michigan companies made major reductions in their generation expansion plans in the late 1970s and 1980s and focused on completing generating plant construction in progress.
  - As a result, transmission expansion was placed on indefinite hold, notwithstanding continued load growth and far greater use of the system by many parties.
- **The next wake up call occurred on 8/14/2003.**

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Michigan's Current Reliability Situation

- **The Michigan Capacity Needs Forum ("CNF") revealed some stark conclusions.**
  - By 2009, growing demand will cause existing electric generation and transmission capacity to be insufficient to maintain reliability standards in the Lower Peninsula.
    - Models predicted a loss of load expectation 323 times higher than the industry standard in the ITC*Transmission* zone, assuming no infrastructure improvements were made to the base case (normal load growth).
  - CNF modeling confirmed that transmission available to serve Michigan customers is affected by non-Michigan flows over the ITC*Transmission* and METC systems.
    - Power flows over the Michigan system by transmission users outside of Michigan tend to reduce transmission capability available to Michigan customers on a nearly one-to-one basis.
- **The lower load forecast produced for the 21st Century Energy Plan ("CEP") provided more time to consider the need for new plants. However, the Midwest ISO study confirmed a transmission reliability problem now.**
  - We have already experienced loads that are higher than what we predicted for years 2009-2010 in the latest load forecast.

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Transmission Reliability Deficiencies

- **Major reliability problems associated with a lack of transmission include:**
  - Capacity across the State. This is illustrated in part by:
    - Blackout of 2003.
    - Problems getting power from IPPs in Western Michigan into ITC*Transmission* footprint.
  - Capacity into and out of the State
    - Many impacts due to others' use of our system.
    - Ontario is frequently a net buyer, not net seller.
- **METC's system has a number of serious deficiencies, notably in their northern 345kV loop, Saginaw Valley area, and Ludington. Ludington must be delivered to both CE and DE, and the system must have access to low cost resources to "pump the pond".**

Any significant generation added within the state cannot be delivered without major reinforcement of the grid.

- **The MISO study analyzed two alternate partial remediation proposals**
  - Cross state DC line
  - Cross state 765 kV line
- **Both were effective in resolving the most egregious reliability issues, but failed to address all of the problems.**
  - Both exhibited quantifiable economic benefits that offset much of the anticipated costs

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Addressing the Transmission Deficiency – 765kV

- **In analyzing all possible solutions for import capability, west to east transfer capability, METC's regional problems, and future growth and capacity needs, ITC*Transmission* has analyzed a complete 765kV loop, as was initially contemplated by Michigan (Detroit Edison and Consumers Power) in the 1970's. This implements the next high voltage "overlay" begun in the 1970's and relieves the existing system.**
- **This is a far more robust solution that addresses just about any future scenario.**
  - A 765-kV overlay in Michigan provides a significant capacity expansion. Integration with AEP's 765 kV avoiding a need for excessive new line redundancy, minimizing cost and maximizing benefits. The grid becomes "self healing" with the capacity margin needed for reliability.
- **The value in the 765kV loop, besides unparalleled reliability, is the flexibility allowed as Michigan addresses future energy needs.** Michigan is no longer an electrical peninsula.
  - Reliability – The 765kV AEP system did not go down during the 2003 Blackout.
  - Access to regional markets, both to and from Michigan..
    - Congestion prevents consumers from accessing the lowest-cost generation, and this eliminates bottlenecks
  - Access to remote generation sites (such as wind, hydro, biomass etc.).
    - Without new transmission, consumers cannot access new generation capacity, including renewables.
  - Whatever generation decisions are made in Michigan will require substantial transmission upgrades. This approach allows many more siting options for any baseload generation, due to the vast improvement in energy deliverability.
- **Permits the state and utilities to continue to depend on the Interconnection for a substantial portion of generation reserves rather than install and operate otherwise unneeded reserve generation.**

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Addressing the Transmission Deficiency– 765kV

- **A 765kV loop greatly enhances the reliability of the state and the region, thereby securing the state's energy future.**
  - This is comparable to constructing an interstate highway system to carry heavy interstate traffic, unloading local systems and releasing capacity for local use.
    - Project would provide roughly 5 times the capacity of a 345kV circuit but ¼ the rights of way.
    - A 765kV upgrade provides great benefits to the State.
      - Improved inter-regional capability of 765kV would allow greater access to regional markets in both directions.
      - Transmitting power from mine-mouth coal plants could reduce inefficient and wasteful railway/highway congestion by eliminating the need for railroad coal deliveries to facilities in the State as well as displacing the need to run less efficient generation.
    - Eastern North America's probability of a wide area outage (such as the one experienced in August of 2003) are virtually eliminated with such a project.
    - This project would result in roughly 300 MW in reduced losses at peak. This could be viewed as the ultimate in "green" power because it is 300 additional MW with no incremental carbon emissions or nuclear waste.
    - A solid energy infrastructure will send a signal that Michigan is serious about economic development and will attract and retain industry, create jobs and help ensure Michigan's future.

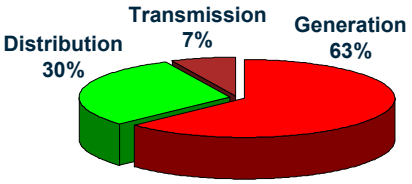
Addressing the Transmission Deficiency– 765kV

- **The flexibility afforded by this type of upgrade is one of the most prominent benefits.**
  - An AC 765-kV system can be tapped at strategic locations within Michigan, Indiana, and Ohio, providing "off-ramps" to enhance local reliability as well as "on-ramps" to accommodate new generation.
  - This provides significant improvements in regional and interregional transfer capability by moving power up onto the interstate superhighway (the I-765) and off the lower voltage local transmission.
- **Portions of right-of-way sufficient to accommodate 765-kV transmission were acquired within the ITC and METC footprints in the past.**
  - Furthermore because fewer circuits are needed to transport the same capacity, fewer rights-of-way will be required.
- **This 765-kV expansion project provides the comprehensive transmission reinforcement necessary for Michigan over the next 20 to 30 years.**
  - Addresses the need for transmission upgrades in the southeastern region of Michigan, and also provides a platform for further reinforcement of transmission in the northern region of the Lower Peninsula, the Upper Peninsula and for increasing Michigan-Ontario interface capacity.

Transmission's Contribution to Energy Cost and Impact on Reliability

- **Transmission is only a small component of total delivered energy cost; yet, the reliability and economic benefits are considerable.**
- **Value of Robust Transmission**
  - **Enables and Ensures Reliability**
    - Sufficient capacity to serve load
    - More robust system better able to withstand Aug 14th type events initiated by others
    - Less reliant on "perfect" operators and reliability rules
    - Provides a hedge against unanticipated events
  - **Reduces Energy Costs**
    - Losses savings
    - Reduced congestion
    - Keeps the "pie" from getting bigger

Industry Average Breakdown of End Use Customer Electricity Bill



Source: EIA Annual Energy Outlook 2003

The money spent on transmission can be "leveraged" in the sense that increased capacity can allow substantial net savings by reducing the price paid to generation.

Conclusions

- **The 765kV loop project represents a decisive step towards stabilizing Michigan's electricity future over the longer term.**
  - Highest commercially available electrical power carrying capability.
  - Minimal right-of-way versus lower voltage lines for the same level of electric power carrying capacity.
  - Maximum economies of scale for the required capacity and minimum long term costs.
  - Enhanced regional reliability and security, promoting a "self-healing" grid.
  - Easy interconnectivity with lower voltage systems.
  - Existing experience and expertise that will expedite implementation.
  - Comparable or lower cost than alternatives.
  - Leverages the existing 765-kV transmission infrastructure to facilitate future expansion.
  - Provides additional capacity for future needs, minimizing need for future rights-of-way.
- Permits a robust, wholesale competitive market to flourish.
- Underinvestment in transmission has led to congestion, constraints, and lower reliability.
  - Higher cost power is generated and dispatched to avoid the constrained area.
  - Transmission system operates at limit during times of peak load.
  - Reliability is compromised as the system operates with no contingencies, or "spare tire".
- Restoring robust backbone transmission system is the key to security and reliability
  - This is due to the "self-healing" nature of the interconnected and integrated grid.
  - The missing energy due to the sudden outage of a generating unit in Michigan is immediately supplied by the entire Eastern Interconnection via the transmission system, without any human action whatsoever.
  - Similarly, the power flowing on a transmission line connected to Michigan is immediately and automatically redistributed to other parallel transmission lines, again without any human action.
  - In both cases, sufficient transmission capacity accommodates the resultant power flows and power flow changes; only a robust transmission system can automatically respond in real time.

Partners in Business Meeting Wrap-up

- **Feedback – fill out survey – get a prize!**
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