



Fall 2008
Partners In Business
November 11, 2008

Agenda



- ◆ Introduction
Jeff Dorr, Manager Stakeholder Relations
- ◆ Regulatory Update
Purvi Patel, Regulatory Affairs Analyst
- ◆ Legislative Update
Francie Brown, Director State Governmental Affairs
- ◆ Load Forecast
Henry Schwab, Manager
Mike Taylor, Senior Economic Analyst
- ◆ ITC *Transmission* &
METC 2008 Capital
Project Review
Ruth Kloecker, Manager Sys. & Interconnection Planning
- ◆ Lunch
- ◆ 10 Year Plan
Carlo Capra, Long Term Planning Principle Engineer
- ◆ MISO Queue Reform
Eric Lavery, Sr. Manager Transmission Access Planning
- ◆ Closing Remarks
Jeff Dorr, Manager Stakeholder Relations

Regulatory Update
Purvi Patel
ITC Senior Regulatory Analyst

Regulatory Update



- The Federal Energy Regulatory Commission (FERC) rejected American Transmission Company LLC's ("ATC") proposed Appendix I Agreement. FERC rejected the Appendix I agreement because the Commission requires that an entity assuming RTO functions must meet the independence requirements of Order No. 2000, which ATC, by its own admission, fails to meet (ER08-1146).
- FERC issues final rule revising its principal financial reporting forms for electric utilities and hydroelectric licensees (RM08-5).
- The MISO and PJM Transmission Owners filed a motion requesting that the Commission expeditiously act on three matters that have been pending before the Commission in the Seams Elimination Charge/Cost Adjustment/Assignment (SECA) case (EL02-111).
 - Pending settlements
 - Two initial decisions by ALJs
 - Green Mountain
- The MISO Transmission Owners filed a motion to defer action on the revised formulas for calculating certain point-to-point transmission service charges to reflect the Capacity Benefit Margin ("CBM") set-aside (OA08-4).

Regulatory Update



- The Government Accountability Office issued a report on the benefits and costs of Regional Transmission Organizations.
- MISO made revisions to Schedules 7, 8, and 9 of their tariff to clarify the existing methodology for calculating rates in Joint Zones (ER08-1556).
- The MISO TOs and MISO filed revisions to Attachment O and Attachment GG of their tariff (ER09-91).
- FERC approved Southwest Power Pool's (SPP) proposal for a balanced portfolio of economic transmission upgrades and a postage-stamp rate design (ER08-1419).
- FERC issued its final rule regarding the improvement of organized wholesale electric power markets (RM07-19).
- FERC scheduled a technical conference (Nov 12) to discuss the issues of Module F (Western Markets Proposal) (ER08-637).

Questions and Discussion

Legislative Update
Francie Brown
ITC Director of State Governmental Affairs

Michigan Comprehensive Energy Legislation



- ◆ MPSC has opened over 80 dockets to implement PA 286 (HB 5524) and PA 295 (SB 213); requested comments from interested parties.
 - PA 286 (BH 5524) – amended PA 3 and PA 141
 - PA 295 (SB 213) – “The Clean, Renewable and Efficient Energy Act”
 - PA 287 (SB 1048) – tax credits
- ◆ Signed by Governor Granholm on October 6, 2008
- ◆ Represents major changes in Michigan’s approach to electric utility regulation and resource development
- ◆ Major focus - job creation aspects of new energy policy

Public Act 286 – Major Provisions



- ◆ Amended rate case timeline provisions
- ◆ Modifies electric choice; mandates electric deskewing
- ◆ Creates Certificate of Need (CON) and Integrated Resource Plan (IRP) mechanisms for major utility generation investments
- ◆ Requires MPSC approval of utility mergers and acquisitions
- ◆ Directs MPSC studies and reports:
 - Service quality improvements
 - Load management
 - Functional separation of generation and distribution
 - Purchasing pool for electric generation

Public Act 295 – Major Provisions



- ◆ Establishes state's renewable portfolio standards (RPS) for all retail electric providers in Michigan to diversify generation sources.
- ◆ Establishes energy optimization requirements for retail electric providers to increase energy efficiency.
- ◆ Requires net metering to enable development of distributed generation.
- ◆ Creates wind energy resource zones to facilitate rapid development of wind generation in Michigan.
- ◆ Requires State of Michigan to reduce energy purchases by 5% by 2015.

Energy Legislation Implementation



- ◆ MPSC has initiated a number of proceedings to solicit public comments on how to implement various provisions of PA 286 and PA 295.
- ◆ Many electric suppliers filings will be forthcoming:
 - RPS and EO plans
 - CPN and IRP
- ◆ Orders implementing PA 286 (HB 5524) and PA 295 (SB 213):
 - Order U-15895 deals with rate filing forms, power quality disturbances, and information gathering; PA 286 requirement to establish standard rate application filing forms and instructions for general rate cases; creates benchmarks for jurisdictional entities within their rate-making process to alleviate end-use customer power quality disturbances and promote power plant generating cost efficiency. Comments due by November 17, 2008

Regulatory Update – the specifics



- Order U-15897 implements PA 286 requirements for return to service provisions for AES customers; return to service procedures. Comments due November 19, 2008.
- Order U-15898 mandated by PA 295 to allow comments on the analysis and content of the MPSC report on decoupling. Comments due March 13, 2009.
- Order U-15801 establishes procedures pursuant to PA 286 on allocation of amount of load served by AES. Comments due November 14, 2008.
- Order U-15803 implements requirements from PA 295 for a statewide net metering program no later than 180 days from the date of the Act. *Comments were due November 3, 2008.*

Regulatory Update (continued)



- Orders U-15804 through U-15812 begin implementation of PA 286 and PA 295 for Michigan's investor-owned utilities; limits no more than 10% of the average weather adjusted retails sales for the proceeding calendar year from an AES at any time; allows utilities to consolidate dockets dealing with the 10% issue; indicate intent by November 19, 2008.
- Orders U-15848 - U-15888 pertain to Michigan municipal utilities and implementation of PA 295.
- Orders U-15813 - U-15822 pertain to Michigan Cooperative utilities and implementation of PA 295.
- Orders U-15823 – U-15847 pertain to Michigan's AES' and implementation of PA 295.

Wind Energy Resource Zones



- ◆ Purpose of Language
 - Identify optimal areas in the state for wind.
 - Define the wind potential within identified zones.
 - Identify the transmission necessary to facilitate the wind potential.
 - Provides expedited transmission siting for interconnecting wind.
- ◆ Benefits of Language
 - Avoids the “chicken and egg” problem with the MISO queue.
 - Should significantly reduce the wait time of the MISO queue as transmission gets planned for the zone, not on a project by project or “piecemeal” basis.
 - Most efficient and effective transmission will get built in the zone.
 - Because this is a state policy, it should facilitate both the transmission planning and queue process at MISO.
 - Approximately 3,000 MW of wind in the queue for Michigan

Michigan's Changing Electricity Resource Portfolio - Implications



- ◆ New “clean/green” energy resources are encouraged:
 - Large scale renewable generation (RPS)
 - Energy efficiency and load management technologies (EO)
 - Distributed customer-owned generation (net metering)
- ◆ Clean energy resources provide significant job creation potential.
- ◆ However, clean energy resources have to be planned for
 - inherently non-firm, intermittent and variable generation and/or loads which impact bulk power system reliability, planning and operation
- ◆ Robust transmission grid is crucial as Michigan and the country rely more on clean energy resources to meet future energy needs.

Transmission Planning Consortium



- ◆ MPSC Planning Consortium presents an opportunity to further discuss the MISO transmission planning process in a Michigan-specific setting.
- ◆ MPSC opened docket No. U-15590 on July 9, 2008
 - Evaluate transmission needs for Michigan.
 - 1 year Consortium process began on August 26, 2008; report due July 2009 on the consortium's efficacy in impacting electricity infrastructure.
 - Three work groups: Information Sharing and Assumptions, 765 kV Line, Renewable and other Generation Integration
- ◆ MPSC has opened over 80 dockets to implement PA 286 (HB 5524) and PA 295 (SB 213); requested comments from interested parties.
- ◆ MPSC issued a notice for interested individuals to serve on the Wind Energy Resource Zone Board
 - Resumes and supporting information due November 7, 2008.

Changes in Political Landscape



- ◆ Overview
 - Michigan House - Democrats pick up 9 seats; 67-43
 - Congress - Democrats pick up 2 seats; 8-7
 - Chief Justice of the Michigan Supreme Court
- ◆ State House
 - Speaker Dillon survives a recall and is re-elected same day
 - Neither Democrats or Republicans lost an incumbent
- ◆ Washington Delegation
 - U.S. Senator Carl Levin wins 5th term in Washington with 67%
 - Congressmen Knollenberg and Walberg defeated; Special election for Schauer seat
- ◆ Michigan Supreme Court
 - Chief Justice defeated changing the court from 5-2 to 4-3 margin.

Questions and Discussion

2009 ITC/METC Forecasts For Attachment O

Henry Schwab, ITC Manager Forecast

Model structure share similarities but have differences



Both ITC and METC models are short term

Both ITC and METC models incorporate:

- ◆ Weather factors
- ◆ Calendar terms
- ◆ Economic terms

Model structures differ

- ◆ ITC models are separate monthly models
- ◆ METC model is an annual model

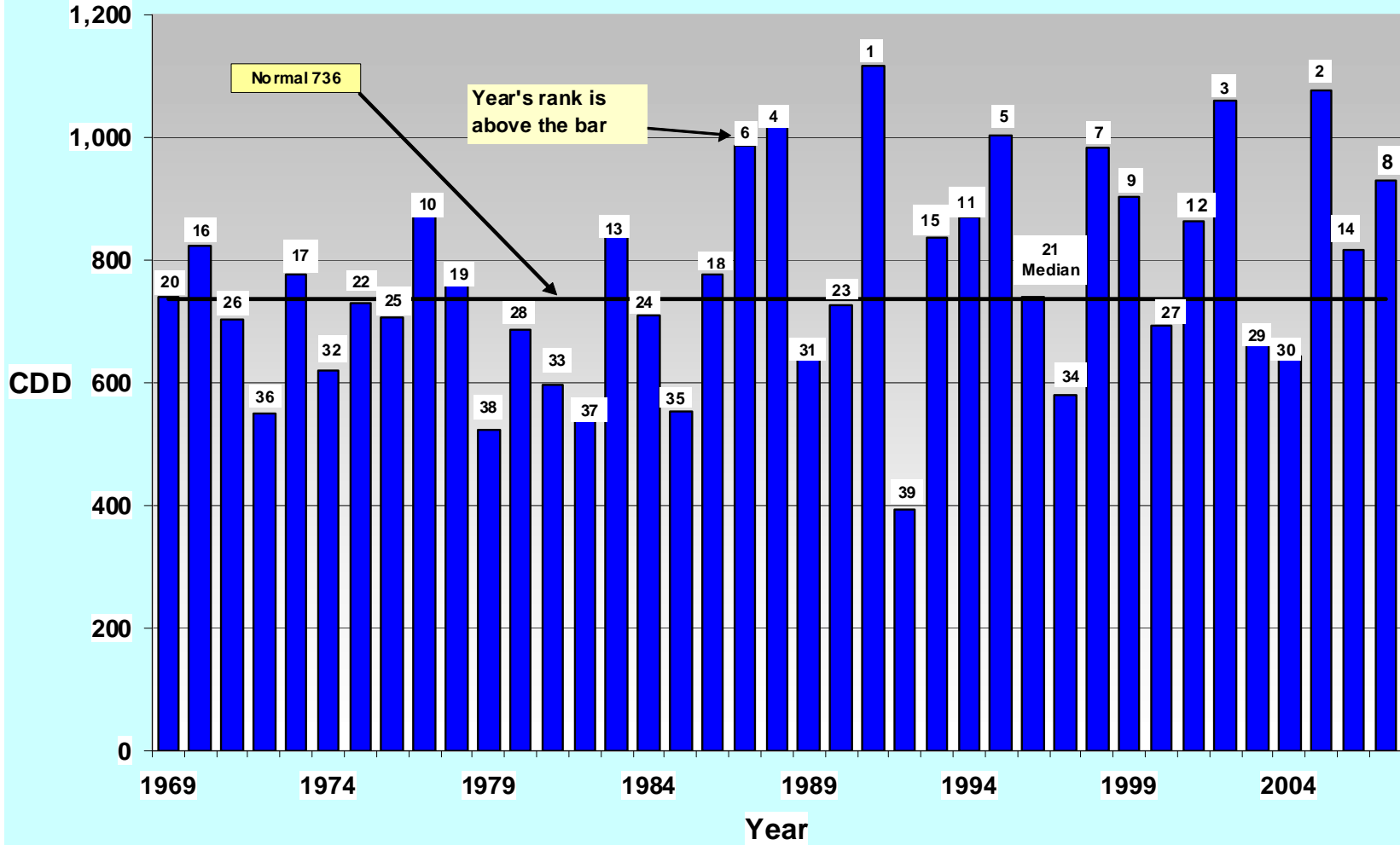
Short Term Models Tend To Respond More To Weather



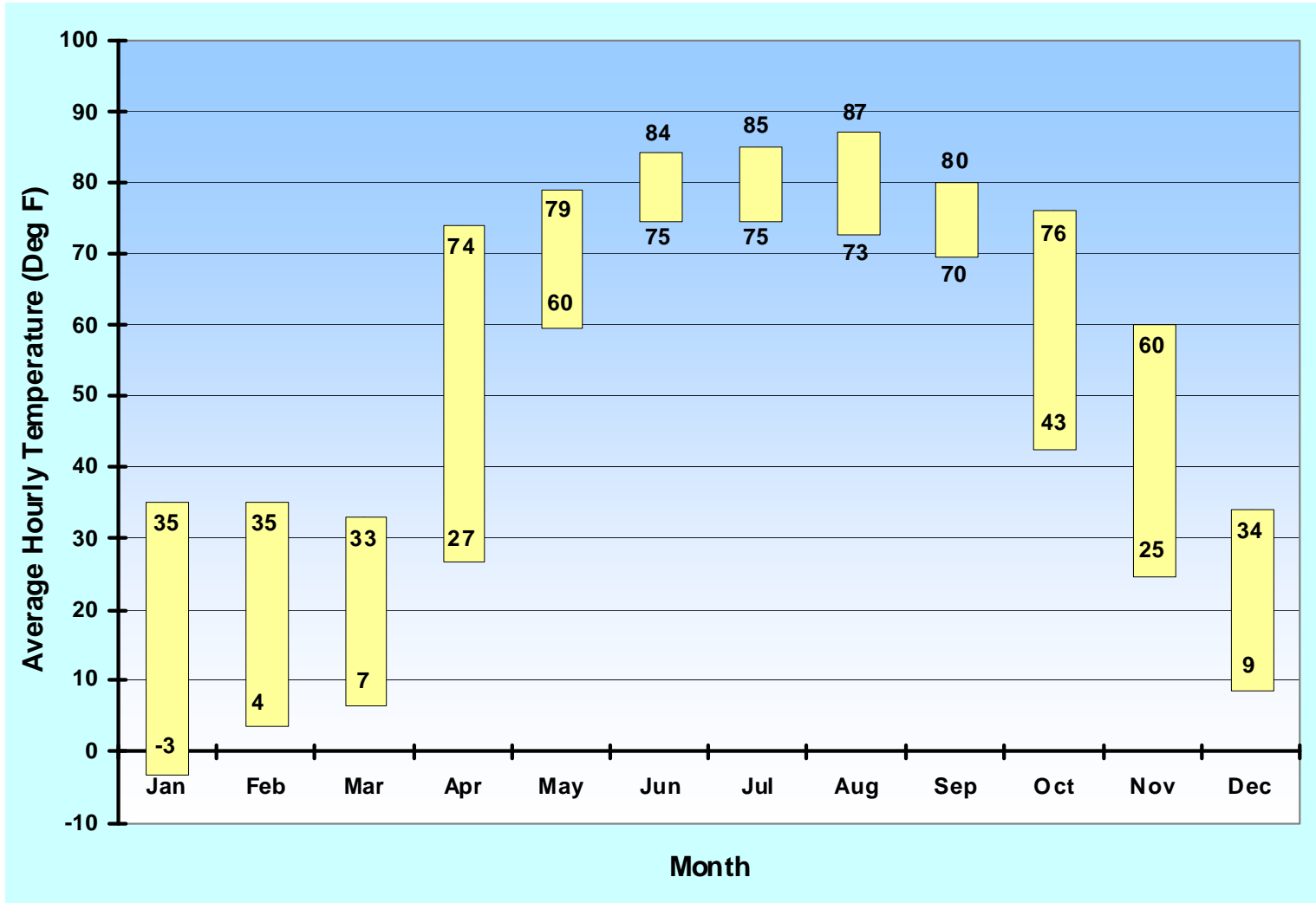
Other variables, e.g., economics, don't vary much from year to year

Weather, however, can vary far more in relative terms

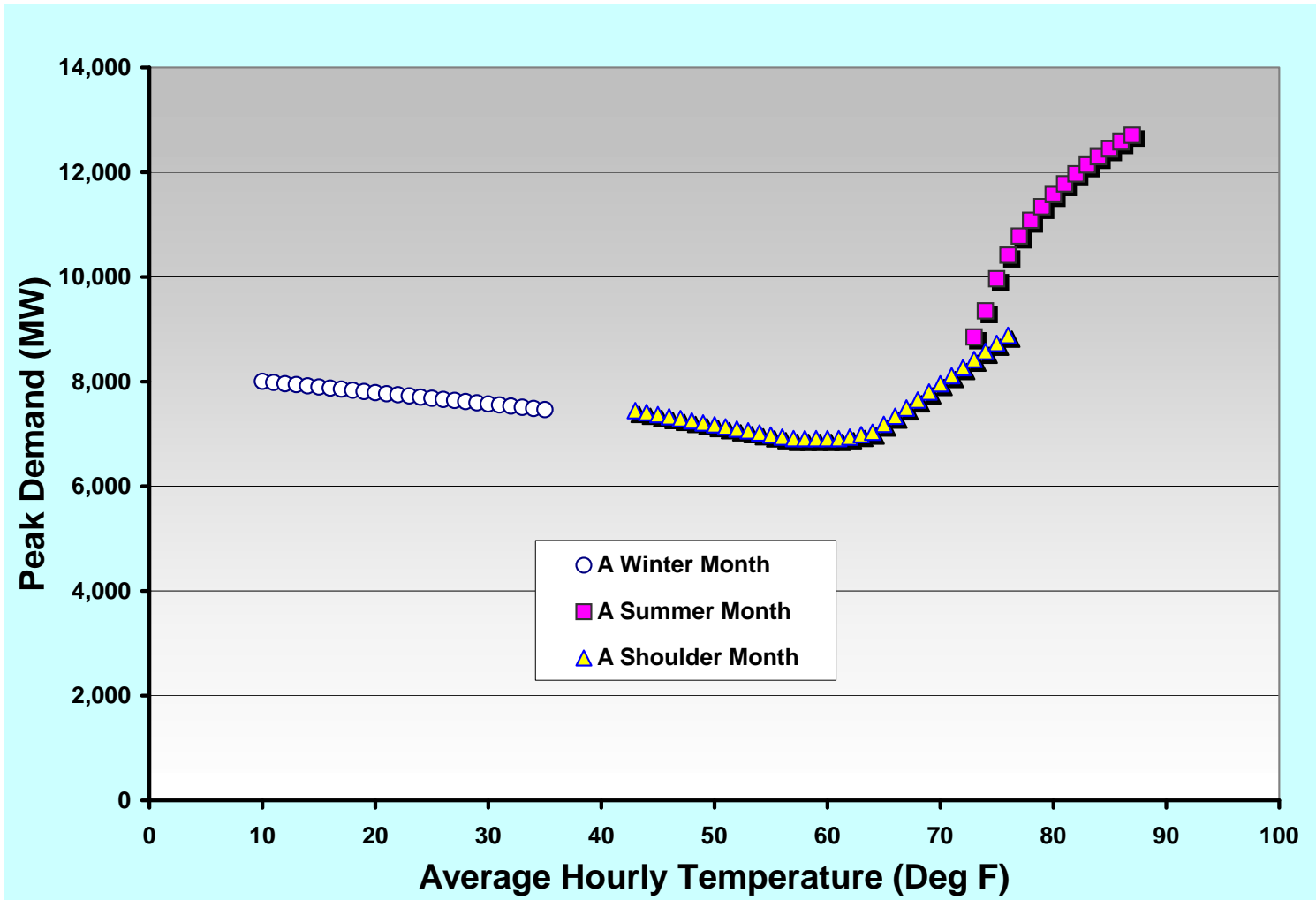
Detroit Metro Airport 1969-2007 Cooling Degree Days (CDD) 65°F Base



Range Of Average Hourly Temperature On Days Of ITC Monthly Peaks, 1995-2007



Some Typical Temperature Effects On Peak Demand



The July model is a good example as it contains all elements



Peak MW is a function of

Intercept +

ITC Area Real Personal Income +

Log of Cooling Degree Days, 65⁰F Base +

Log of Cooling Degree Days, 65⁰F Base of previous day +

Day Of Month

- ***Real personal income is for the 11 county ITC service area***
- ***Day of month is actual day of month***
 - Peak demand in July depends on WHEN it occurs within the month, all other things being equal

2009 ITC Billing Demand Forecast



ITC 2009 Forecast			
Month	Max MW	Wyandotte	Billing MW
Jan	7,836	0	7,836
Feb	7,599	0	7,599
Mar	7,458	0	7,458
Apr	6,882	-19	6,863
May	7,443	-3	7,440
Jun	11,193	-11	11,182
Jul	11,439	-15	11,424
Aug	11,838	-16	11,822
Sep	10,293	-4	10,289
Oct	7,515	-2	7,513
Nov	7,842	-8	7,834
Dec	8,189	0	8,189
Annual	105,527	-78	105,449

- ◆ The adjustment for Wyandotte is minimal
- ◆ Total billing demand is slightly less than 105.5 MW

Comparison To The Detroit Edison Maximum Demand Forecast Is Reasonable



	ITC 2009 Forecast Max Mw	Detroit Edison Forecast U-15244U
Jan	7,836	8,231
Feb	7,599	8,026
Mar	7,458	7,802
Apr	6,882	7,212
May	7,443	9,178
Jun	11,193	11,267
Jul	11,439	12,403
Aug	11,838	11,740
Sep	10,293	10,894
Oct	7,515	7,774
Nov	7,842	8,008
Dec	8,189	8,490
Annual	105,527	111,025
% difference		5.2%
Max MW	11,838	12,403
% difference		4.8%

- ◆ Total demand for Detroit Edison is higher than the ITC forecast
- ◆ Detroit Edison' s peak estimate is higher
- ◆ The most recent Detroit Edison PSCR case peak demand forecast is 12,114 MW

The METC model differs from the ITC model



- ◆ **An annual model, i.e. all months are in one model**
- ◆ **Weather drivers start with a weighted weather calculation of hourly temperature**
- ◆ **Additional calendar variables**

The METC model is complex, more so than the ITC monthly models



Variable	Definition
RPI	Real Personal Income - counties served by METC
CDD65	Cooling degree days base 65 - avg hourly
CDD65_1	Cooling degree days base 65 lagged one day - avg hourly
HDD50	Heating degree days base 50 - avg hourly
June2006	June 2006 peakday was on a weekend (June 17)
Jan	January binary
Apr	April binary
Jun	June binary
Jul	July binary
Aug	August binary
Sep	September binary
Nov	November binary
Dec	December binary

- ◆ **Monthly binary variables are corrections to base use**
- ◆ **June 2006 binary variable needed as peak day was a Saturday**
- ◆ **Weather variables are not transformed**

2008 METC Billing Demand Forecast



METC 2009 Billing Demand

Month	Max MW	Billing MW
Jan	6,860	6,520
Feb	6,567	6,079
Mar	6,499	6,161
Apr	5,807	5,367
May	6,564	6,105
Jun	8,540	8,001
Jul	8,914	8,370
Aug	9,022	8,485
Sep	7,623	7,088
Oct	6,090	5,595
Nov	6,698	6,370
Dec	6,947	7,165
Annual	86,131	81,306

- ◆ Entitlements (not displayed) are expected to be over 6,000 MW
- ◆ Adjustments to Maximum MW includes new customer additions not included in forecasted maximum demand.

Comparison To Consumers Energy Forecast Is Reasonable



	METC 2009 Forecast Max MW	Consumers Energy Forecast U-15675 (Adjusted)
Jan	6,860	6,701
Feb	6,567	6,345
Mar	6,499	6,138
Apr	5,807	6,021
May	6,564	6,668
Jun	8,540	8,290
Jul	8,914	8,865
Aug	9,022	7,593
Sep	7,623	7,218
Oct	6,090	6,368
Nov	6,698	6,655
Dec	6,947	7,045
Annual	86,131	83,907
% difference		-2.6%
Max MW	9,022	8,865
% difference		-1.7%

Total demand is higher than the Consumers Energy estimate

Questions and Discussion

Modeling Load Forecast Uncertainty

Mike Taylor, ITC Senior Economic Analyst

Peak Forecasting Methodology



- ◆ ITC forecasts system peaks using the following method:
 - A sales forecast is derived using a model which has economic indicators and weather forecasts as predictors.
 - A system load factor is modeled to reflect a range of usage scenarios.
 - The following relationship is used to extract the system peak:

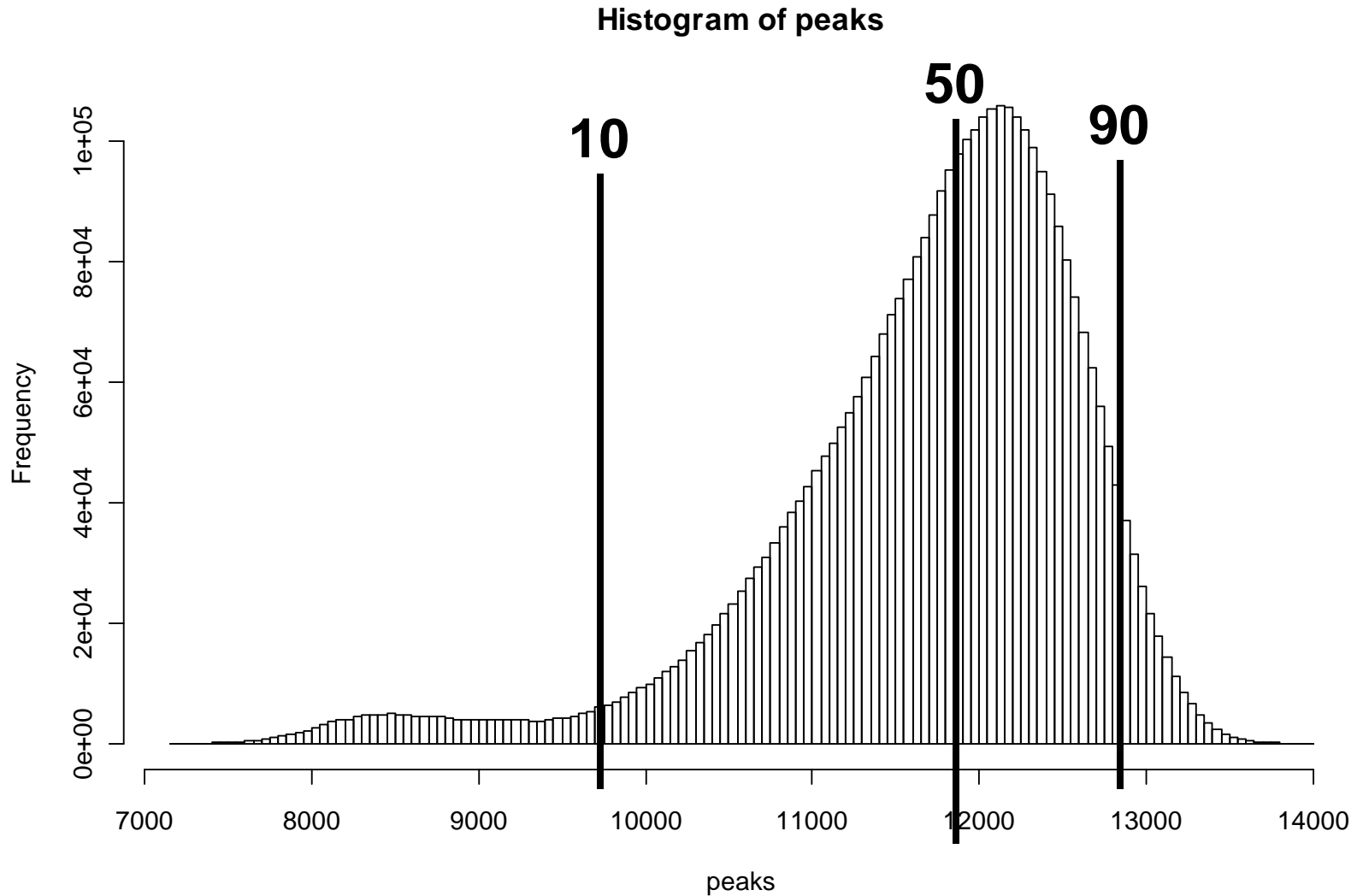
$$\textit{Peak Demand} = \textit{Average Demand} / \textit{Load Factor}$$

Modeling Forecast Variability



- ◆ ITC models different scenarios of peak forecast drivers:
 - Economics: Each scenario is taken from a multivariate distribution of economic indicators. These indicators are highly correlated, and this observed structure is preserved throughout all iterations of future scenarios.
 - Weather: A 15-year sample of Heating Degree days and Cooling Degree Days provides the basis for a range of different yearly weather scenarios.
 - Usage/Efficiency: The system load factor is modeled over a range of outcomes that represent different demand patterns.
- ◆ Many combinations of these scenarios are fed through the forecast model to produce a range of outcomes.

A Sample Year's Results



ITC Transmission and METC Forecasts



Year	ITC Transmission			Michigan Electric Transmission Company		
	Ninety	Fifty	Ten	Ninety	Fifty	Ten
2010	12,806	12,126	10,910	11,304	9,249	7,132
2011	12,996	12,284	11,033	11,472	9,385	7,232
2012	13,187	12,441	11,157	11,640	9,522	7,331
2013	13,379	12,599	11,281	11,809	9,658	7,430
2014	13,570	12,756	11,405	11,977	9,794	7,529
2015	13,761	12,914	11,529	12,146	9,930	7,629
2016	13,953	13,071	11,653	12,314	10,066	7,728
2017	14,143	13,229	11,776	12,482	10,202	7,827
2018	14,334	13,386	11,900	12,651	10,339	7,926
2019	14,526	13,544	12,025	12,819	10,475	8,026
2020	14,717	13,701	12,149	12,988	10,611	8,125
2021	14,908	13,859	12,272	13,156	10,747	8,224
2022	15,100	14,016	12,396	13,324	10,883	8,323
2023	15,291	14,174	12,520	13,493	11,019	8,422

Questions and Discussion

Planning Update
Ruth Kloecker
Manager, System and Interconnection
Planning

Agenda



ITC Near Term Study

MISO MTEP09

ITC Transmission Projects

METC Projects

ITC Near Term Study



Compliance Requirement

➤ ***2010 Study Year***

➤ ***2013 Study Year***

➤ ***Peak***

➤ ***80% Peak***

➤ ***Sensitivities:***

Ludington Generating and Pumping

Various Import Levels in and out of Canada

➤ ***Identify System Constraints – based on the ITC Planning Criteria which has its basis in ‘Good Utility Practice’ but now is based on mandatory NERC Planning Standards.***

MISO MTEP09



Cases MISO will be using to analyze the systems

- ***2 Year Out Model***

- Peak and Shoulder Peak

- ***5 year Out Model***

- Peak and Shoulder Peak

- ***10 Year Out Model***

- ***Light Load Model***

- ***MISO will also be setting up and studying sensitivity cases as appropriate for different study areas to evaluate projects for MTEP09.***

- ***Set Schedule this year for project review in SPM and Technical Task Force meetings for Michigan***

Where ITC is at



- ◆ **Planning – Has identified potential issues on the grid using the previous forecasts and identified potential proposals to solve the issues.**
- ◆ **Engineering – Has identified infrastructure issues with the system and programs to resolve these issues.**
- ◆ **A Multiple–Area Team – Has identified system issues in response to outages. Proposals have been identified and reviewed in response to these issues and projects recommended as appropriate.**
- ◆ **Proposed projects within the appropriate time horizon have been recommended to MISO for consideration to be moved to Appendix A in MTEP09.**



Distribution Connections

- ***East Ann Arbor***
- ***MacSteel – GOAB***
- ***Navarre***
- ***Oakwood***
- ***Scio***



Capacity/System Reinforcement

- ***Belle River – Greenwood – Pontiac***
- ***Hancock 230/120 kV Transformer***
- ***Bloomfield – Upgrade terminal equipment***

Infrastructure Improvement

- ***Genoa Latson 138 kV Line***
- ***Hunters Creek - Robin – Wabash 120 kV Line***
- ***Hunters Creek – Stratford – Pontiac 120 kV Line***



Infrastructure Improvement

- ***Anti-Galloping Program (2009)***
- ***Breaker Replacement Program***
- ***Cable Termination Replacement Program***
- ***Capacitor Bank Replacement Program***
- ***NERC Relay Loadability Compliance***
- ***Potential Device Replacement Program***
- ***Power Plant Controls Relocation Program***
- ***Relay Betterment Program***
- ***Synchronizing Sites***
- ***Wood Pole Replacement Program***



Distribution Connections

- ***Acme***
- ***Birchwood***
- ***Capital Ave***
- ***Chase***
- ***Cochran***
- ***Forest Grove***
- ***Haakwood***
- ***Harvard Lake***
- ***Hazelwood***
- ***Hawthorne***



Distribution Connections

- ***Hubbardston Road***
- ***Ironwood***
- ***LaBarge***
- ***Maines Road***
- ***Scenic Lake***
- ***Titus Lake***



Capacity/System Reinforcement

- ***Argenta – Palisades #1&2 345 kV Lines***
- ***Garfield – Hemphill 138 kV Line***
- ***McGulpin Shunt Reactor***
- ***Murphy – 345/138 kV Transformer***
- ***Northern Reactive Project***
- ***Sag Clearance 138 kV***
- ***Weeds Lake***



Capacity/System Reinforcement – Terminal Equipment Upgrades

- ***Battle Creek- Verona #2 138 kV Line***
- ***Bullock – Dow Corning 138 kV Line***
- ***Bullock – Summerton 138 kV Line***
- ***Bullock – Tittabawassee 138 kV Line***
- ***Bullock – Warren 138 kV Line***
- ***Keystone – Tippy 138 kV Line***
- ***North Belding – Vergennes 138 kV Line***
- ***Stronach – Tippy 138 kV Line***
- ***Tallmadge – Wealthy #1 138 kV Line***



Infrastructure Improvement

- ***Ausable 138 kV Line***
- ***Bullock - Edenville -Warren 138 kV Line***
- ***Delhi - Genoa - Oakland 138 kV Line***
- ***Delhi – Island 138 kV Line***
- ***Karn – losco 138 kV Line***



Infrastructure Improvement

- ***Battery Replacement Program***
- ***Breaker Replacement Program***
- ***Cable Termination Replacement Program***
- ***NERC Relay Loadability Compliance***
- ***Potential Device Replacement Program***
- ***Power Plant Controls Relocation Program***
- ***Relay Betterment Program***
- ***RTU/SCADA Re-direction***
- ***Synchronizing Sites***
- ***Transformer Monitoring***
- ***Wood Pole Replacement Program***

Next Steps



- ***The list of projects has been submitted to MISO***
- ***Project Justification documentation is due to MISO***
- ***GOAL for majority of information this Friday.***
- ***MISO will finalize their cases by mid-late December***
- ***ITC will review its projects against the new forecasts***
- ***ITC will furnish any missing information to MISO for project justifications***
- ***SPM Process will begin in mid-December.***

Questions and Discussion

Hungry ?
Time for Lunch
Please be back by 1:30 PM

Long Range Planning Update
Carlo Capra
Principal Engineer Long Range Planning

Agenda

Why Long Range Planning

2008 ITCT/METC Long Range Planning Study

Next Steps

Why Long Range Planning



Long Range Planning for the Midwest ISO MTEP Process

- ◆ ITC's long range plan will be primary vehicle for proposing projects for appendix C or B
- ◆ Short range plan could also identify projects for appendix C or B

Open and transparent planning process

- ◆ Allow stakeholders time required to provide feedback on projects well before they move from appendix C or B into appendix A

Evolving process that will improve over time

- ◆ Both the MISO and ITC planning processes have been (and will continue to) evolving over time in order to develop a reliable and economic transmission system

Why Long Range Planning



6 years and beyond

- ◆ Identify long lead time projects
- ◆ Analyze probable changes in flow patterns from future generation or changes in MISO and/or neighboring market dispatches

Feeds into short range planning study

- ◆ Identifies possible longer term “problem areas”
- ◆ Helps to determine scope for shorter term projects (avoid short sighted planning)

Feeds into longer term capital forecast¹

Required for NERC compliance

¹ Long term capital forecasts are subject to significant changes as load and generation patterns change over time.

2008 ITC/METC Long Range Planning Study



This study is NOT intended to:

- ◆ Present solutions to all possible conditions that could lead to planning criteria violations
- ◆ Identify system issues on the lower voltage sub-transmission or distribution systems
- ◆ Identify system issues on other neighboring systems
- ◆ Represent that any “engineering” feasibility has been determined for any proposed projects
- ◆ Serve as an interconnection study for any specific future generator or groups of generators
- ◆ Provide generation developers aid in siting future generation



Three studies were undertaken for the 2008 Long Range Study

- ◆ Base system analysis
- ◆ Impacts of 765 kV overlay project
- ◆ Future generation²

Primarily DC thermal analysis

- ◆ AC thermal and voltage analysis on the “final” plan

2 Future generation study was done in coordination with the Michigan Wind Energy Transmission Study (MI-WETS) headed by the MPSC and focused on wind interconnections.

Base System Analysis



Focused on serving existing and future load with existing generation

Determine “base plan” assuming limited generation expansion in Michigan

Included transfers into, out of, and through the ITCT and METC systems

- ◆ Importing power into the ITCT system
- ◆ Importing and exporting power to/from the METC system
- ◆ Moving power from/through Michigan into Canada and from Canada into/through Michigan

Michigan/Canada Interface Flows



Flows were modeled in both directions

- ◆ 1500 MW from/through Michigan into Canada
- ◆ 2000 MW into/through Michigan from Canada

For modeling purposes, total flow controlled and split between 4 interconnections

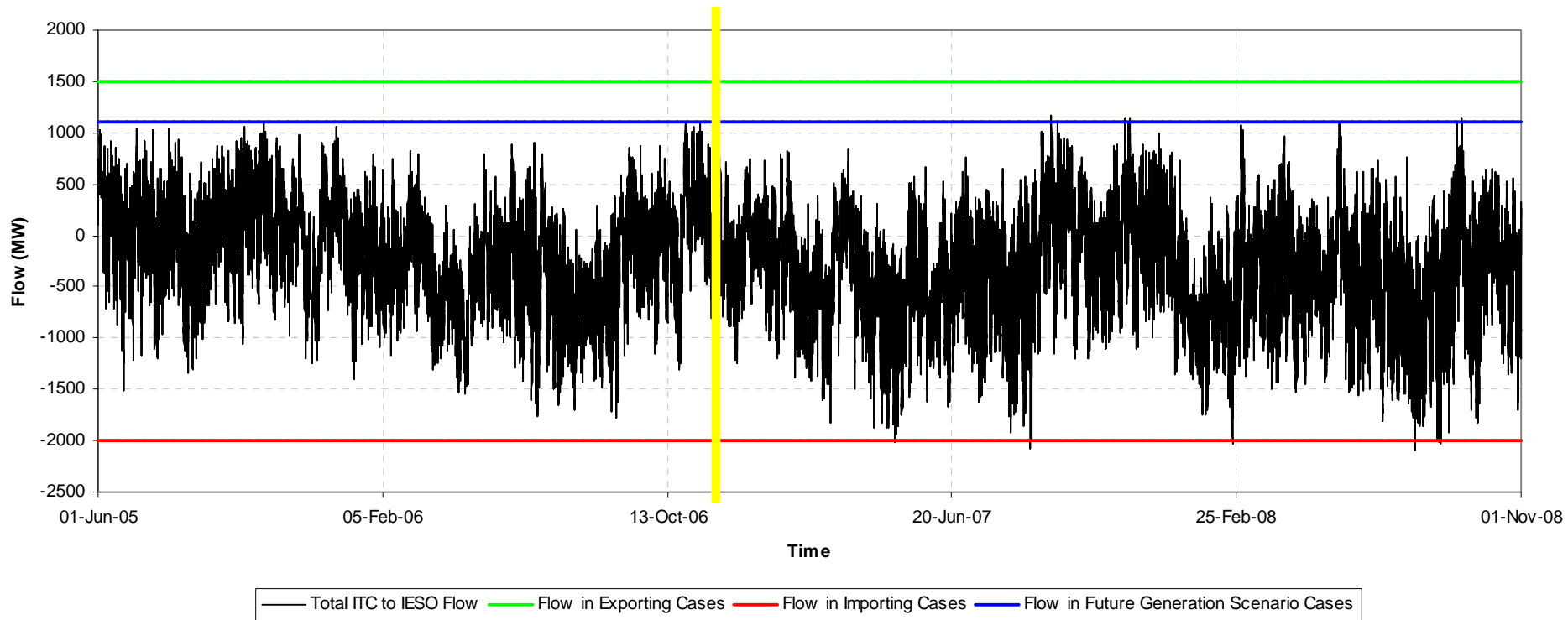
- ◆ 1/6 on northernmost interconnection
- ◆ 1/3 and 1/3 on two central interconnections
- ◆ 1/6 on southernmost interconnection



Michigan/Canada Interface Flows



ITC-IESO Interface
Flow vs. Time
6/1/2005 - 11/1/2008



Northernmost interconnection not in-service until 11/15/06

- ◆ Tie line now in-service w/o phase angle regulator (free flowing)
- ◆ Phase shifting transformer(s) expected to be in-service in 2010

Existing Generation Assumptions



Generation has been historically dispatched in merit order (based on an economic order lists³ for the ITCT and METC systems)

- ◆ Generation on ITCT system feeding load on ITCT system
- ◆ Generation on METC system feeding load on METC system
- ◆ Additional generation external to ITCT is required to serve all load within the ITCT footprint (typically units within the METC footprint utilized)

May consider a MECS or MISO wide economic dispatch for future studies

3 Generation in the ITCT and METC footprints was dispatched in economic merit order to the best of ITC's ability. ITC does not have a current merit order listing.

Other Key Assumptions



Total Combined ITCT and METC peak load (plus losses) of approximately 25,500 MW

- ◆ METC ~12,000
- ◆ ITCT ~ 13,500

Represented ITC forecast for approximately 2018 timeframe at the start of the study

- ◆ Corresponds with 2015-2016 timeframe from 21st Century Plan base forecast for combined ITCT and METC load)
- ◆ Forecasts have since been reduced (new forecasts will be used for 2009 studies)

765 kV Overlay



Attempting to identify possible lower voltage (345 kV, 138 kV and 120 kV) impacts of 765 kV project

Attempting to determine what impacts the overlay project will have on other future plans

Future Generation Analysis



Focused on serving existing and future load with existing and probable future generation

Amount and location for future generation sights were derived with input from the MI-WETS⁴

Michigan/Canada interface flows held constant at about 1100 MW into Canada

- ◆ As has been done historically in MISO studies

4 MI-WETS is a public coordinated effort lead by the MPSC staff with input from the Michigan utilities, independent transmission companies, generation developers, and other interested parties.

MI-WETS Overview



A preliminary, high-level scoping study, for information only

***NOT generation interconnection studies;
NOT transmission system plans***

Separate studies performed for UP and LP

Overall Goal: Model different possible scenarios for wind energy production in Michigan, to develop an overview and basic understanding of high level transmission system needs

Objective: Provide basic information policy makers can use to begin to understand the likely ramifications of future wind energy development

MI-WETS for Lower Peninsula



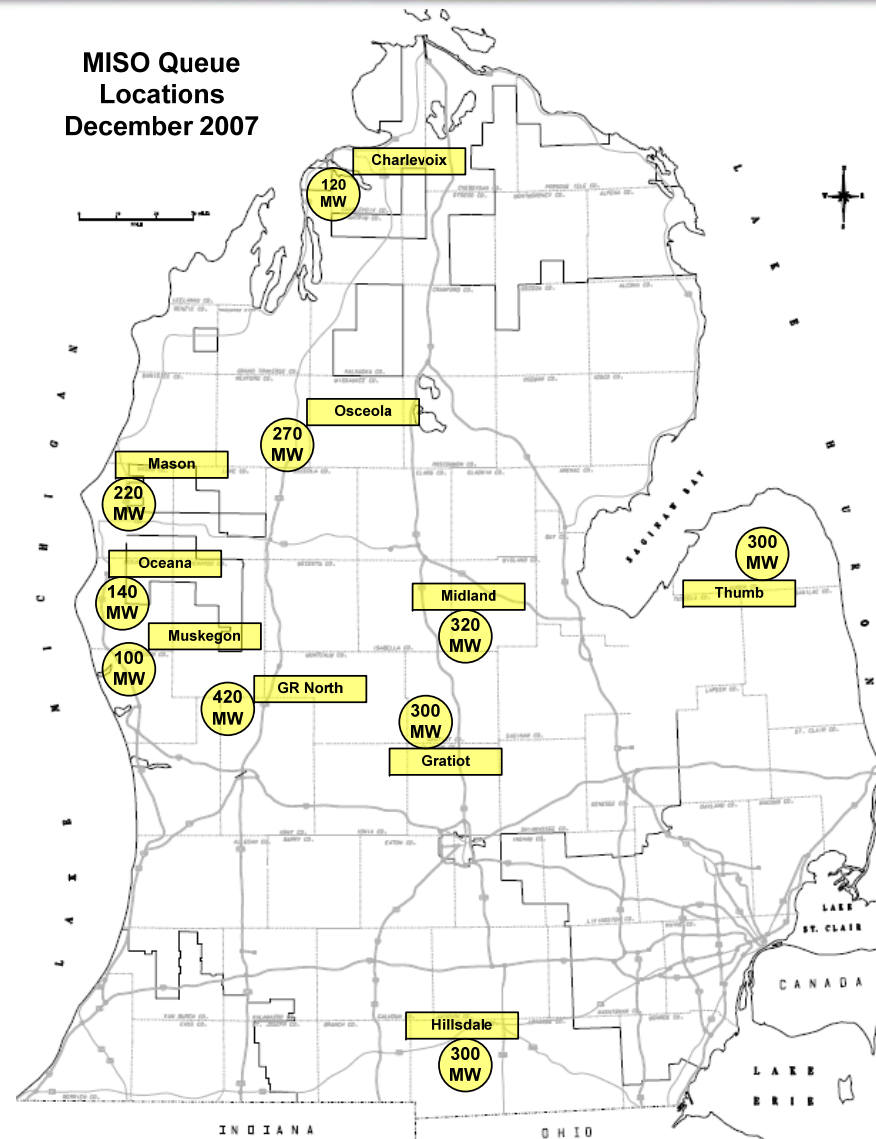
Several specific wind scenarios analyzed:

- ◆ low, medium, and high on-shore wind production (1500 MW, 3000 MW, 4500 MW)
- ◆ one off-shore scenario (adding two 500 MW off-shore farms to 4,500 MW scenario)
- ◆ with and w/o three possible future fossil units

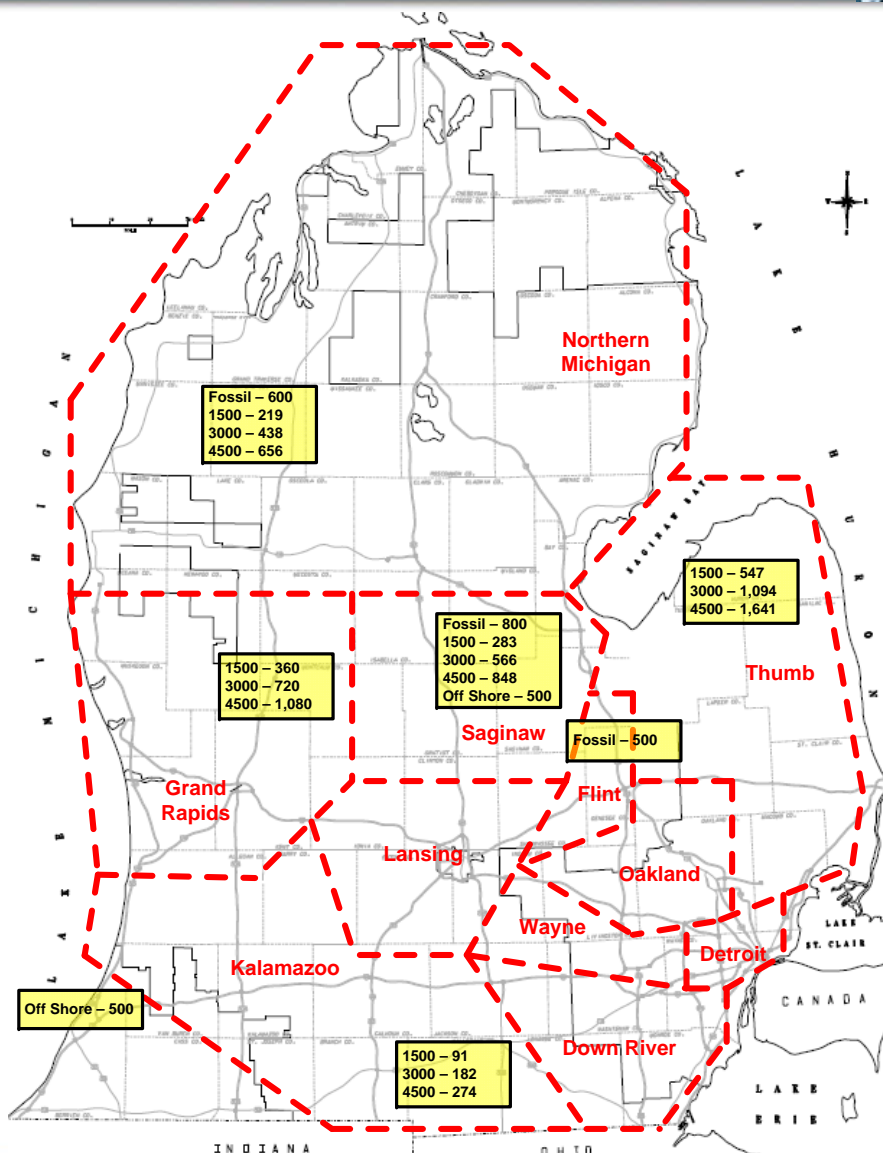
This study did not include community wind or small wind systems, that will interconnect at distribution system voltages.

Scenarios developed with input from MI-WETS Working Group

MISO Queue Wind Generation Locations



Future Generation Locations by Area



Future Generation Assumptions

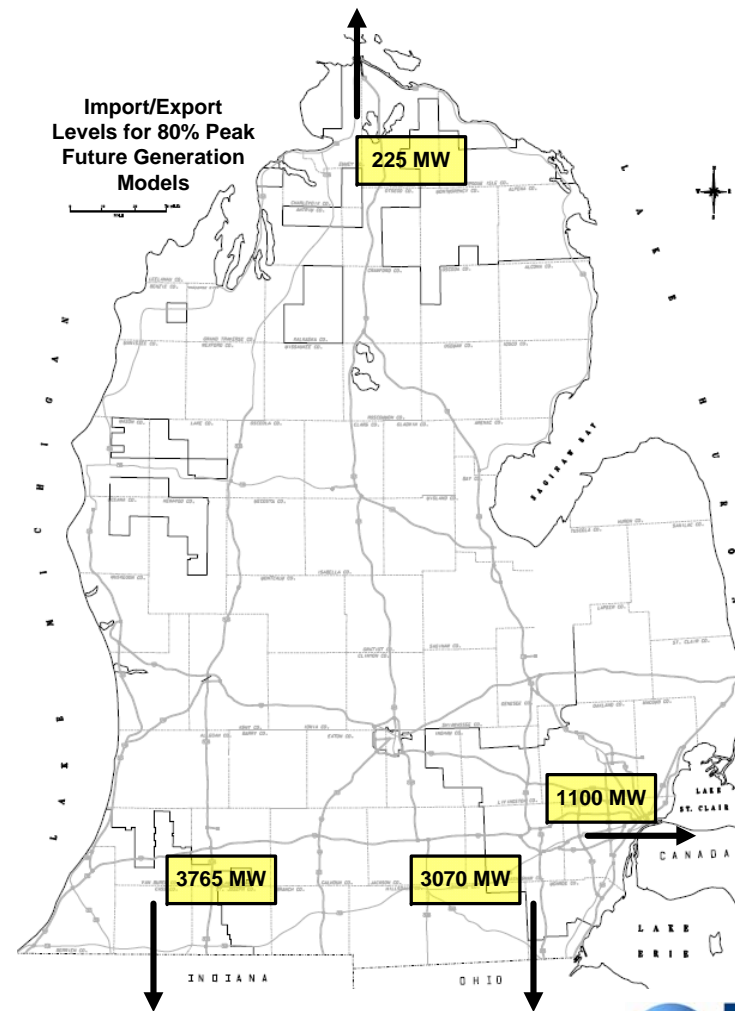
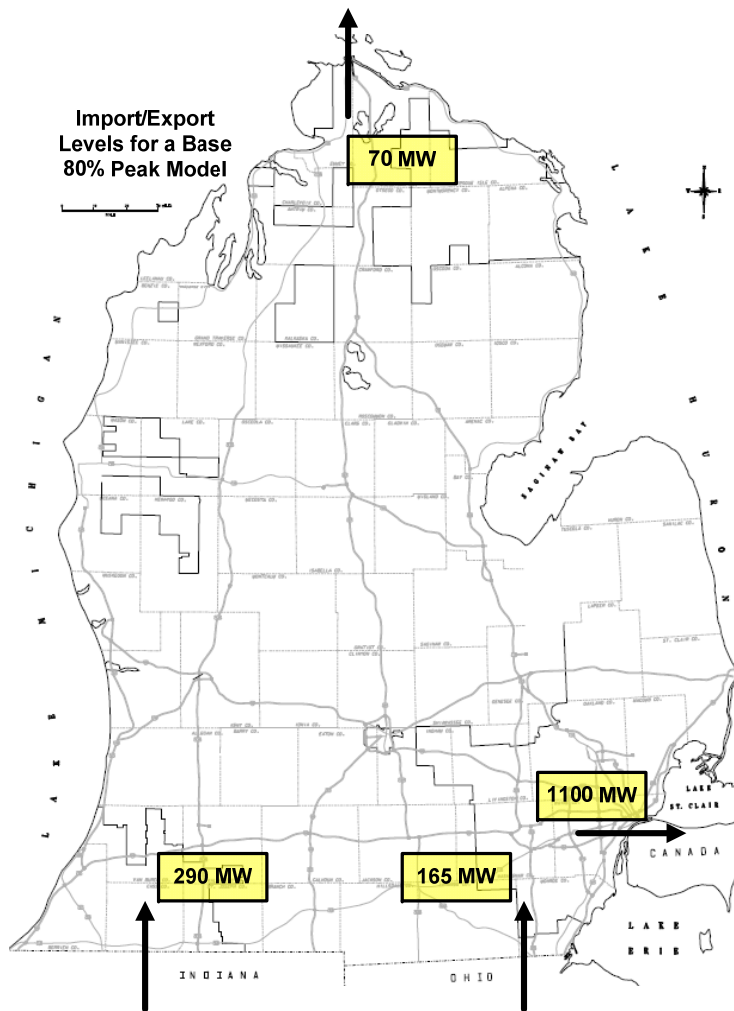


3/4 of the new resources were dispatched against generation external to MECS and 1/4 of the new resources were dispatched against generators within the MECS⁵ footprint

When attempting to export large amounts of power out of Michigan there would most likely be limits on neighboring systems including but not limited to ATC, First Energy, AEP, NIPSCO, Detroit Edison, and Consumers Energy.

⁵ Generation in the MECS footprint was dispatched in economic merit order to the best of ITC's ability. ITC does not have a current merit order listing.

Future Generation Assumptions



Future Generation Assumptions



Wind was dispatched:

- ◆ 15% of nameplate capability @ peak
- ◆ 100% of nameplate capability @ 80% peak

Per the MI-WETS Working Group, Michigan average wind production was modeled to total only 15% of nameplate capability during the time of peak system loading.

- ◆ The projects identified for this study would not ensure that all of the wind farms would be able to operate simultaneously at their nameplate capability.

Preliminary Results for Base and 765 kV Overlay Analysis



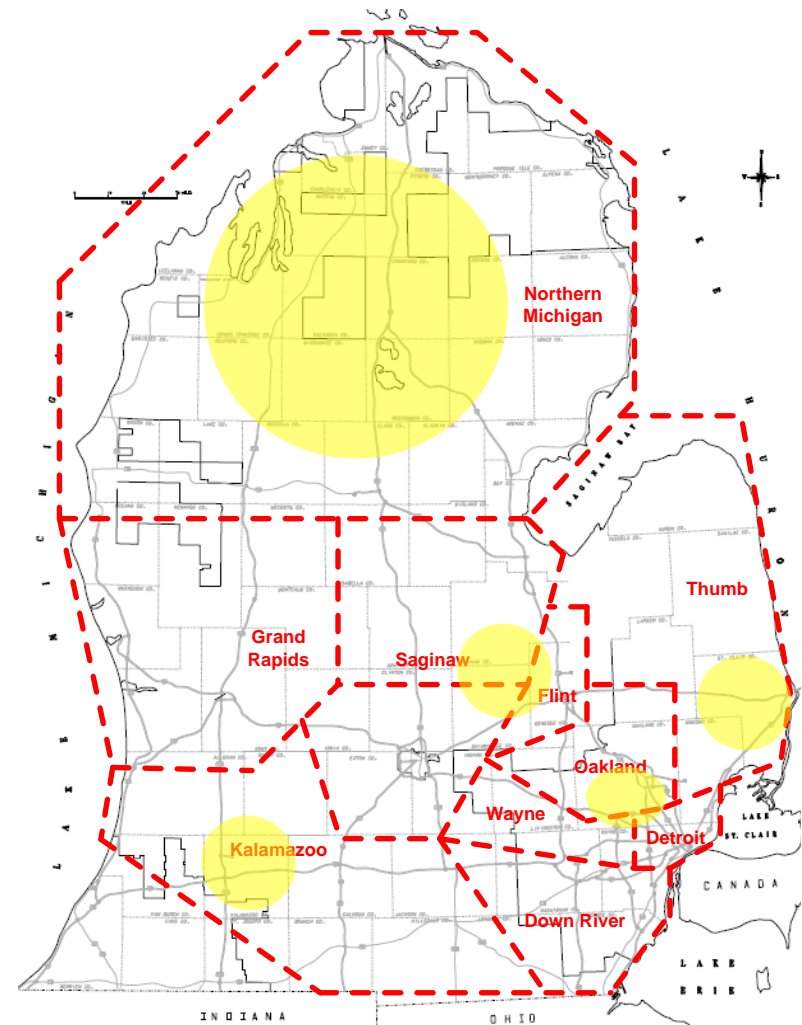
Projects understudy in:

- ◆ Kalamazoo
- ◆ Northern Michigan
- ◆ South Eastern Thumb
- ◆ Saginaw/Flint
- ◆ Southern Oakland County

Long range studies will identify “a” possible solution to be further analyzed as projected overloads “move closer”

Results currently being compiled for second set of base runs

Some of these areas also under study in short term studies



Preliminary Results for Future Generation Study



Significant transmission upgrades required to support large amounts of wind in the Thumb area

- ◆ Total MW's will determine voltage level required

In order to export large amounts of power from Michigan, stronger interconnections to the south would be required

Large amounts of generation in Northern Michigan may require stronger (or controllable) interconnections with ATC to the north

Coordination would be required with neighboring utilities

Next Steps



Review runs for 765 kV overlay analysis

Finalize study results and develop rough estimates of MECS Transmission expansion costs for base plan and max future gen scenario

Incorporate future generation scenario analysis into MPSC Staff MI-WETS report in early 2009

Develop scope for 2009 Long Range Plan

Questions and Discussion

Midwest ISO Generator Interconnection Queue Reform

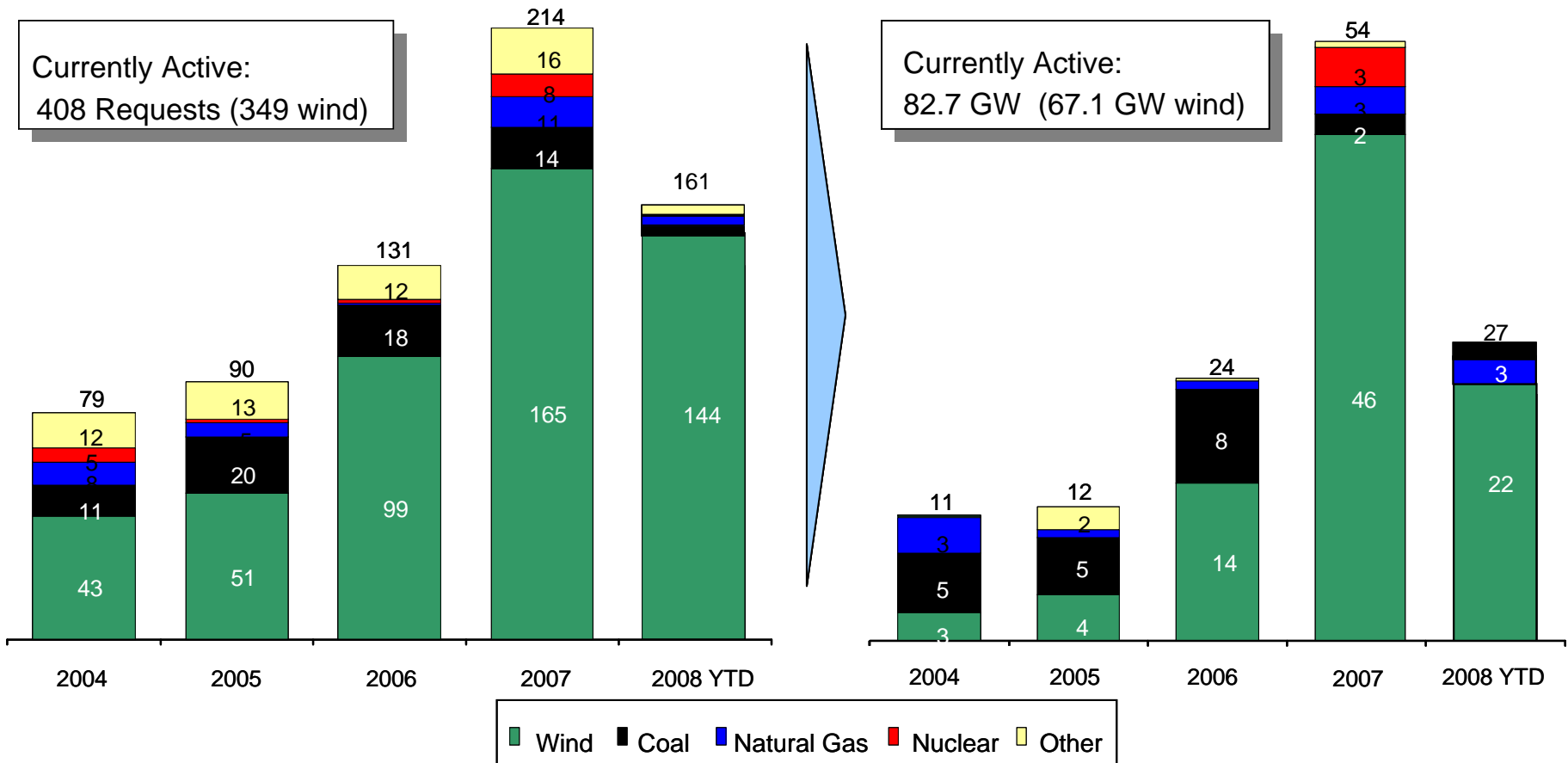
ITC Partners In Business

November 11, 2008

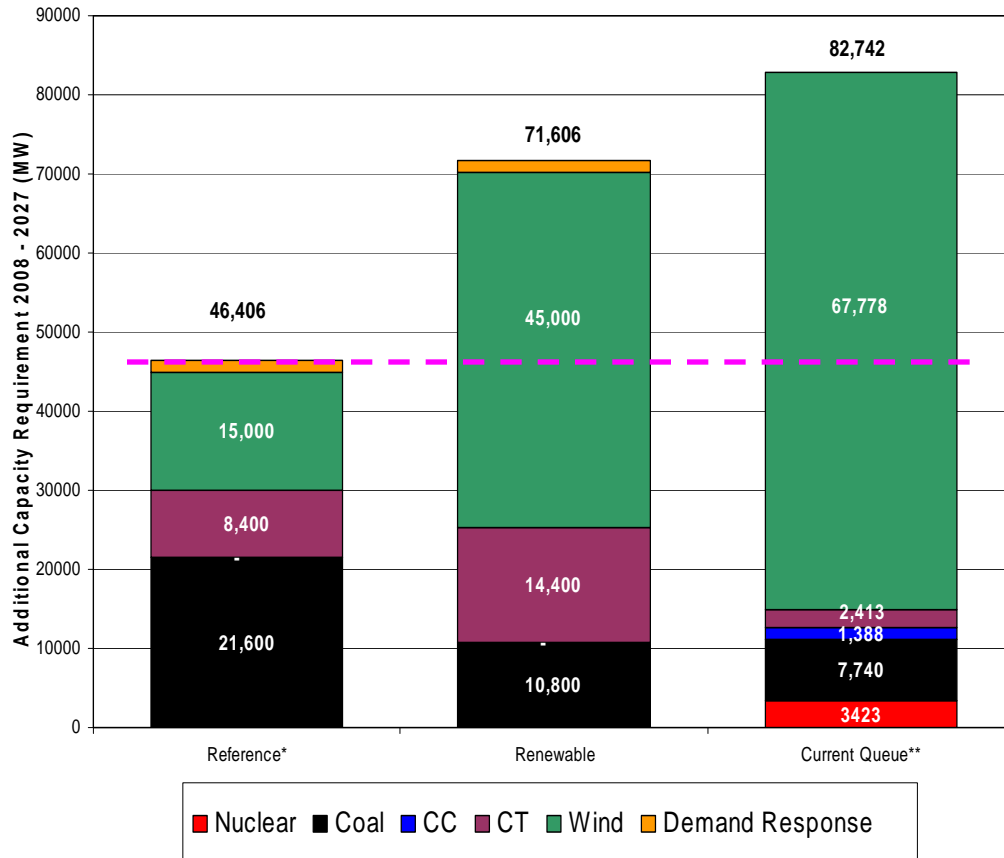
Queue Evolution*

Number of Requests

Megawatts of Requests



2008-2027 Future Generation Scenarios



- Midwest ISO long-term planning process models alternative scenarios of future generation needs

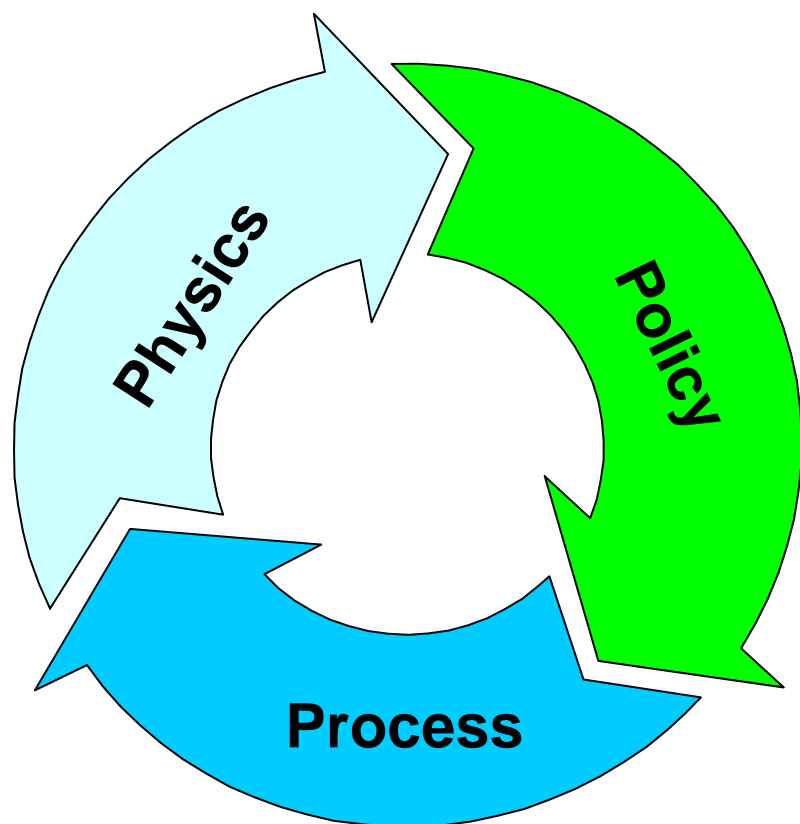
- Scenarios support a transmission planning approach which attempts to maximize optionality of the transmission grid, given an uncertain future
- Reference future models status quo, including renewable portfolio standards (RPS)*
- Renewable future assumes 20% renewable mandate across Midwest ISO footprint

* RPS as of October 2007 for the Midwest ISO footprint; current RPS is 20,000 MW

** Requests under evaluation in queue as of October 31, 2008; wind includes 662 MW of other renewables

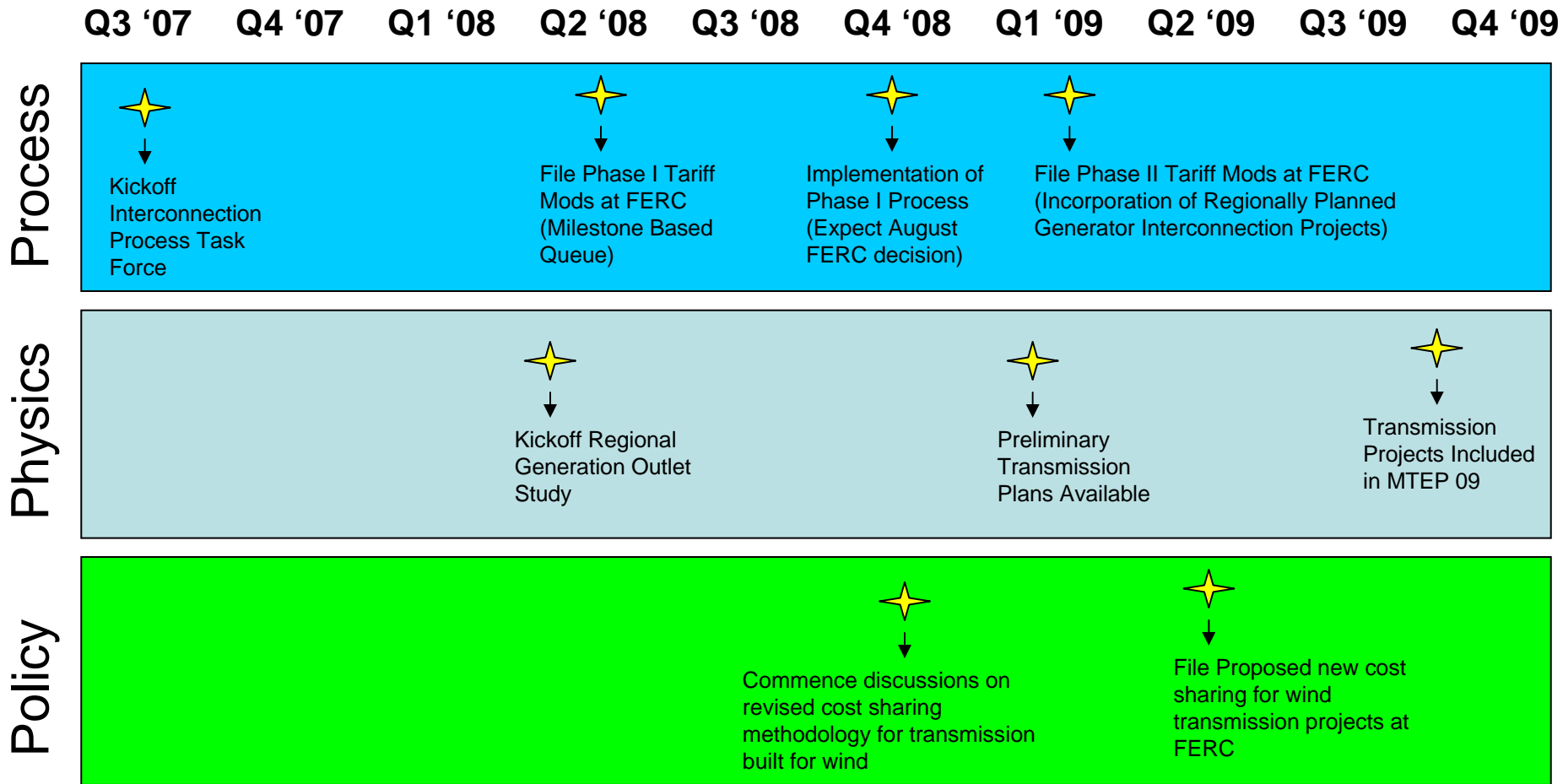
• Queued wind requests exceed

3 P's of Queue Reform

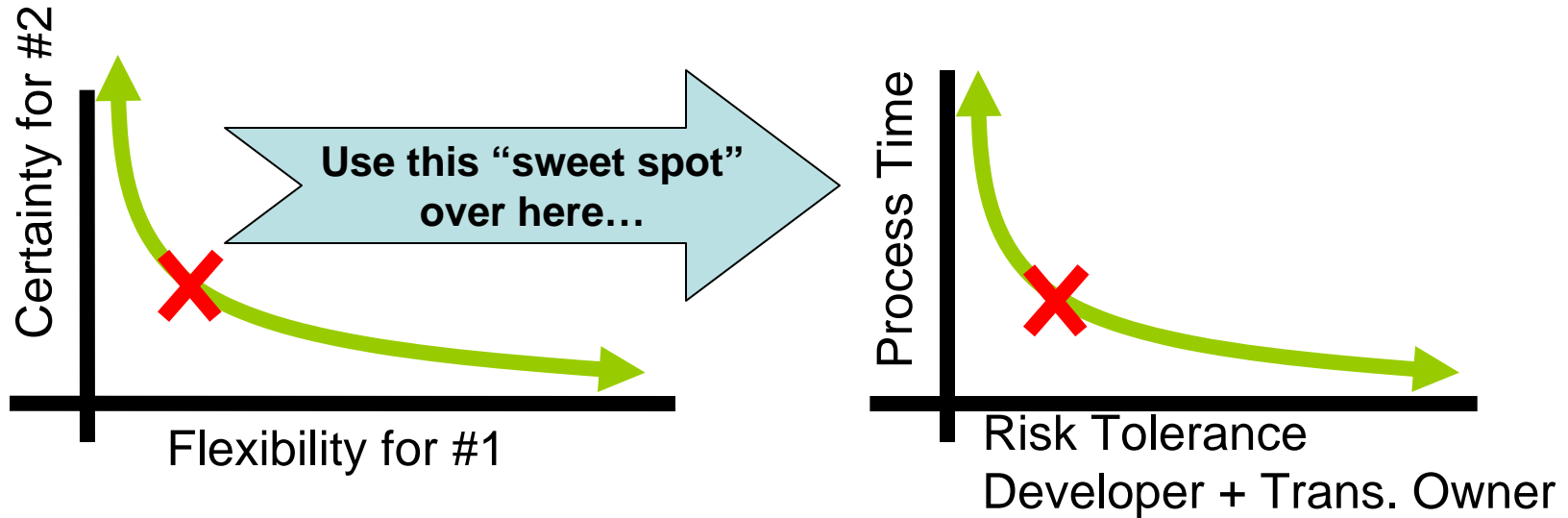


- Success in queue reform rests on addressing each of the 3 P's
 - Process: Filed to FERC proposed changes to generator interconnection process on June 26, 2008
 - Physics: Regional Generation Outlet Study is the first step in using alternative planning methods to identify network upgrades to support interconnection of large quantities of generation in remote areas
 - Policy: Opening dialogue on items such as cost sharing and recovery

Queue Reform Timing



What We Did for Queue Process Reform



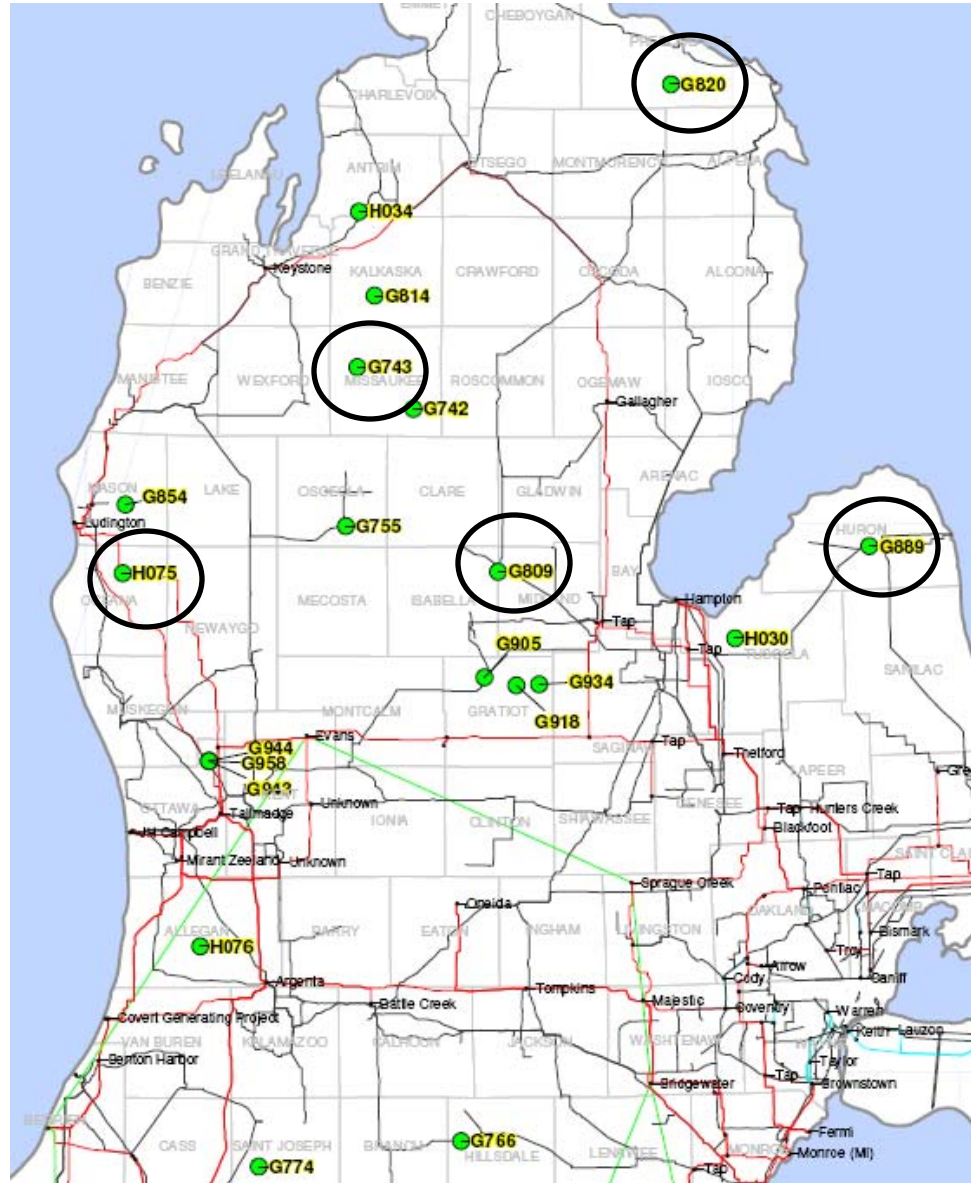
Step 1: Find that sweet spot that balances certainty with flexibility

Step 2: Add the risk tolerance of the TO to the developer's risk tolerance.

Step 3: The RTO's develops processes and procedures to meet the balance of risk on a consistent timeline

ITC Area Projects

- 20 projects are eligible for the DPP (or, “faster lane”)
- 5 projects sent in the milestones to proceed
- Remainder are parked, and have until about 2/15/09 to “true up” or get re-tested



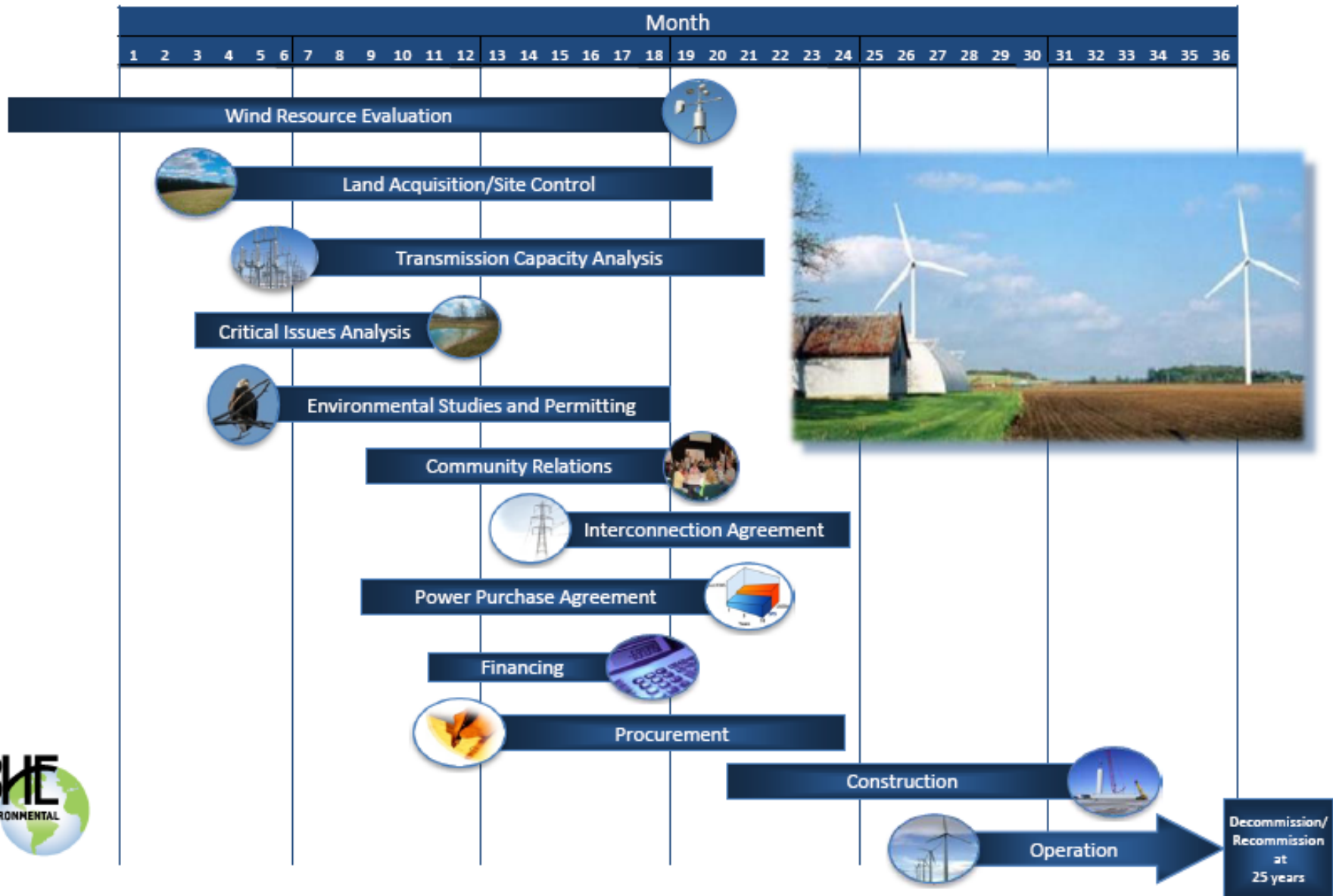
Generator Interconnection Queue Reforms (Process)

- Make Results of Feasibility Study Binding/Create Fast Lane
 - Change the current Feasibility Study process to a screen, which determines if a project can proceed to fast lane
 - Fast lane projects will proceed with reduced wait time to start study process with a shortened timeline
- Modify Study Deposit Levels and Timing
 - Increase study deposits to match expected study costs at various project sizes
 - Collect all study deposits up-front
 - Make study deposits partially non-refundable to fund potential restudies caused when a project withdraws from the queue

Generator Interconnection Queue Reforms (Process) cont.

- Introduce New or More Rigorous Milestones
 - Increase requirements for technical information during study process
 - Introduce non-technical milestones at start and midpoint of Definitive Planning Phase
 - Financial – such as security for estimated Network Upgrades
 - Non-financial – such as attaining necessary air, land, or water permits
- Reduce Flexibility Associated with Suspension
 - Only allow suspension for Force Majeure conditions
 - Move first Generator Interconnection Agreement milestone out six months
 - Require payment of Network Upgrade cost or \$5 million, whichever is greater, upon suspension

Example* Wind Project Development Timeline



* This timeline is only an example. An exact timeline should be developed for your specific project.

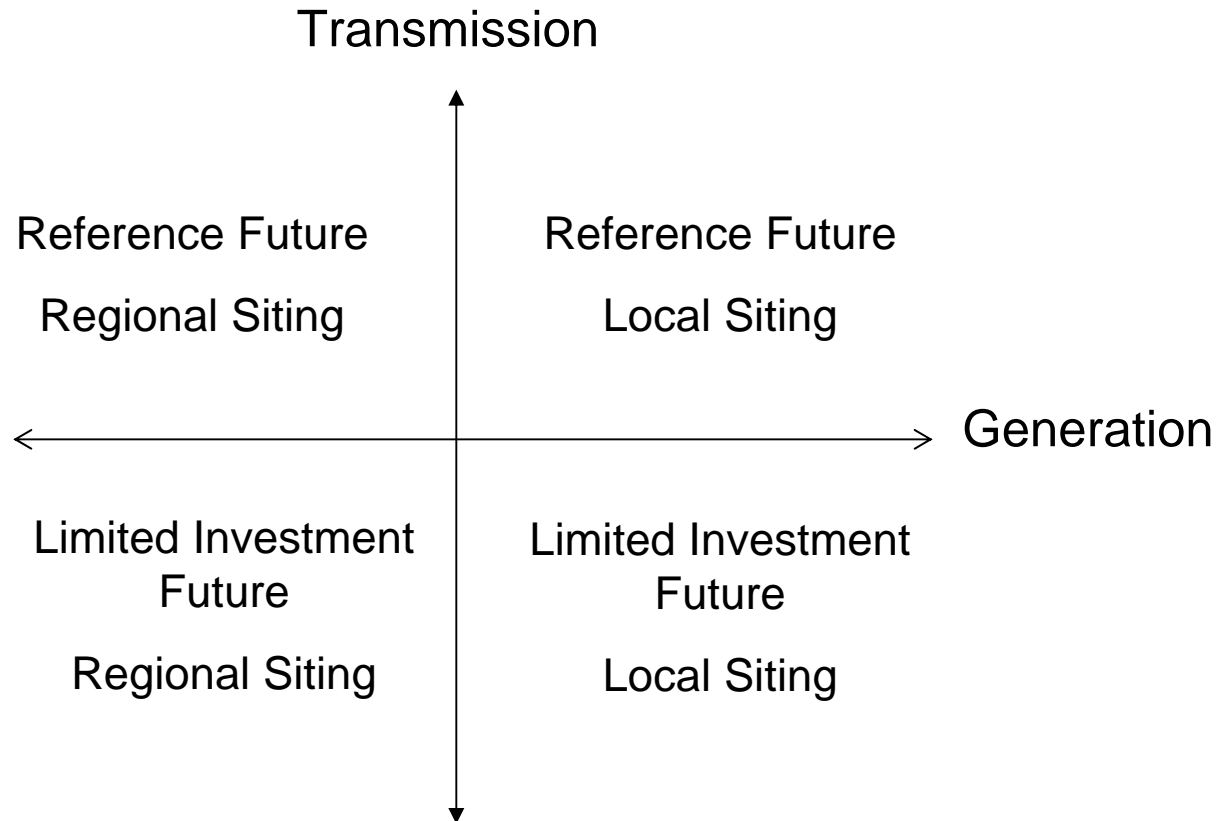
Regionally Planned Generator Interconnection Projects

- Goal is to increase integration with long-term planning process to allow more efficient generator interconnection
 - Determine the demand for the energy
 - Identify transmission upgrades to meet the demands
 - Allow projects in the queue to have access to the capacity
- Regional Generation Outlet Study to evaluate the transmission requirements
 - Determine distribution of wind sites across footprint to maximize ease of wind integration (Renewable Energy Zones)
 - Assess year-by-year aggregate wind mandates for all states in Midwest ISO, and associated renewable capacity requirements
 - Develop five year road map, informed by the queue and consistent with mandates, of transmission projects to interconnect wind generation
- Interconnection Process Task Force to evaluate necessary tariff changes to integrate with current queue process (e.g. identification and subscription methodology)

The Optimization Problem

- General Problem Statement for Transmission Studies
 - Minimize transmission and generation capital costs and minimize system energy costs while maintaining system reliability
- Problem solution subject to sometimes competing constraints:
 - Minimize investment risk (shorter payback horizon)
 - Maximize carbon reduction (replace coal production)
 - Maximize local economic development (install wind directly within RPS State)
 - Maximize economic value (lowest cost to customer)

Regional Generation Outlet Study Alternatives under Evaluation



Conditions Precedent to Increased Transmission Build

- A robust business case for the plan
 - Need to demonstrate that the hypothesized benefits exist, including evaluation of alternatives
 - Regulators are the judge of the business case
- Increased consensus around regional energy policy
 - Does not exist today around wind, for example, across the Midwest ISO footprint
- A regional tariff that matches who benefits with who pays over time
 - For example, beneficiaries of wind may be due to public policy, rather than load flow or economic benefit analyses which are the current basis for cost allocation
- Cost recovery mechanisms that reduce financial risk
 - Investors in these projects need to be assured of cost recovery

Questions and Discussion

Contact information



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