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   b. Pre-collaborative stakeholder engagement to develop a strawman draft between now and June
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   d. Circulate sign-up sheets
7. Closing remarks
What is **Integrated Resource Planning**?

- Historic utility planning prior to the 1980s typically matched the load requirements to the available supply side generation options.
- In the period from about 1945-1970, utilities simply built new base load units of increasing economies of scale.
- The consideration of demand side options started gaining popularity in the 1980s.
- IRP involves the integration of various demand side options in the supply mix during the planning process.
A Little IRP History

• The Northwest Power Planning Council
• Regional organization that develops and maintains a regional power plan and a fish and wildlife program to balance the Northwest's environment and energy needs.
• Created in 1980 when the U. S. Congress passed the Pacific Northwest Electric Power Planning Conservation.
• First use of IRP process.
Demand Reduction Resources

- Energy Efficiency
- Load Management
- Demand Response
- Distributed Generation
Michigan Statewide IRPs

- Michigan Electricity Options Study 1986-87
- Capacity Need Forum 2005-06
Integrated Resource Plan (IRP)

• An IRP submitted by the utility shall contain:
  – Planning Process and Modeling
  – Forecasts and Supply Resources
  – Demand Reduction Resources
  – Scenarios and Risk Analysis
  – Proposed Course of Action
PA 341 Section 6T IRP Implementation
Stakeholder Kickoff Meeting
March 10, 2017
9:30 am – 12:30 pm

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IRP is a planning and selection process\(^1\) for new energy resources that evaluates the full range of alternatives.

Capacity options include:
- new generating capacity
- power purchases
- energy waste reduction and demand response
cogeneration and district heating and cooling
applications
- renewable energy resources

in order to provide adequate and reliable service to its electric customers at the lowest system cost.

The process shall take into account necessary features for system operation such as:
- Diversity
- Reliability
- Dispatchability and other factors of risk

and shall treat demand and supply resources on a consistent and integrated basis.

---

Development of an Integrated Resource Plan (IRP) is a process with a number of steps.
Market scenario development is an important step to ensure diverse, robust conditions to test different strategies to meet the need

**INPUTS**
Factors that will shape the future

**SCENARIOS**
Combine inputs into alternative views of the energy future

**SENSITIVITIES**
Smaller “Tweaks” to test individual uncertainties

Examples:
- Environmental Standards adoption
- Solar Energy installation increases

1. Adapted from IHS CERA
Many different resource alternatives are evaluated within the IRP process.

- **Gas CT Peakers**
- **Gas Combined Cycle (CC)**
- **Solar**
- **Battery Storage**
- **Energy Waste Reduction & Demand Response**
- **DTE Energy’s Capacity Options**
- **Wind**
The process to determine the most viable technology options for the IRP goes from simplistic economic screenings to increasingly more complex analyses.

**Preliminary Economic Analysis**
- Technologies compared on a cost basis
- Options narrowed down based on economics

**Market Valuation**
- The cost/benefit for each option is evaluated against the market

**Modeling**
- Modeling tools are used to select the optimal technologies and develop a series of build plans

**Financial Analysis**
- The calculation of the customer financial impacts of various alternative capital projects

Commercially available Technology alternatives
Multiple customer expectations will be considered within the Integrated Resource Planning process

- An Integrated Resource Plan is a comprehensive road map for meeting a utility’s objective of providing electric service to all of its customers
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MPSC / MAE IRP Stakeholder Kickoff
March 10, 2017
IRP Process Diagram

1. Identify Capacity Need
2. Define Point of View
3. Define Scope
4. Collect Data Assumptions
5. Develop Resource Options
6. Preliminary Screening
7. Optimization Modeling
8. Evaluation Criteria
9. Risk Analysis
10. Action Plans
11. Document / Regulatory
Business Environment

- Air
- Water
- Waste

Environmental Regulations

MISO Market

 Existing Fleet

 More
Renewables

Combined Heat & Power

Customer Desires / Technology Advancements

Probable and potential outlooks drive scenario and sensitivity definitions
Resource Options

- **Supply-side options**
  - Purchase new capacity (PPAs)
  - Build new conventional generation (coal, gas)
  - Build new renewables or other non-conventional generation
  - Purchase existing facility

- **Demand-side options**
  - Energy efficiency
  - Demand response
Modeling Tools

- ABB’s Strategist® (formerly owned by Ventyx)

- Study horizon is usually 20+ years (2017-2040)

- Run times vary significantly (<1 hr to days) and depend on factors such as:
  - User-defined optimization constraints
  - Number and size of alternatives available to fill the “gap”
  - Supply and demand growth rate assumptions
  - Planning period horizon

- Current tools and methodologies allow for max 5 scenarios, 10-12 sensitivities within IRP scope
CE Model of MISO Market

CE ROA

DE ROA

METC

DE

ITC

CE

TN

MISO N/C

MISO South

TN = TRANSFER NODE

SPECIFIED TIE LIMITS
CE Model of MISO Market

1. Develop Data Assumptions + Resource Options for all MISO
2. MISO Market Simulation + Optimization
3. Combine MISO and CE Models
4. CE Optimizations

Repeat for each scenario and sensitivity
Evaluation of Outputs

- Costs
  - Lifetime NPV
  - Year by year revenue requirements
  - Timing of costs/benefits, cost tradeoffs
  - Rate impacts
  - Capacity vs. energy

- Portfolio Balance
  - Fuel, technology, operational flexibility

- Dependence on capacity market

- Breakeven analysis

- Sensitivity and risk analysis
  - Demand, gas prices, carbon prices, capacity prices

- Other considerations
  - Environmental impact
  - Community impact/jobs
  - Reliability
  - Alignment with corporate strategy
  - Regulatory risk
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INTEGRATED RESOURCE PLANNING
THE CURRENT I&M PROCESS

Indiana Michigan Power
American Electric Power Service Corporation

March 10, 2017
Lansing, Michigan
MCL 460.6T(4) provides:
“If an electric utility has filed a multistate integrated resource plan that includes its service area in this state with the relevant utility regulatory commission in another state in which it provides tariff service to retail customers, the commission shall accept that integrated resource plan filing for filing purposes in this state. However, the commission may require supplemental information if necessary as part of its evaluation and determination of whether to approve the plan.”
OVERVIEW OF AEP INTEGRATED RESOURCE PLAN (IRP) OBLIGATIONS

- AEP has 9 Operating Companies with service territories spanning 11 states.
- SIX AEP Operating Companies are required to file IRPs in 7 states.
- IRPs are Operating Company and State specific, prepared at varying intervals based on State rules.

I&M – Michigan Svc Territory:

- **128,000** Retail Customers
- **2,800 MWh** Retail Sales
  (~ 15% of I&M Total)
- **1,375** approx. sq. miles
  (Three Rivers, St. Joe areas)
## IRP FILING REQUIREMENTS FOR AEP OPERATING COMPANIES

<table>
<thead>
<tr>
<th>Operating Company</th>
<th>State</th>
<th>Filing Cycle</th>
<th>Stakeholder Interaction</th>
<th>Approx Dates</th>
<th>Total Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>APCo</td>
<td>VA</td>
<td>Annual 5 years</td>
<td>Contested Hearing Discovery/Comments</td>
<td>1-Jan 1-May 1-Dec</td>
<td>11 months</td>
</tr>
<tr>
<td>APCo/WPCo</td>
<td>WV</td>
<td></td>
<td></td>
<td>31-Dec 7-Jun</td>
<td>9 months</td>
</tr>
<tr>
<td>I&amp;M</td>
<td>IN</td>
<td>3 years</td>
<td>Meetings/Discovery/Comments</td>
<td>1-Jan 1-Nov 30-Aug</td>
<td>20 months</td>
</tr>
<tr>
<td>KPCo</td>
<td>KY</td>
<td>3 years</td>
<td>Discovery/Comments/Tech Meeting</td>
<td>1-Jul 20-Dec 14-Nov</td>
<td>17 months</td>
</tr>
<tr>
<td>PSO</td>
<td>OK</td>
<td>3 years</td>
<td>Comments/Tech Meeting</td>
<td>1-Apr 1-Sep</td>
<td>5 months</td>
</tr>
<tr>
<td>SWEPCO</td>
<td>AR</td>
<td>3 years</td>
<td>Meetings/Stakeholder Report Meetings/Draft Report/Comments</td>
<td>1-Jan 1-Dec 1-Aug-19 N/A</td>
<td>11 months</td>
</tr>
<tr>
<td></td>
<td>TX</td>
<td>4 years</td>
<td>NA</td>
<td>2-Jan-17 NA 1-Feb-20 1-Aug-19 NA</td>
<td>24 months</td>
</tr>
</tbody>
</table>

**Notes:**

- APCo: Appalachian Power Company
- I&M: Indiana Michigan Power
- KPCo: Kentucky Power Company
- PSO: Public Service Oklahoma
- SWEPCO: Southwestern Electric Power Company
- WPCo: Wheeling Power

- The IRPs presented in the various states represent an appropriate planning “line-of-sight” to inform and guide future resource decisions by the operating company leadership team.
- The IRPs identify the “Amount”, “Timing” & “Type” of long-term resources that may meet customers’ needs reliably, environmentally-responsibly, and at the lowest reasonable cost reasonably possible.
- The AEPSC Resource Planning Group provides technical support to I&M and other AEP operating companies and has significant experience in IRP resource modeling, stakeholder engagement and report preparation.
- I&M’s IRP is a total company plan that is created to meet the needs of all of its customers, including those in Michigan.
I&M invites numerous stakeholders to participate according to the rules of the Indiana Utility Regulatory Commission (IURC).

I&M provides IRP tutorial, pre-reading material, input assumptions.

I&M posts IRP related information on its website.

I&M conducts initial Stakeholder meeting to identify issues and expectations as to the likely resources to be included in the plan.

I&M facilitates subsequent Stakeholder meetings to incorporate Stakeholder feedback into planning assumptions.

I&M files final IRP with IU RC and responds to Stakeholder comments regarding final plan.

IURC issues Draft and Final Director’s reports to evaluate utility performance.
CONTENTS OF INDIANA INTEGRATED RESOURCE PLAN

• Fundamental Pricing Assumptions
• Load Forecast
• Resource / Technology Options: Cost & Performance Parameters
  • Fossil
  • Renewable
  • Distributed Generation
• DSM/Energy Efficiency Assumptions
• Scenarios and Sensitivity Cases
• Resource Modeling Results
• Developing the Preferred Portfolio

I&M’s Indiana IRP is consistent with the requirements of MCL 460.6T(5) and can be supplemented to the extent necessary to support approval.
SUMMARY

The AEPSC IRP group prepares resource plans in multiple jurisdictions and its work product is subject to review and comment from a multitude of interested parties.

The Stakeholder process is well-established, dynamic, and the feedback is well-documented.

I&M’s IRP results in a comprehensive plan for meeting customers’ needs, including those in Michigan.
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IRP Stakeholders’ Meeting
A Municipal Utility’s Perspective
Citizens Advisory Committee Process

• Nine member CAC representing cross section of the community, e.g. business, labor, residential, environmental and utilities
• CAC met 8 times between October, 2015 and April, 2016
• First six meetings were “grounding”
  • Open to the public participation
  • Focus on presentations by subject matter experts
  • Sessions recorded and made available on web site
• Final meetings focused on identifying guiding principles, reviewing model results (eight scenarios), and developing recommendations
Citizens Advisory Committee Members

- Mary Brady Enerson
- James Butler
- Glenn Freeman
- Rory Neuner
- Jeff Pillon
- Derrell Slaughter
- Steve Transeth
- Daniel Voss
- Yvonne Young-McConnell
Public Engagement

• **Customer Survey**
  - Reliability, affordability and environmental impact were all key customer considerations
  - Energy independence of community very important
  - The majority of Residential and half of Business Customers would pay more for renewable energy

• Public meetings in different locations included the opportunity for any interested party to make presentation and offer comment

• Third party communications firm to assist in engaging and informing the public

• Web page with schedules and locations of meetings, copies of presentations and documents

• Opportunity to submit written comments at meetings or for posting on web site
Summary of IRP Sessions

- **Meeting One**: Overview of the BWL generation and distribution system and BWL’s role in MISO
- **Meeting Two**: Forecasts of peak and annual load; fuel costs; market prices; capital costs and resource requirements
- **Meeting Three**: New generation resource options (with costs); projected retirement of existing units and regulatory requirements
- **Meeting Four**: Renewable options; energy waste reduction; distributed generation and demand response programs
- **Meeting Five**: How modeling scenarios and sensitivities are used to manage future uncertainty and risk.
- **Meeting Six**: Advantages of a balanced portfolio; Local employment impact; energy security and resiliency; Health Impacts and environmental impacts beyond regulations
Portfolio Planning Study Objectives

- What options and directions are desirable or unacceptable?
- Some Examples:
  - Build versus Buy
  - Reliance on the Market
  - Fuel mix
  - Renewables - Energy Efficiency
  - Emission Targets (Clean Power Plan)
CAC’s Guiding Principles

- Provide affordable, reliable, secure, and sustainable electricity to customers.
- Continue BWL’s leadership in the deployment of clean-energy technologies, such as renewable energy, energy efficiency, and distributed-energy resources.
- Promote further improvement in a healthy environment for customers and the Greater Lansing region.
- Generate and maintain local employment.
- Promote economic development in the Greater Lansing region.
- Be adaptable and mitigate future risks related to resource/fuel availability, technological advances, and cost.
- Emphasize the importance of local control and continue to seek input from the community when making major decisions.
- Prioritize energy self-sufficiency by reducing BWL’s reliance on outside energy markets.
Committee Review and Analysis

- BWL modeled 3 initial portfolios:
  - Reference (cost index 100)
  - Clean energy (cost index 112.4)
  - Market-based (cost index 238.4)

- Market-based Portfolio ruled out due to cost and risk
Committee Review and Analysis

Committee requested additional models:

- Belle River Early Retirement Portfolio
- 85MW Wind Project Portfolio
- Expanded Energy Efficiency Portfolio
- Clean-Energy Goal with 85MW Wind Project Portfolio
- Clean-Energy Goal with 85MW Wind Project & Expanded Energy Efficiency Portfolio
<table>
<thead>
<tr>
<th>Assumption</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – Modeling Software</td>
<td>Strategist</td>
</tr>
<tr>
<td>2 – Study Period</td>
<td>2016 to 2035</td>
</tr>
<tr>
<td>3 – Model Region</td>
<td>Lansing, MI</td>
</tr>
<tr>
<td>4 – Weighted Cost of Capital</td>
<td>6.18%</td>
</tr>
<tr>
<td>5 – Load Growth</td>
<td>1.30%</td>
</tr>
<tr>
<td>6 – Energy Optimization Target</td>
<td>1.00%</td>
</tr>
<tr>
<td>7 – Demand Response Reduction</td>
<td>0% - 2016 to 2.65% - 2035</td>
</tr>
<tr>
<td>8 – Unit Retirements</td>
<td>Eckert 4, 5 and 6 – 2020</td>
</tr>
<tr>
<td></td>
<td>Belle River, Erickson – 2030</td>
</tr>
<tr>
<td>10 – Coal Price (2015 $/MMBtu)</td>
<td>$2.36 – 2016 to $3.19 – 2035</td>
</tr>
<tr>
<td>11 – Gas Conversion, Thermal and Renewable Costs</td>
<td>Gas and Thermal listed in Barr Study</td>
</tr>
<tr>
<td></td>
<td>$52/MWh – Wind PPA, $65/MWh – Solar PPA</td>
</tr>
<tr>
<td>12 – Renewable Capacity Factors</td>
<td>37.5% - Wind</td>
</tr>
<tr>
<td></td>
<td>14.2% - Fixed Axis Solar</td>
</tr>
<tr>
<td></td>
<td>22.4% - Single Axis Solar</td>
</tr>
<tr>
<td>13 – Renewable Capacity Credit</td>
<td>14.7% - Wind, 50% - Solar</td>
</tr>
<tr>
<td>14 – Energy Price Forecast ($/MWh)</td>
<td>$30.24 – 2016 to $47.25 – 2035</td>
</tr>
<tr>
<td>15 – Annual Capacity Price Forecast</td>
<td>$0.48 – 2016 to $47.25 – 2035</td>
</tr>
<tr>
<td>16 – Transmission Cost</td>
<td>$13.25 – Short Term, $6.47 – Long Term</td>
</tr>
<tr>
<td>17 – Network Transmission Cost</td>
<td>$3M/year til 2030, $19M/year after 2030</td>
</tr>
</tbody>
</table>
## CAC Portfolio Recommendation

<table>
<thead>
<tr>
<th>Model Results</th>
<th>Supply-side Resources</th>
<th>Demand-side Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative Cost Index: 100.8</td>
<td>2018 85MW Wind</td>
<td>Energy Efficiency 41 MW</td>
</tr>
<tr>
<td>PV Cost ($000): $1,693,448</td>
<td>2020 100MW Gas Turbine 40MW Solar</td>
<td>Distributed Generation 7 MW</td>
</tr>
<tr>
<td>Clean Power Plan Compliant Yes</td>
<td>2025-2029 70MW Solar</td>
<td>C &amp; I On-site Generation 15 MW</td>
</tr>
<tr>
<td></td>
<td>2030 150MW Gas Turbine 150MW Combined Cycle</td>
<td>Residential TOU &amp; DLC Programs 7 MW</td>
</tr>
<tr>
<td></td>
<td>30MW Solar</td>
<td></td>
</tr>
</tbody>
</table>
Other Committee Recommendations

- Review and update the IRP (with input from a standing CAC) every four years
- Regularly review the applicability and costs of advancing renewable energy technologies, particularly battery storage
- Continue to explore opportunities to expand BWL energy-efficiency program
- http://lansingenergymorrow.com/
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Sec. 6t of 2016 PA 341 requires all rate-regulated utilities to file IRPs with the MPSC by April 20, 2019, every 5 years thereafter.
IRP Statewide Parameter Setting

• MPSC commences formal, non-contested proceeding by August 18, 2017

• In consultation with MAE, DEQ, interested parties:
  – Conduct Energy Waste Reduction/Demand Response Potential Studies
  – Identify environmental requirements
  – Identify reliability requirements
  – Establish modeling scenarios/assumptions

• Solicit written comments and hold hearings to get input from the public

• Publish proposed modeling scenarios and assumptions on the MPSC’s website by December 18, 2017
Modeling Scenarios and Assumptions developed through parameter setting process to be used by utilities in individual IRP filings

- Any required planning reserve margins and local clearing requirements
- All applicable state and federal environmental regulations
- Any supply-side and demand-side resources that could address the need for additional generation capacity, including (but not limited to):
  - Type of generation technology for any proposed generation facility
  - Projected energy waste reduction savings
  - Projected load management/demand response savings
- Any regional infrastructure limitations
- Projected costs of different types of fuel used for electric generation
IRP Filing Deadlines/Requirements

• All rate-regulated electric utilities must file an IRP no later than April 20, 2019, and no less than every 5 years thereafter.
• The MPSC shall issue an order establishing the filing requirements and filing deadlines.
• For rate-regulated electric utilities with fewer than 1,000,000 customers, the MPSC may establish separate filing requirements, review criteria, and approval standards.
• A rate-regulated utility that serves customers in Michigan and at least 1 other state may design an IRP that covers all of their customers.
IRP Timing and Process

• Individual utility files IRP
  – Include 5-year, 10-year, and 15-year load forecasts
  – Utility may update cost estimates up to 150 days after filing

• MPSC must state whether it recommends changes to a utility’s IRP within 300 days of the initial filing
  – Parties given at least 15 days to comment
  – Utility given at least 30 days to consider the recommended changes and submit a revised IRP

• MPSC must issue a final, appealable order within 360 days of a utility’s initial filing
Alternatives to Utility Proposals

• Prior to filing IRP, an electric utility shall issue a **Request For Proposals** for any new supply-side capacity resources needed to serve load
  – Results required to be used to inform utility IRP filings
• Existing supplier currently producing 200 MW within same ISO zone may submit proposals directly to the MPSC for consideration as an **alternative to utility proposal** within IRP
  – Supplier has standing to participate in utility IRP proceeding
  – Does not limit the ability for other entities to participate
• Electric utility not required to adopt any alternative proposals
• Each electric utility is encouraged, but not required, to partner with other suppliers in the same local resource zone
IRP and the Certificate of Necessity Process

• If any proposed generation project is 225 MW and above, a CON must also be filed.
• IRP/CON review shall be consolidated
• CON provisions supersede IRP provisions if project is approved
### IRP Application Requirements

**Forecasting**
- Long-term forecast of sales and peak demand under various scenarios.
- Projected impact on rates for the periods covered.
- An analysis of the cost, capacity factor, and viability of all reasonable generation options available to meet projected capacity needs.
- Plans for meeting current and future capacity needs with cost estimates.

**Renewable Energy**
- Projected renewable energy purchased or produced.
- An analysis of how combined renewable energy and energy waste reduction will compare to the 35% goal.

**Energy Waste Reduction**
- Plan for eliminating energy waste.

**Demand Response**
- Projected load management and demand response savings and costs from utility programs.
- Forecast of utility’s peak demand and the amount peak reduction it expects to achieve.

**Environmental Policies**
- Plan for compliance with environmental rules, laws, and regulations. Projected costs for compliance must be included.

**Transmission Interconnections**
- An analysis of new or upgraded transmission options.

**Current/Projected Generation and Fuel**
- Current utility generation portfolio data
- Project long-term firm gas transportation or storage contracts for any new generation.
- Projected energy and capacity purchased or produced by the electric utility from a cogeneration resource.
IRP Review Criteria

• The MPSC must determine whether an electric utility’s IRP is the most reasonable and prudent means of meeting energy and capacity needs by considering whether the plan appropriately balances all of the following:
  – Resource adequacy
  – Compliance with applicable environmental regulations
  – Competitive pricing
  – Reliability
  – Commodity price risks
  – Diversity of generation supply
  – Whether the proposed levels of peak load reduction and energy waste reduction are reasonable and cost effective
After MPSC issues final order...

- **Approve** → MPSC cost finalization
- **Deny** → Utility may submit revised IRP within 60 days
  - MPSC has 90 days to review/150 days if proposed changes are substantial
  - Utility may pursue denied projects, even if not approved in IRP
- **Appeal** → Limited to whether order conforms to MI/US Constitutions/laws and is within MPSC’s authority
- **Amend** → 90 days/150 days if proposed changes are substantial, or MPSC may order review
- **Review** → no later than 5 years after most recent approved IRP, or upon order of the MPSC or request of utility
IRP Cost Recovery Provisions

• **MPSC specifies costs to comply with approved IRP**
  – Cost finalization for large generation projects
  – 225 MW+ follow CON provisions

• **Costs incurred within 3 years** to comply with IRP are considered reasonable and prudent for cost recovery purposes, and are **pre-approved for recovery in rates**
  – Costs incurred in excess of those authorized by MPSC must be proven to be reasonable and prudent
  – MPSC shall disallow costs incurred as a result of fraud, concealment, gross mismanagement
  – Off-ramp if assumptions underlying an approved project have materially changed or if the MPSC believes it is unlikely that a project will become commercially operational
IRP Process

Standard Integrated Resource Plan Process

Statewide Assumptions/Scenarios
- MAE/MPSC
- 8/20/17 Start
- 12/18/17 Completion
- Every 5 years

Utilities file IRP
- Pre-RFP
- Projects 225 MW plus file CON too
- Meet MPSC filing requirements
- Standing for interested parties
- By 4/20/19

Hearing
- Contested case
- DEQ advice
- MPSC indicates if it suggests changes within 300 days

Final Order
- MPSC approves or denies IRP within 360 days
- If deny, utility refiles within 60 days

Cost Approval
- Cost finalization
- CON provisions 225 MW plus
- Pre-approval for recovery (3 years)
- Off-ramps

Amendments
- Utility or MPSC may call for IRP amendment
- IRP review every 5 years
Next Steps

• “Pre-work” (2^{nd} quarter 2017)
  – Filing Requirements/Schedule
  – Prepare for Parameter Setting

• Statewide Modeling (3^{rd} & 4^{th} quarters 2017)
  – Draft Proposal
  – Public Input

• Individual Utility IRPs (2018/19)
Thank you!

michigan.gov/mpsc
michigan.gov/energy
michigan.gov/deq
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   d. Circulate sign-up sheets
7. Closing remarks
MAE, MPSC, and MDEQ PA 341 Section 6T Implementation Plans

Cathy Cole, MPSC
Bonnie Janssen, MI Agency for Energy
Mary Maupin, MI DEQ

March 10, 2017
Formal Proceeding (but not a contested case)

• Commencing within 120 days of the effective date of the Act and every 5 years thereafter

• 120 day timeline
  – To complete everything in Sec 6T(1A) – 6T(1I)
    * Most will need to be developed early in the 120 day process in order to allow for comments and public input *
  – Before issuing the final modeling scenarios and assumptions
    • Receive written comments
    • Hold public hearings to solicit public input
    • Post to website
Expected Formal Proceeding

• Commission-initiated docket in August
  – Expected to direct Staff to post initial drafts
  – Announcement of public hearing dates and locations in September, 2017
    • East Michigan, West Michigan, Upper Peninsula
  – Expected deadline for written comments in the docket through the end of October
  – Expected to direct Staff to file a report summarizing written and verbal comments and making any recommended revisions to the initial strawman proposal by mid-November
  – Expected Commission Order in December
Stakeholder Engagement

GOAL: Develop a strawman proposal with as much consensus as is possible prior to the formal proceeding.

When: Between now and June.

How:

- Divide into workgroups populated by subject-matter experts.
- Workgroups will develop recommendations for and receive feedback from the larger stakeholder group (all of you).
- Workgroups may revise recommendations based upon stakeholder feedback.
- MPSC Staff will assimilate all of the workgroup recommendations and combine into a strawman proposal that would be available for review and comment by stakeholders in July (PRIOR to the formal proceeding).
Workgroups

- Environmental Policies – Federal/State/Local/Tribal (Rules and Regulations)
- Energy Waste Reduction (EO, EE, EWR)
- Demand Response (DR, DRR, EDR, LMR, btmg)
- Renewables and PURPA (Hydro, Pumped Storage, Wind, Solar, Other)
- Transmission*
- Upper Peninsula (Zone 2)*
- Other Market Options (Energy Storage, IPP, BTMG)
- Filing Requirements (including smaller utilities)

*The FERC, MISO, PJM Workgroup has been narrowed to Transmission and the Upper Peninsula (Zone 2) Workgroup has been added based on feedback received at the meeting.
Workgroup Assignments

• Start by evaluating MISO’s MTEP Futures Scenarios - details available at www.misoenergy.org
• Developed in a stakeholder process; updated annually
• Should Michigan require any of the MTEP Futures?
• Modified MTEP Futures?
• Is anything missing?
## MTEP16 Futures Matrix

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Business as Usual</td>
<td>0.75% / 0.82%</td>
<td>No Additional</td>
<td>2.5%</td>
<td>$4.11</td>
<td>N/C: 4.2 Wind/ 1.4 Solar S: 0 Wind/ 0 Solar</td>
<td>N/A</td>
</tr>
<tr>
<td>High Demand</td>
<td>1.55% / 1.61%</td>
<td>Age-related</td>
<td>4.0%</td>
<td>$4.11</td>
<td>N/C: 7.2 Wind/ 1.6 Solar S: 0 Wind/ 0 Solar</td>
<td>N/A</td>
</tr>
<tr>
<td>Low Demand</td>
<td>0.11% / 0.19%</td>
<td>Age-related</td>
<td>2.0%</td>
<td>$3.29</td>
<td>N/C: 2.4 Wind/ 1.3 Solar S: 0 Wind/ 0 Solar</td>
<td>N/A</td>
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<tr>
<td>Regional CPP Compliance</td>
<td>0.75% / 0.82%</td>
<td>14 GW coal + age-related</td>
<td>2.5%</td>
<td>$4.93</td>
<td>N/C: 4.2 Wind/ 1.4 Solar S: 0 Wind/ 0 Solar + cost maturity curves</td>
<td>$25 / ton</td>
</tr>
<tr>
<td>Sub-Regional CPP Compliance</td>
<td>0.75% / 0.82%</td>
<td>20 GW coal + age-related</td>
<td>4.0%</td>
<td>$4.93</td>
<td>N/C: 4.2 Wind/ 1.4 Solar S: 0 Wind/ 0 Solar + cost maturity curves</td>
<td>$40 / ton</td>
</tr>
</tbody>
</table>

*12 GW of MATS related coal-retirements are assumed in all Futures
Age-related retirement assumption applies to non-coal, non-nuclear generation only
Consider Sensitivity Requirements

Should there be specific requirements for sensitivities?

- **Demand & Energy Growth Rates**
  - High
  - Mid
  - Low

- **Natural Gas Prices**
  - High
  - Mid
  - Low

- **Renewable Portfolio Standards**
  - Existing 10%
  - 15% by 2025

- **Carbon Emission Reductions**
  - No constraint
  - 25% reduction by 2030
  - 35% reduction by 2030

- **Energy Efficiency Programs**
  - Existing
  - 2% savings/year

- **Demand Response Programs**
  - Existing
  - Additional programs

- **Imports**
  - Existing
  - Additional import of 630 MW
Workgroup Assignments

• Workgroups report status and/or propose initial recommendations to larger stakeholder group May 1^{st}
• Workgroups meet together to make any consensus revisions based on stakeholder feedback
• Final workgroup recommendations due to Staff by June 19^{th}
• Staff to assimilate and prepare 1^{st} draft of strawman proposal by July 7^{th} for one last round of informal comments before the commencement of the formal proceeding
Tentative Meeting Dates

Located at MPSC / MAE offices, 7109 W. Saginaw Hwy, Lansing, MI
WebEx / Call in options will be made available

• March 17
• March 30
• April 17
• May 1
  * Status report from workgroups due to stakeholders
• May 24
• June 12
How to get involved

• Workgroup sign up sheets are circulating
• Email Lynn Beck beckl12@michigan.gov
• Check www.Michigan.gov/mpsc or www.Michigan.gov/energy for IRP website and sign up
• Attend workgroup meetings
• Provide informal and formal comments at proper times
Next Meetings

• March 17 – 9:00 am – 12:00 pm
  – Energy Waste Reduction Workgroup
  – Demand Response Workgroup

• March 30 – 9:00 am – 4:30 pm
  – 9:00 – Environmental Policy Workgroup
  – 10:00 – Renewables and PURPA Workgroup
  – 11:00 – Other Market Options and Advanced Technologies Workgroup
  – 1:30 – Pricing and Reliability Workgroup
  – 3:30 – Filing Requirements Workgroup (small utility considerations)
PA 341 Section 6T IRP Implementation
Stakeholder Kickoff Meeting
March 10, 2017
9:30 am – 12:30 pm

1. Opening remarks (MAE Director Valerie Brader and MPSC Chairman Sally Talberg)
2. High level overview of IRP (Paul Proudfoot)
3. High level presentations from utilities on IRP
   a. DTE Energy (Kevin Chreston)
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Integrated Resource Plan (IRP) Stakeholder Outreach Meeting

Friday, March 17, 2017; 9:00 a.m. – 12:00 p.m.
Lake Michigan Hearing Room, Michigan Public Service Commission (MPSC)
Map to MPSC at 7109 W. Saginaw Hwy., Lansing, MI 48917

Phone-In: (877) 366-1831, Access Code 9382920
Webinar: www.connectmeeting.att.com,
Meeting no. 8773661831, Access Code 9382920

DRAFT AGENDA ITEMS

9:00 a.m. Energy Waste Reduction Potential Study
- Brief history of 2013 Statewide Energy Efficiency Potential Study
- Current findings of individual company energy efficiency studies by GDS
- Other potential scenarios based on current studies
- Comments from stakeholders regarding additional inputs or
- Assessment of information from all potential studies, additional scenarios, and comments from stakeholders

10:15 a.m. Break

10:30 a.m. Demand Response Potential Study
- Brief history of demand response proceedings and Commission activity
- Current plan for two part study
- Stakeholder engagement plan