MI POWER GRID

Making the Most of Michigan's Energy Future

Agenda Items		
8:30 am	Welcome and Introductions	Katie Smith, MPSC staff
8:45 am	Polar Vortex 2019 Operations Walkthrough and Communication Procedures: Utility Perspective	Marcus Rivard, Michael Samson, Edwin Peart, DTE
9:15 am	Polar Vortex 2019 Operations Walkthrough and Communication Procedures: Utility Perspective	Tom Clark, Consumers
9:45 am	Polar Vortex 2019 Operations and Communication Procedures: DR Aggregator Perspective	Gregg Dixon, Voltus
10:15 am	Polar Vortex 2019 Operations and Communication Procedures: Customer Perspective	Phil Rausch, Hemlock Semiconductor
10:35 am	Polar Vortex 2019 Operations and Communication Procedures: Customer Perspective	Danette Butcher, General Motors
10:55 am	Break	
11:10 am	Panel Discussion: LMR Underperformance and Barriers Experienced in PV 2019 Goal: identify problems and solutions to LMR underperformance Audience participation strongly encouraged!	Moderator: MPSC Staff Panelists: DTE, CE, Voltus, HSC, GM
11:40 pm	Review of Utility Tariffs: Notification and Penalty Provisions, Communication with customers, and Testing the communication system Staff will give an overview of existing interruptible tariffs and highlight areas that may be revised to address LMR underperformance. Stakeholders will be asked for input on suggested changes for the tariffs at the next meeting	Dave Isakson, MPSC Staff
12:00 pm	Next Steps and March Stakeholder Meeting Overview	MPSC Staff
12:15 pm	Adjourn	

MPSC

Michigan Public Service Commission

DTE Energy Load Modifying Resources (LMR)

Processes, Preparedness, Polar Vortex 2019 Operations and Improvements

February 19, 2020

Executive Summary

- DTE Electric has several interruptible rate tariffs that are used to comply with MISO Resource Adequacy requirements.
  - Customers on these tariffs may be directed to curtail during local system integrity events and MISO capacity emergencies (during Event Step 2b)
- DTE forecasts the amount of load available for interruption for every hour of the year and provides the forecast to MISO
- Every spring DTE sends a letter to customers on interruptible rates reminding them of their obligations and performs a test call to customers
- DTE received a MISO directive on 1/30/19 to interrupt Load Modifying Resources (LMRs) and promptly sent interrupt notices to customers
- DTE made improvements to its LMR processes based on results from the 1/30/19 LMR interrupt directive

DTE has ~650 MW of LMRs used to meet MISO planning requirements and maintain reliability in emergencies

- DTE has several interruptible tariff rates registered with MISO as LMRs which require curtailment per MISO directive during Maximum Generation Event Step 2b

Retail Rate		Direct Load Control	Request and Manual Interruption
		DTE interrupts customers directly using radio signal (~15 minutes to implement)	*Customer manually interrupts load when requested by DTE (~90 minutes to implement)*
D1.1	Interruptible Air Conditioning	143	-
D3.3	Interruptible General Service	-	21.0
D5	Interruptible Water Heating	5	-
D8	Primary Supply Interruptible Rate	-	88.8
R1.1	Alternative Metal Melting Rider	-	6.6
R1.2	Process Heat Rider	-	73.7
R10	Interruptible Supply Rider	-	304.7
		148	**494.8**

1. Table depicts PY 2018-19

DTE Energy submits hourly LMR availability in the MISO Communication System (MCS)

- Forecasted LMR availability is calculated using a methodology using inputs including historical load patterns, time-of-day, day-of-week, and temperature
- DTE's practice is to submit hourly forecasted LMR availability to the MCS for each DR class:

HE (EST)	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
DEMO WATER HEATERS Acknowledged by Nicholas Kotz 02/01/2020 22:17 EST																
Run hrs	4															
Notif.	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00
MWs Avail for MISO	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Self Sched LMR MW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DR INT AIR CONDITION Acknowledged by Nicholas Kotz 02/01/2020 22:17 EST																
Run hrs	8															
Notif.	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00
MWs Avail for MISO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Self Sched LMR MW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DR OTHER PROGRAMS Acknowledged by Nicholas Kotz 02/01/2020 22:17 EST																
Run hrs	4															
Notif.	02:00	02:00	02:00	02:00	02:00	02:00	02:00	02:00	02:00	02:00	02:00	02:00	02:00	02:00	02:00	02:00
MWs Avail for MISO	250	260	270	280	290	300	310	320	330	340	350	360	370	380	390	400
Self Sched LMR MW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Proxy values for example use

DTE performs annual LMR readiness activities to ensure performance during emergencies

Annual LMR Readiness:

- Perform test interrupt call to customers and internal contacts
- Send letter to customers on interruptible rates reminding them of their obligations and notification process
- Verify/update contact information

DTE

May 28, 2019

Service Company
Service Address
Service City, MI Service Zip

Dear Customer,

Since you are enrolled in our D8 Interruptible Supply rate, I want to help you understand your responsibilities and how DTE will reach out to instruct you to reduce your electric use as allowed for under this special rate. Please be sure you (and any co-workers as appropriate) fully read these instructions so you are prepared for our **test of the notification system on June 6, 2019**. Your participation is crucial.

Notification Procedures and Responsibilities
At times, DTE Energy may need to reach out to you to order a reduction in usage. In these instances, we will notify you at least one hour prior to the time we require you to interrupt electric usage and reduce your demand to your "firm load." If you do not comply, DTE must follow the requirements of our electric tariffs and charge you as follows in these two types of interruptions:

During a System Integrity Interruption Order, A customer who does not interrupt within one hour following a system integrity interruption order shall be billed at the rate of $50 per kW for the highest 30-minute kW demand created during the interruption period for all usage above the customer's firm demand (product protection), in addition to the prescribed monthly rate.

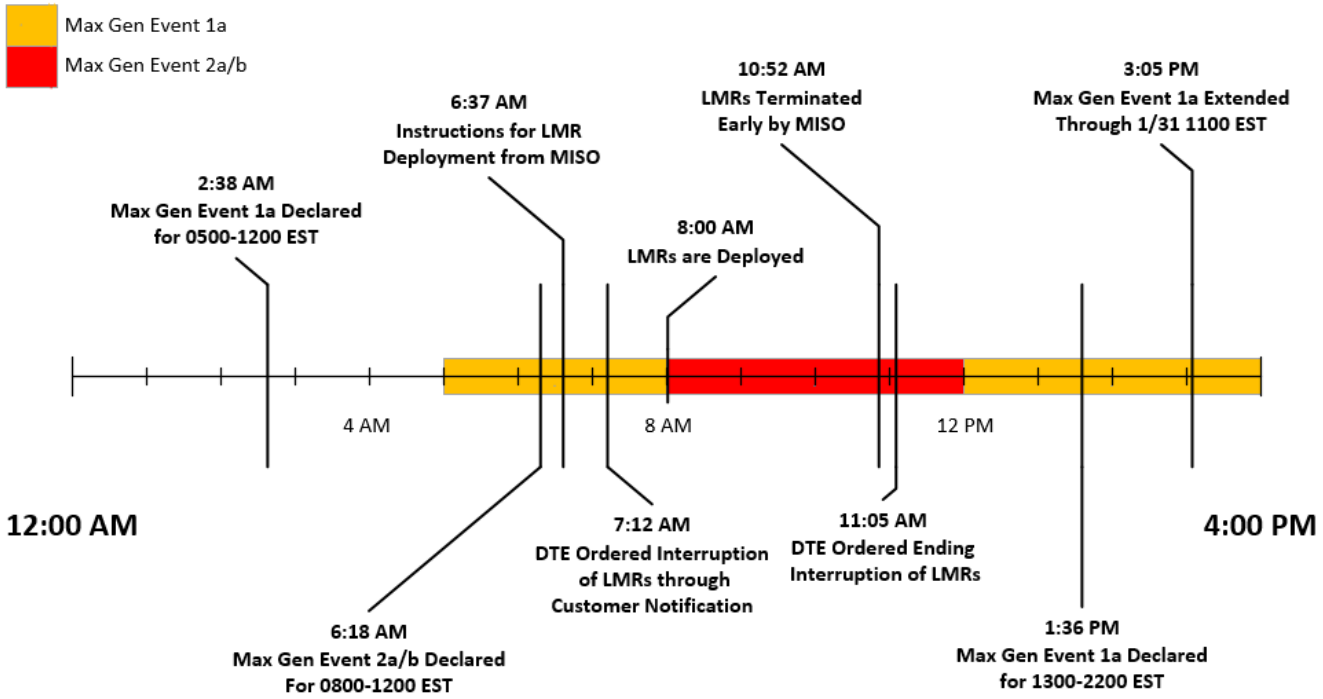
During a Capacity Deficiency Interruption order, Customers who do not interrupt within one hour following notice of a capacity deficiency interruption order shall be billed at the cost of replacement energy plus 0.576¢ per kWh during the time of interruption plus the applicable voltage level charge, but not less than the normal D8 rate.

System Test – *Do NOT power down your interruptible load for the system test.*
On **Thursday, June 6, 2019 between 10 a.m. and 1 p.m.**, DTE will attempt to call you at the numbers you have previously provided. (See the list of your provided numbers on the next page and **contact me with any necessary updates by June 4, 2019**).

IMPORTANT: We use an automated calling system which cannot interact with another automated system such as a main switchboard or answering system that requires a voice response or a caller to input numbers. Please ensure your provided phone contacts are direct lines to individuals, **or the test will fail**. This would mean a future call from DTE to order an actual service interruption would also fail, **resulting in the charges described above**.

DTE received a MISO directive on 1/30/19 to interrupt LMRs and promptly sent interrupt notices to customers

- DTE notified DR customers within ~35 minutes following MISO's dispatch instructions
- DR customers were given ~1 hour and 45 minutes notice to interrupt



Post-event reviews within DTE and at MISO identified improvements to LMR processes

- After event review and analysis of lessons learned, DTE has identified and implemented numerous LMR process improvement actions

Implemented Improvements
Modified MPSC notices for improved clarity
Rewrote message templates for interruptible rate customers to clarify expectations
Expanded internal communications during emergency events to include Senior Executives (if interrupting customers or issuing PA) and DTE's Public Affairs State Emergency contact
Improved process documentation and Job Aids for LMR implementation
Created talking points for Customer Service during emergency events

Future Improvements
Supplement phone calls for customer interruptions with SMS text notification option
Improve MCS hourly availability calculation methodology to align with "10 in 10" MISO measurement and verification

- MISO has proposed reduced accreditation for LMRs with longer notification times
  - DTE offers supportive (shorter) notification times for LMRs and expects to receive full accreditation under any proposed MISO capacity rule changes

DTE provided the appropriate notice as outlined in its tariffs for interruptible customers to curtail load at the required time

- The Company sent a message to all interruptible customers (except D5 – water heating) through the automated notification system at 7:15 am informing them to reduce their loads by their contracted amounts. Customers were instructed to interrupt this load by 9:00 am
  - Our records indicate that we successfully contacted 97% of our customers through the automated notification system
  - Though not a tariff requirement, Account Managers were instructed to call their interruptible customers to confirm customers received the automated notification and understood what was required (240 of the 380 assigned customers were personally contacted during the event)
  - Approximately 312 of the 575 customer sites subject to interruption did not respond or did not sufficiently respond. These customers were subject to penalties as outlined in the tariff
  - Customers were given the option of paying the penalty immediately or via a payment plan of 3-9 months
  - All penalties have been paid with the exception of one customer (currently a formal complaint with the MPSC)
  - 13 customers (2%) have requested rate changes as a result of the Polar Vortex event (~12.4 MW)
  - 11 customers have requested an interruptible rate product since the Polar Vortex (~13.6 MWs). In totality LMRs were not significantly changed

Customer Feedback and Countermeasures

Customer Feedback	Countermeasure	Expected Completion Date
The interruption messaging on the automated call does not have urgency and is similar to all other messaging	We have reviewed and modified the language to ensure the message reflects urgency and clarity.	3-30-2020
1 hour or less is not enough time for most customers to shut down equipment properly	We are in discussions with MISO, Regulatory, and Generation Optimization on exploring the possibility of a longer lead time for future load reductions.	TBD
Customer personnel has changed over the years and all do not understand the requirements of the rate/tariff	Meet with each interruptible customer annually to review contract terms and changes to operations to ensure complete understanding and responsibility	Q1 Annually
Customers need assistance with load reduction planning	Account Managers and Energy Partnership engineers meet as needed with interruptible customers to develop "Action Plans" to ensure tariff compliance.	7-31-2019 (Completed)

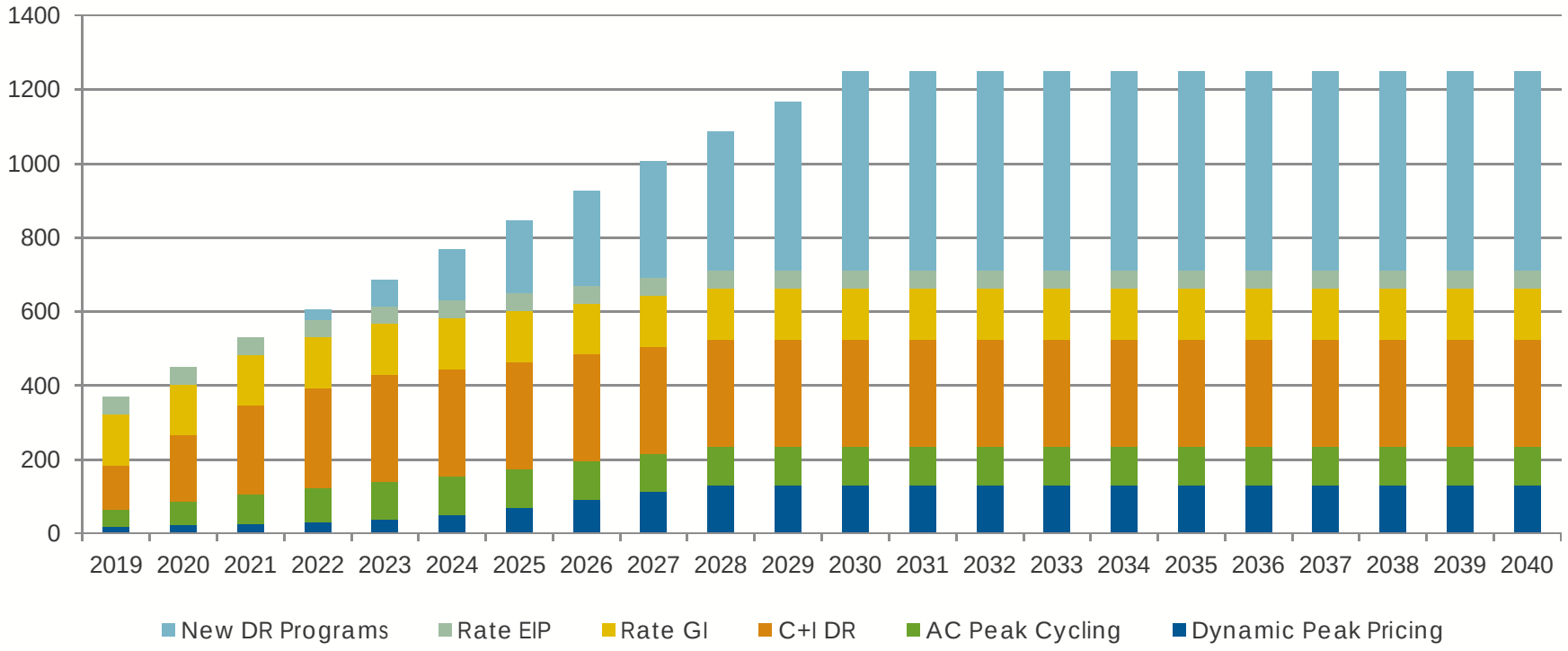
Consumers Energy Demand Response Update

February 19, 2020

Tom Clark
Derek Kirchner
Emily McGraw
Phil Walsh

Consumers Energy
Count on Us®

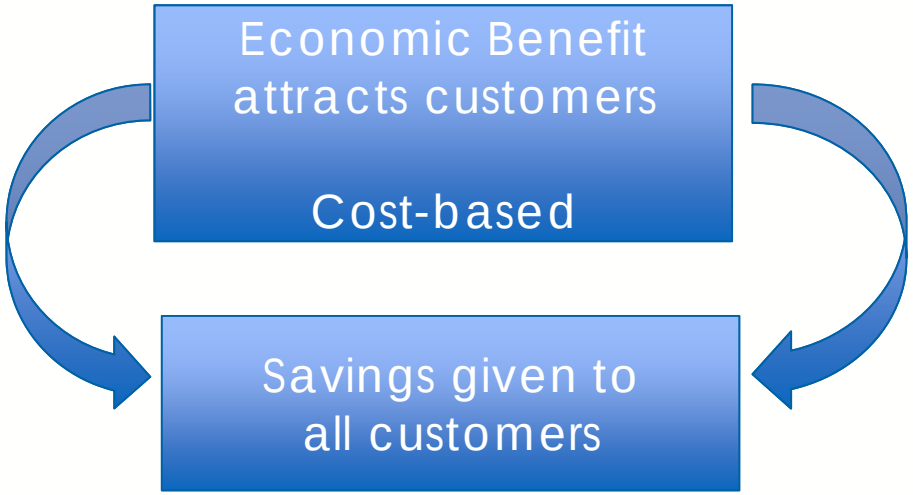
The Demand Response Plan



Demand Response is a key resource in planning for future capacity.

See Integrated Resource Plan, Case No. U-20165

Demand Response Outcomes



Demand Response is a key resource in planning for future capacity.

See Integrated Resource Plan, Case No. U-20165

Commercial DR and Interruptible Tariffs

Commercial and Industrial DR

- $25/kW annually, per contract language
- Customer nominates available capacity and submits energy reduction plan for enrollment
- Customer tools: Load monitoring equipment, web dashboard*
- Interruptions based on MISO system integrity notifications and emergency operating procedures
- Economic option available to receive incentives based on MISO LMP** threshold
- Ability to enroll in multi-year contracts for annual participation

Interruptible Service Provision (GI) Rate

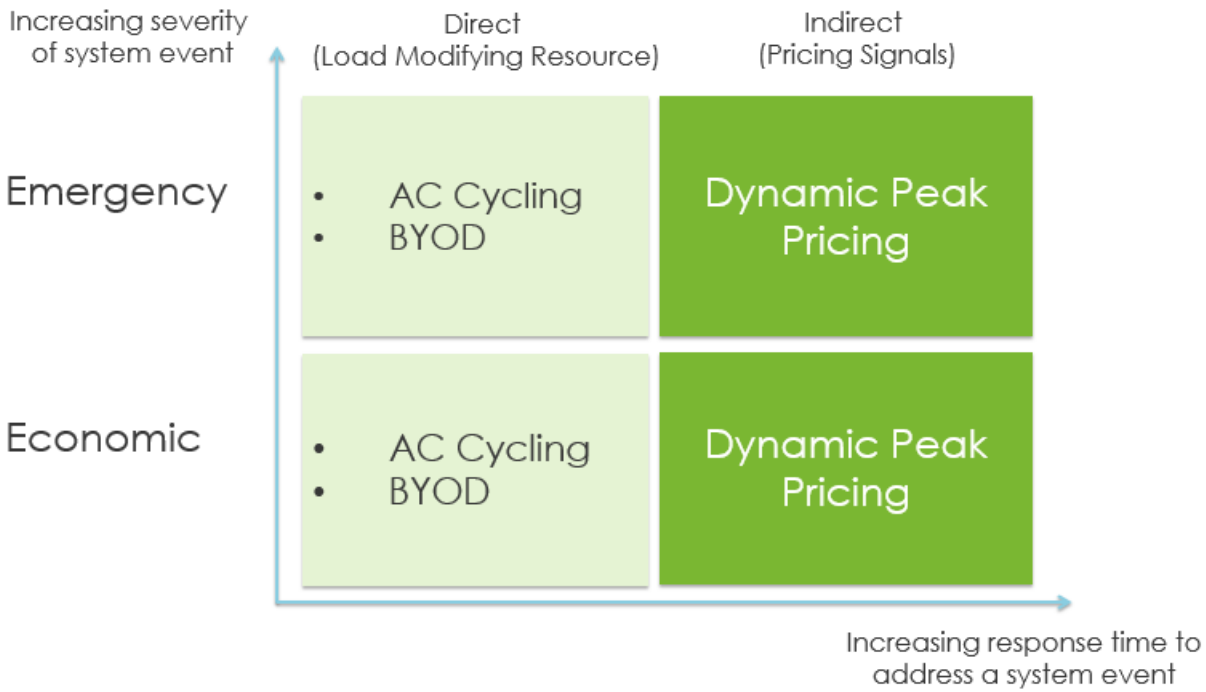
- Minimum load = >500 kW interruptible
- Customer tools: Load monitoring equipment, web dashboard*
- Billing demand discount
- Interruptions based on MISO system integrity notifications and emergency operating procedures
- Penalties for non-interruption

Interruptible Service Provision (GI2) Rate

- Minimum load = >3,000 kW interruptible
- Customers tools: Load monitoring equipment, web dashboard*
- Energy billed at the MISO real-time LMP** for all kWh
- Penalties for non-interruption
- Interruptions based on MISO system integrity notifications and emergency operating procedures

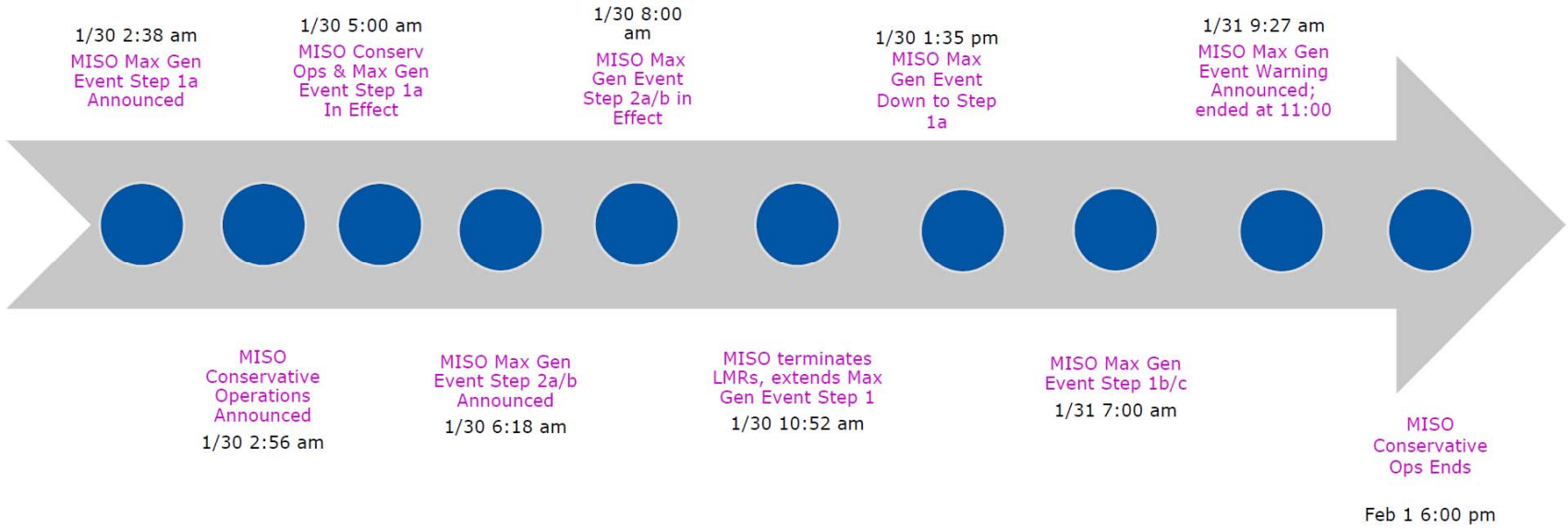
* Provided by Consumers Energy based on customer size
**LMP = Locational Marginal Pricing

Residential DR and Interruptible Tariffs



BYOD = "Bring Your Own Device" program; AC = Air Conditioning

Polar Vortex 2019 – Event Timeline



Learnings and Improvements

We learned

- It is important to provide accurate MCS* data for what is available as an LMR* year-round.
- Communications from MISO were not as expected based on training.
- Internal communications between LMR* program managers, corporate account managers, and market operations were insufficient.

We are improving

- We have implemented a process to provide accurate MCS* data with LMR* information year-round.
- Recognition from actual experience in receiving communications for an emergency event may not be the same as that experienced during training.
- Communication processes for internal groups are being enhanced.
- Improvements due to lessons learned do not require changes in tariffs for Consumers Energy.

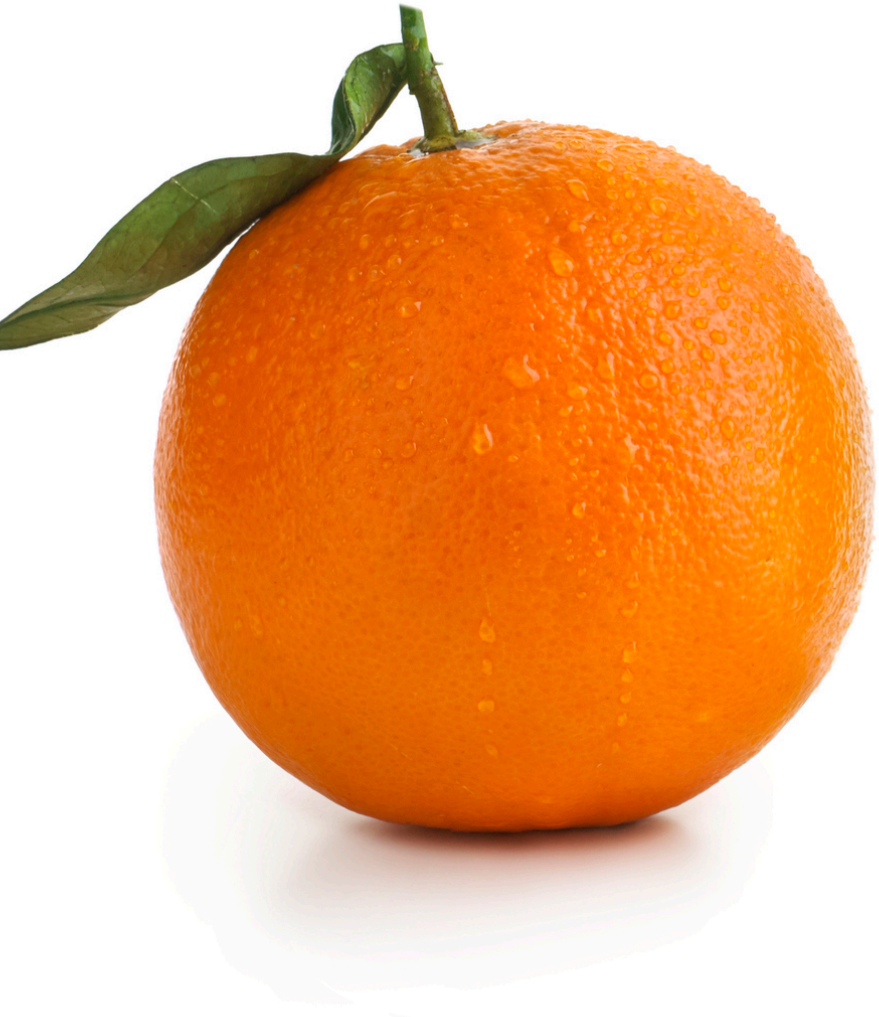
*LMR = Load Modifying Resource; MCS = MISO Communication System

MI Grid Workshop

February 19, 2020

Contents

$153,300



$73,000


GOOD
BEST
BETTER


Current Process
Process time


Walmart
DUPONT
GSA
USG
Cargill
SIMON
Steel
LafargeHolcim
DEPARTMENT OF THE ARMY
UNITED STATES OF AMERICA
1775
DEPARTMENT OF THE NAVY
UNITED STATES MARINE CORPS
DEPARTMENT OF THE NAVY
UNITED STATES OF AMERICA
DEPARTMENT OF THE AIR FORCE
UNITED STATES OF AMERICA
MCMXLVII
UNITED STATES COAST GUARD
SEMPER PARATUS
1790
amazon
TESLA
Google

HSC Overview

Demand Response and Interruptible Resource

HEMLOCK SEMICONDUCTOR

HSC was founded in 1961

Joint Venture of: Corning, DuPont, ShinEtsu

1,500
workers on site

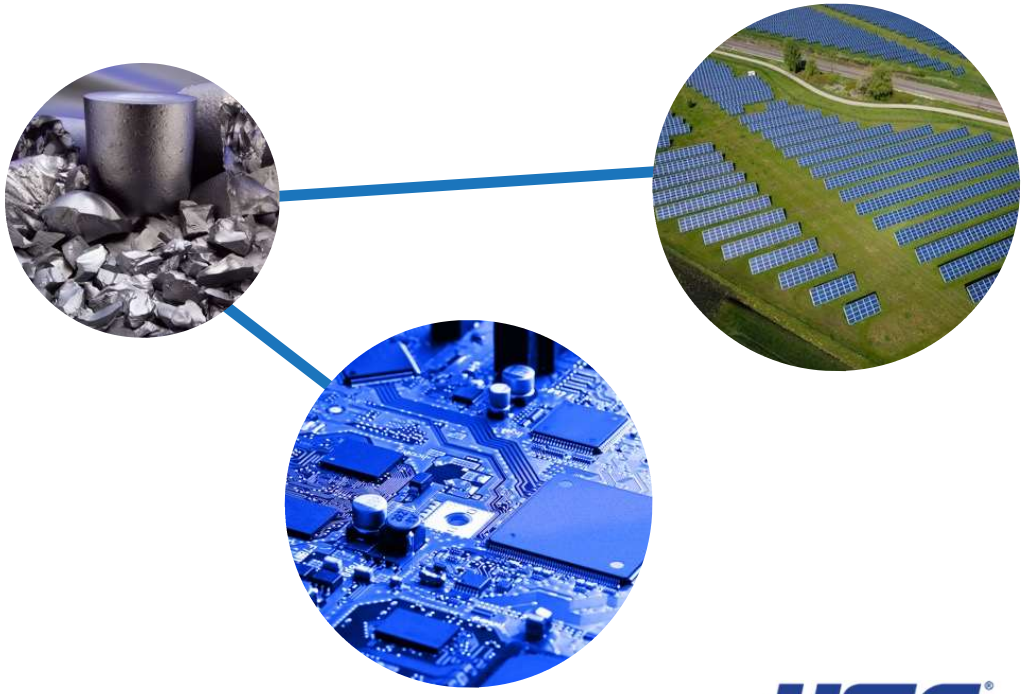
>$1 billion in
annual revenue

$3+ billion
invested in HSC's
site since 2005

HSC HEMLOCK SEMICONDUCTOR

- 8000 BC **Stone Age**
- 3700 BC **Bronze Age**
- 1880 **Industrial Age**
- 1945 **Atomic Age**
- 1957 **Space Age**
- 1970 **Silicon (Information) Age**

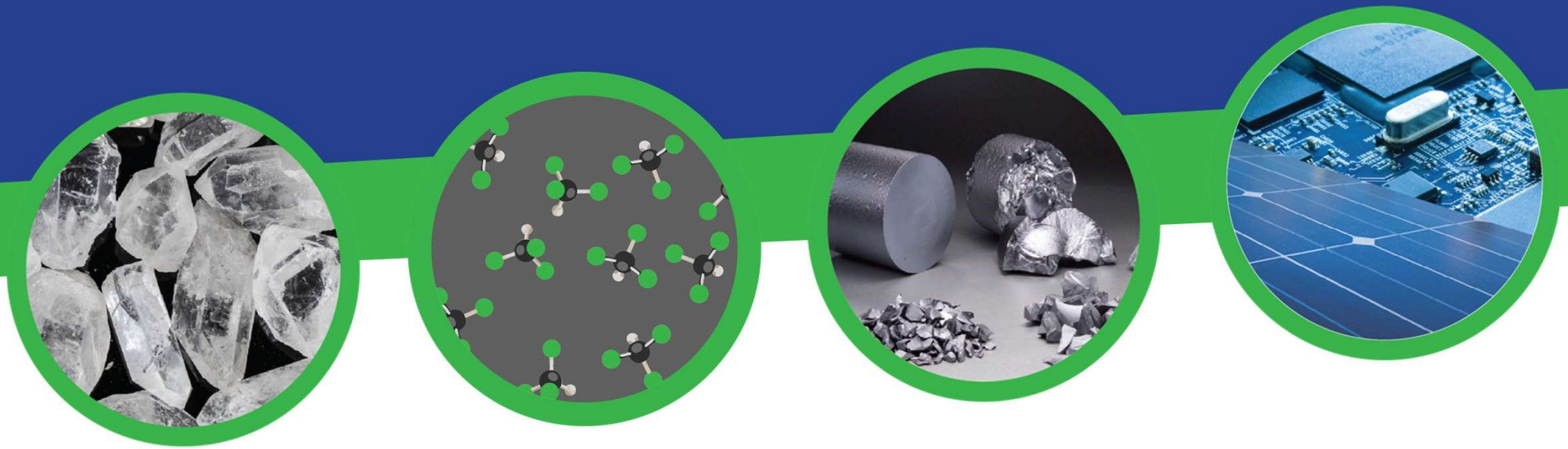
We are living in the Age of Silicon



HSC HEMLOCK SEMICONDUCTOR

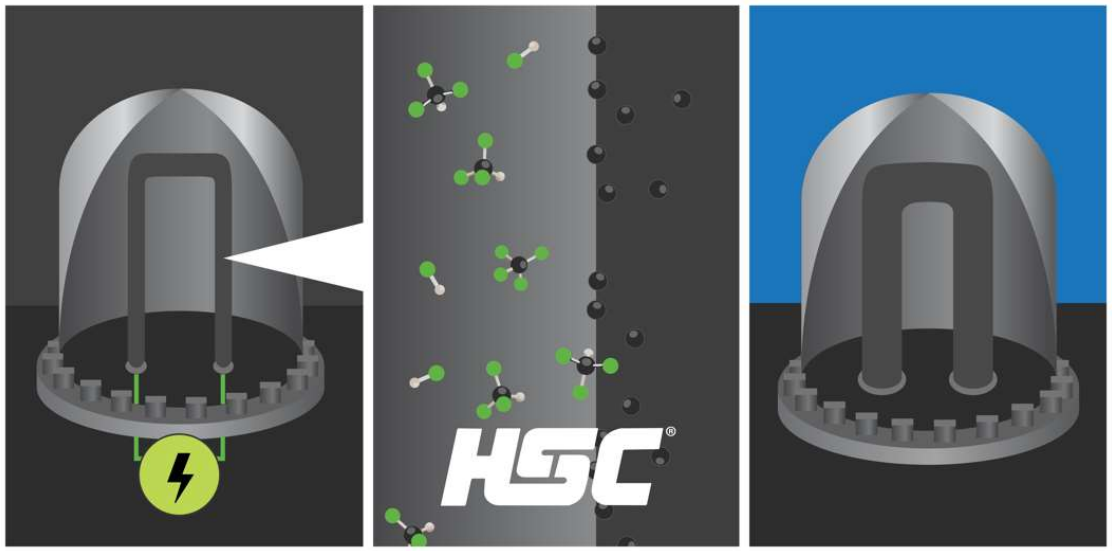
Polycrystalline Silicon (Polysilicon)

It all starts with quartz from the earth's crust.



HSC HEMLOCK SEMICONDUCTOR

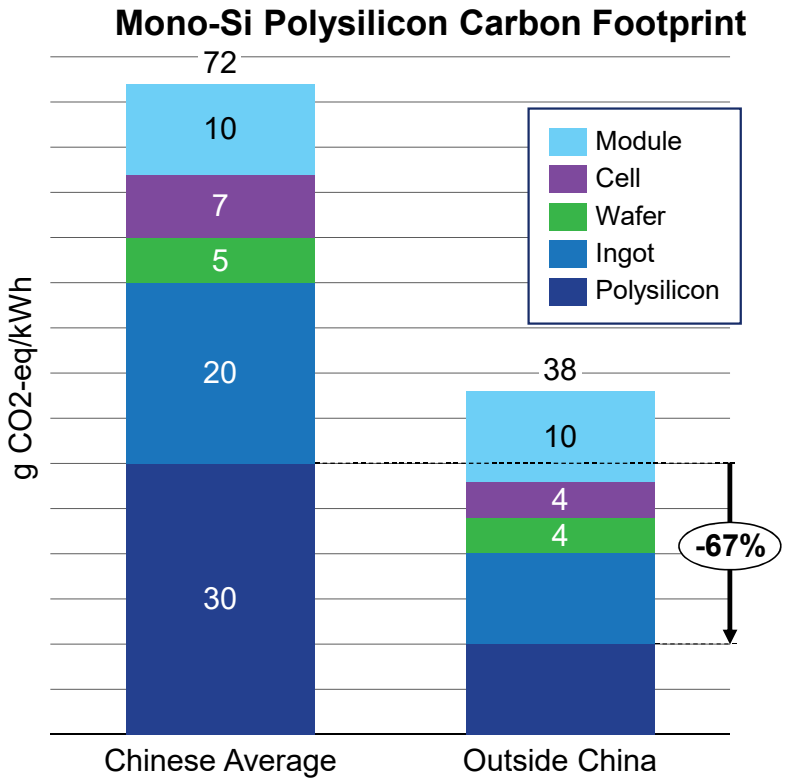
How polysilicon is made



HEMLOCK SEMICONDUCTOR

HSC's Differentiation

- Only US headquartered manufacturer
  - History of high quality and customer service
- Carbon footprint best in class
  - YoY ↓ usage w/ ↑ yield
  - Low carbon electricity source & improving
  - Currently capturing 1/3 of French Market



Source: Yue, You, Darling, Domestic and overseas manufacturing scenarios of silicon-based photovoltaics: Life cycle energy and environmental comparative analysis

Polar Vortex 2019

HSC HEMLOCK SEMICONDUCTOR

HSC Timeline

Date/Time	Notification/Action
1/31/19 4:58AM	Warning issued of 0700 Max Gen Event 1b/c
1/31/19 8:46AM	Received Notification from Consumers for Max Gen Event
1/31/19 8:46AM	HSC immediately begins 75MW Demand Response

HEMLOCK SEMICONDUCTOR

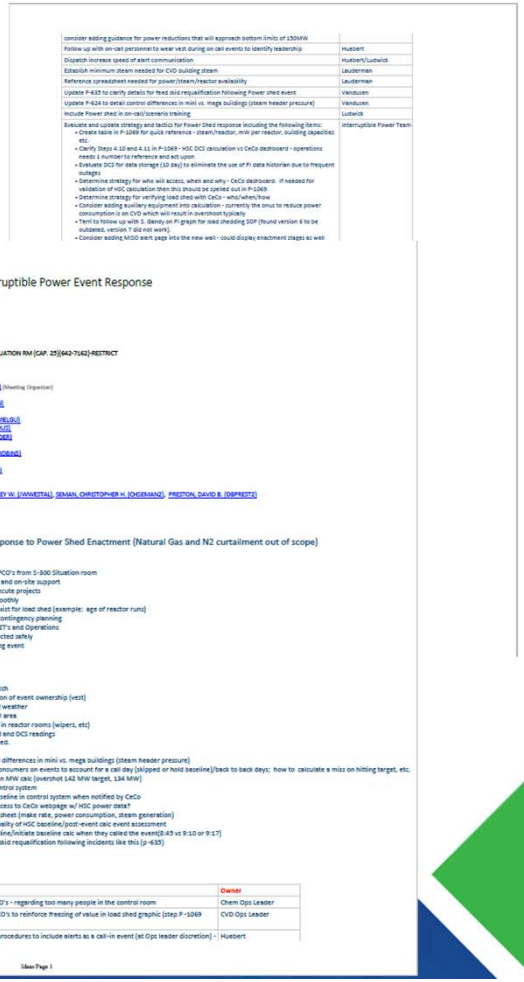
TOP: HSC Internal Time Stamp Notifications from Consumers Energy
BOTTOM: MISO PowerPoint Presentation to MI Power Grid January 16th 2020

Lessons Learned

Positives
- No Injuries or Spills!
- 100% Compliance
- Ramping off Reactors Went Smoothly
- Communication with Consumers Energy
- Training and Procedures Paid Off

Opportunities:
- Virtual Dashboard Issues
- Cold Weather Operator Safety
- Refined SOPs and Developed New Training Scenarios
- Gas Curtailment Procedures

Costs To HSC
- Lost Production
- Damage ~$250k



Rehash CECo GI Interruptible Power Event Response (1/30/2019)

Meeting Date: 2/4/2019 1:00 PM
Location: HSC - HGC3000A (A) 3300 SITUATION RM (CAP. 25)(642-7162)-RESTRICT
Link to Outlook Item: click here
Invitation Message
Participants

Additional Attendees: WESTALL, JEFFREY W. (JWWESTAL), SEMAN, CHRISTOPHER H. (CHSEMAND), PRESTON, DAVID B. (DBP48272)

Notes

Purpose: Evaluate HSC response to Power Shed Enactment (Natural Gas and N2 curtailment out of scope)

Positives
- Organized communication to PCO's from S-300 Situation room
- Availability of Personnel - OET and on-site support
- Sub teams were formed to to execute projects
- Ramping off reactors went smoothly
  - Automatic instructions exist for load shed (example: age of reactor runs)
- Good preparation for further contingency planning
- Good process ownership by OET's and Operations
- No injuries/spills - work conducted safely
- OET assistance with eLog during event

Opportunities
- Timeliness of alert from Dispatch
- P-1069 needs better explanation of event ownership (vest)
- Response not expected in cold weather
- Too many people in S-300 PCO area
- Cold weather issues identified in reactor rooms (wipers, etc)
- Confusion between dashboard and DCS readings
- Checklist in SOP P-1069 not used.
- Use the GI email list
- Update P-624 to detail control differences in mini vs. mega buildings (steam header pressure)
- Complete more scenarios w/consumers on events to account for a call day (skipped or hold baseline)/back to back days; how to calculate a miss on hitting target, etc.
- Consider auxiliary equipment in MW calc (overshot 142 MW target, 134 MW)
- Calculation error (minor) in control system
- CVD Rxr PCO did not freeze baseline in control system when notified by CeCo
- Do all the right people have access to CeCo webpage w/ HSC power data?
- Develop CVD/HOST reference sheet (make rate, power consumption, steam generation)
- PI data archive skips impact quality of HSC baseline/post-event calc event assessment
- CeCo did not freeze their baseline/initiate baseline calc when they called the event(8:45 vs 9:10 or 9:17)
- Add clarifying details for feed skid requalification following incidents like this (p-635)

Actions

Action	Owner
Get feedback from on shift PCO's - regarding too many people in the control room	Chem Ops Leader
Follow up with CVD reactor PCO's to reinforce freezing of value in load shed graphic (step P-1069 4.3.2.1)	CVD Ops Leader
Update emergency response procedures to include alerts as a call-in event (at Ops leader discretion) -	Huebert

Idaso Page 1

HEMLOCK SEMICONDUCTOR

Opportunities for Improvement

HSC HEMLOCK SEMICONDUCTOR

MISO Interruptible Tariffs Available

Respond BY (Pre 6/1/2019)

75MW Interruptible Capacity

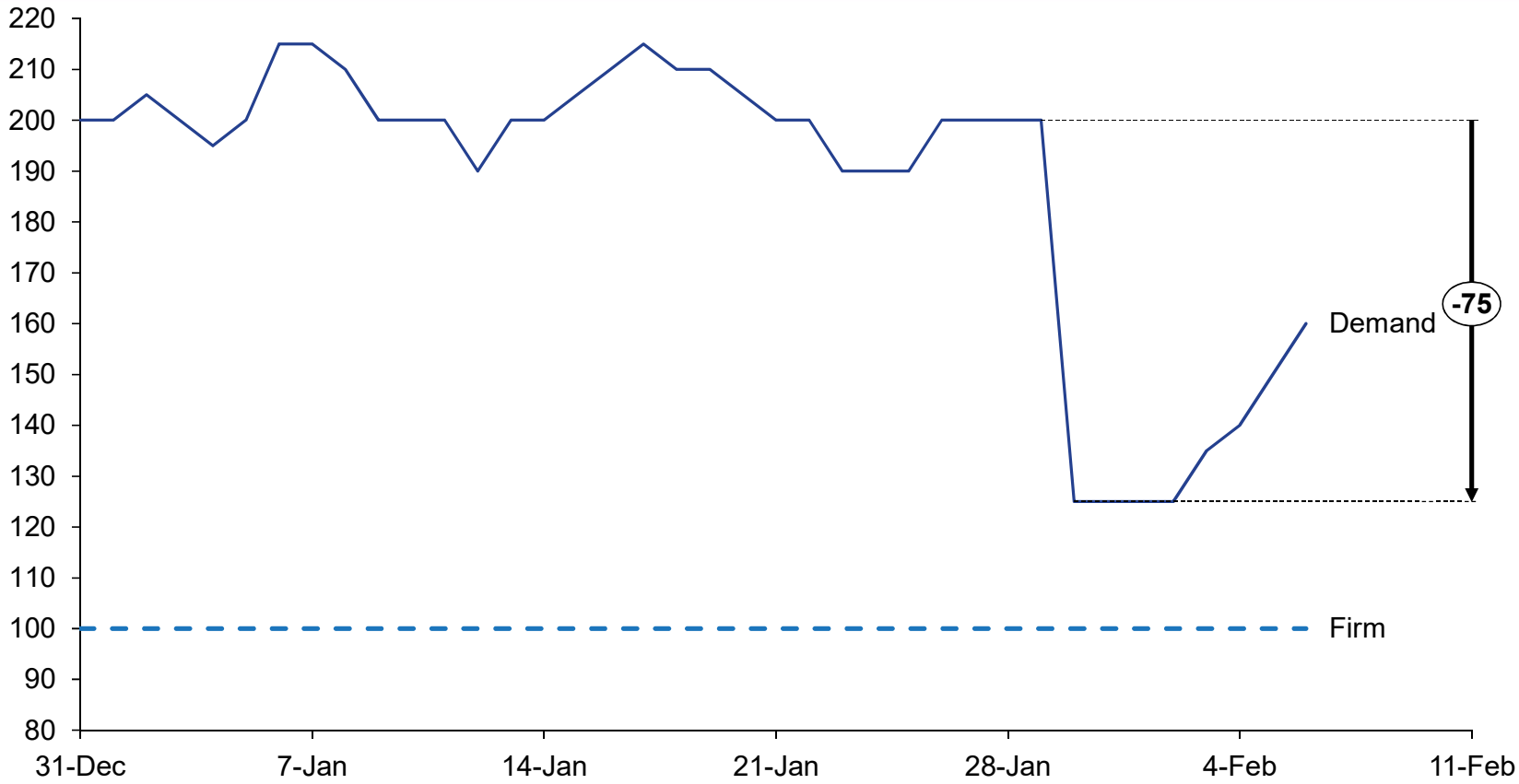
1. Elect Interruptible Capacity
2. Develop Procedures
3. Train Operations
4. MISO Event Enacted
5. Calculate Baseline (10 days)
6. Day of Adjustment (+/-20%)
7. Hit Moving Target

Respond TO (Post 6/1/2019)

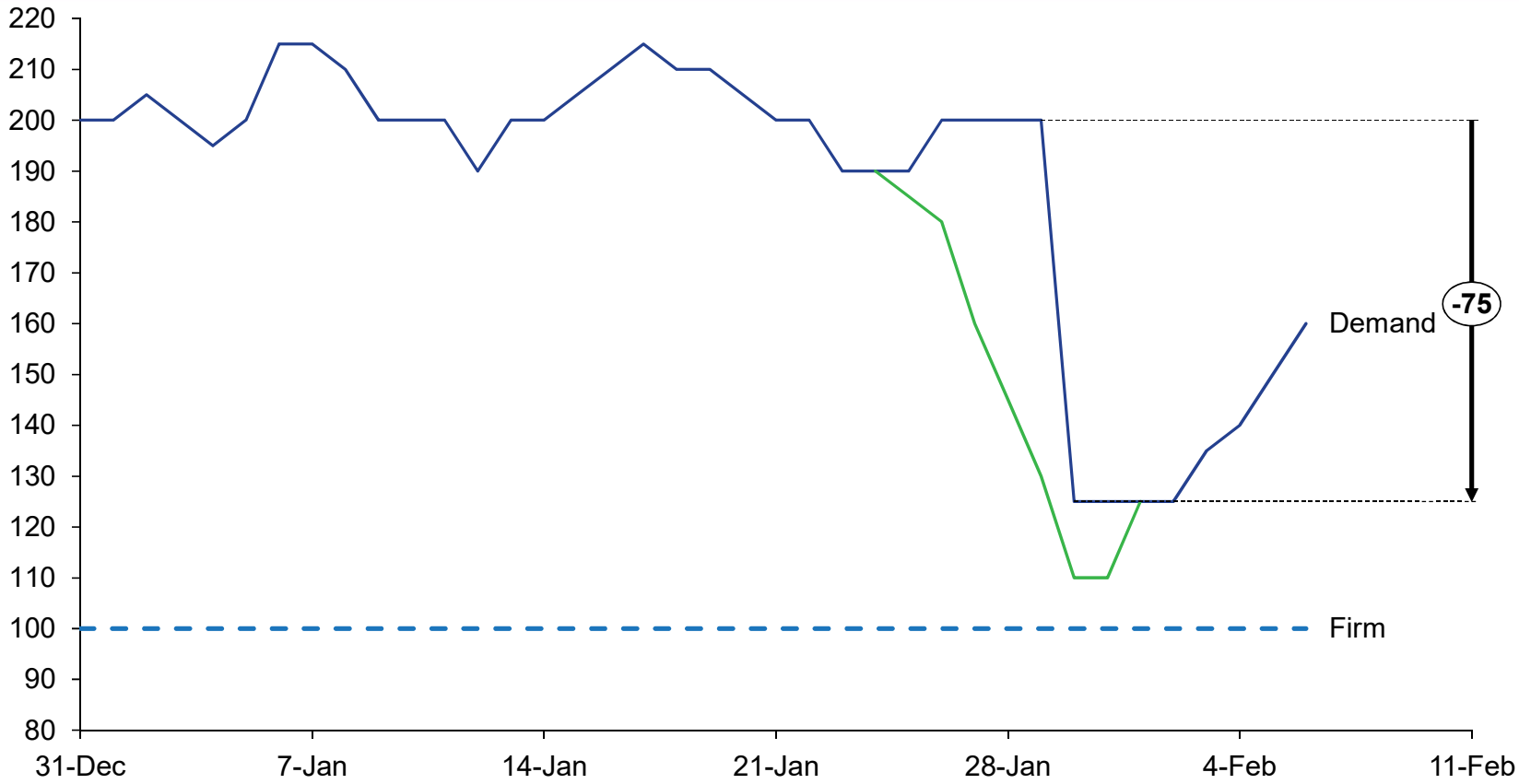
100MW Interruptible Capacity

1. Elect Interruptible Capacity
2. Develop Procedures
3. Train Operations
4. MISO Event Enacted
5. Hit Fixed Number

Pre-Ramp Disincentive



What If Customers Had an Economic Incentive to Pre-Ramp?



GM ACTIVITY
MI POWER GRID DEMAND RESPONSE STAKEHOLDER INITIATIVE

OUTLINE OF JANUARY 30, 2019 POWER INTERRUPTION EVENT

GM Demand Response Participation

- GM has been contracted for GI Provision (Consumers) since 2008, and on Rate I from 2006 - 2008
- GM has been on Rider 10 (DTE) for more than 25 years

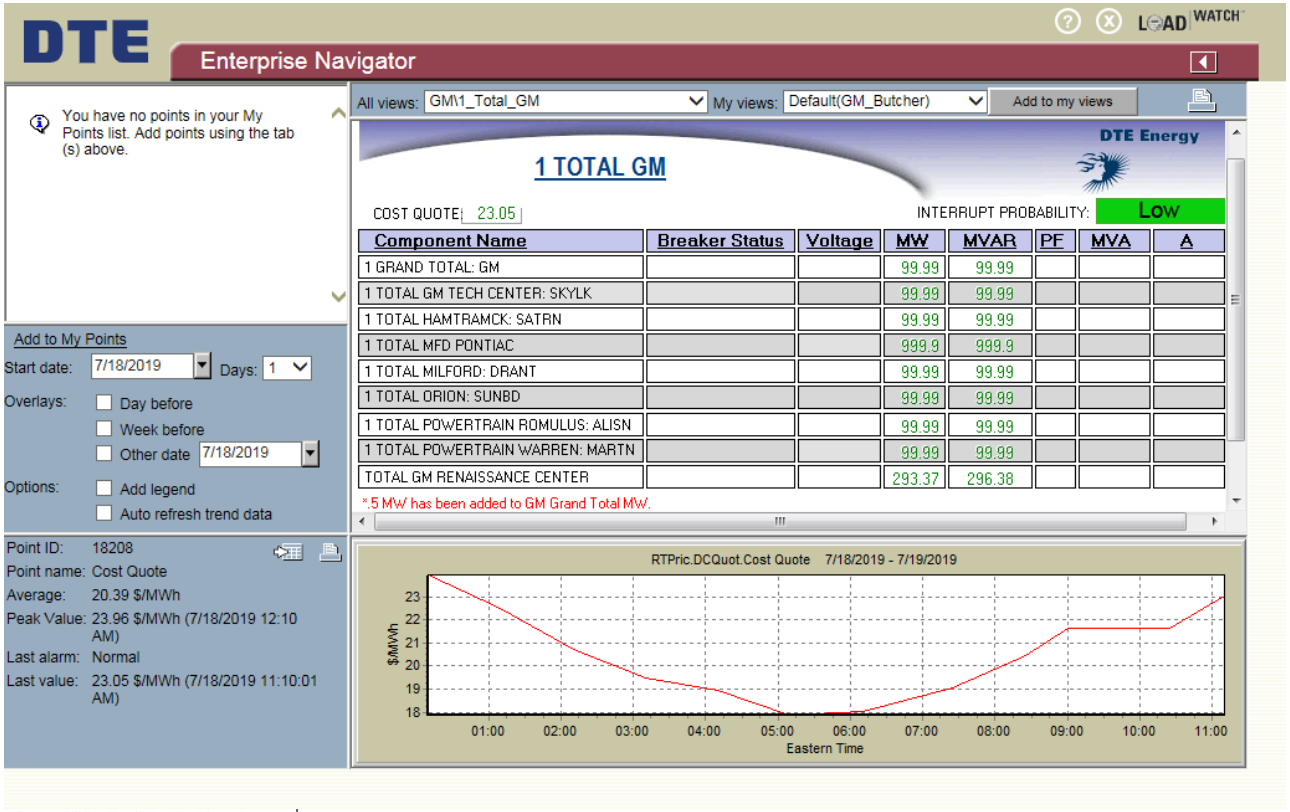
OUTLINE OF JANUARY 30, 2019 POWER INTERRUPTION EVENT

How was interruption communicated?

- MISO calls for interruption (utility level)
- Utilities automated calls go to GM Energy Manager
- Utility representative follows up with a call and/or email to the Energy Manager

GM uses DTE Load Watch to monitor usage at DTE sites and to anticipate interruptible situations

OUTLINE OF JANUARY 30, 2019 POWER INTERRUPTION EVENT

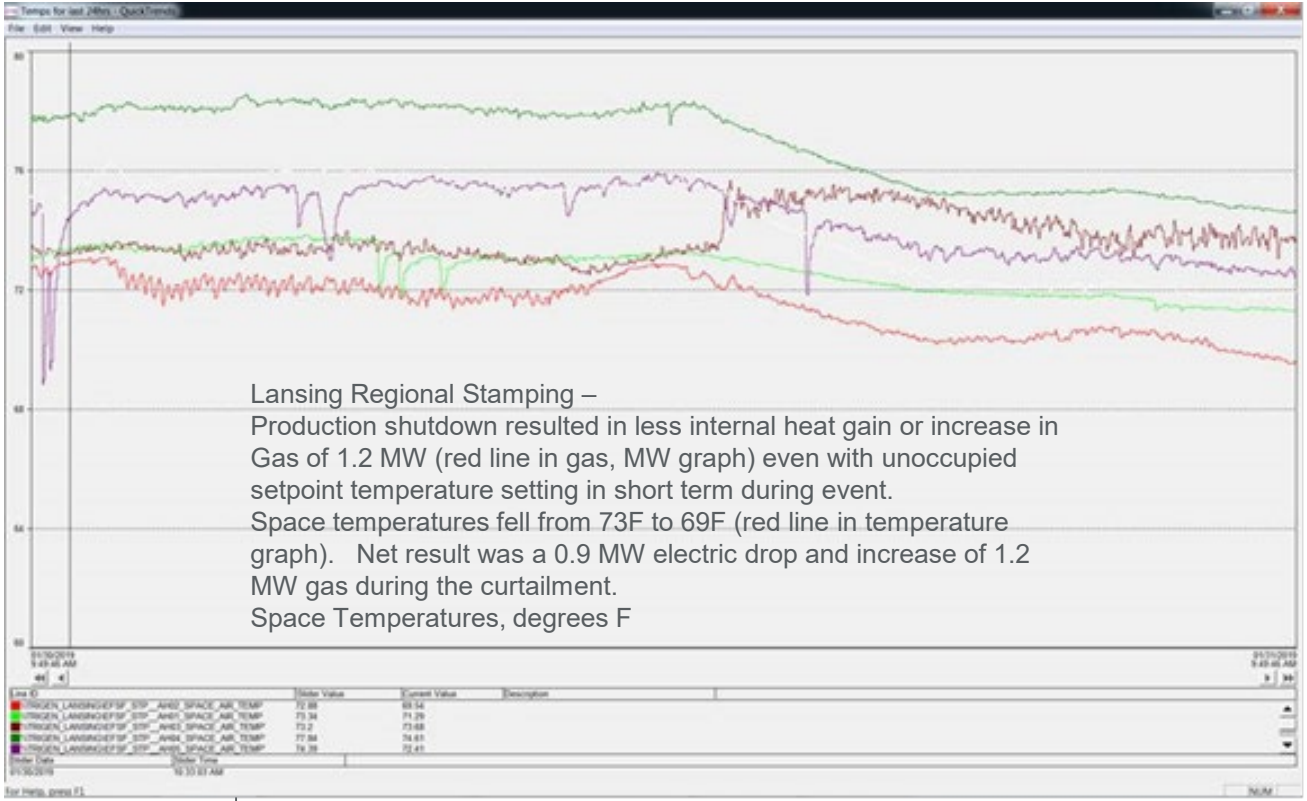


OUTLINE OF JANUARY 30, 2019 POWER INTERRUPTION EVENT

GM Response to January 30, 2019 Power Interruption Event

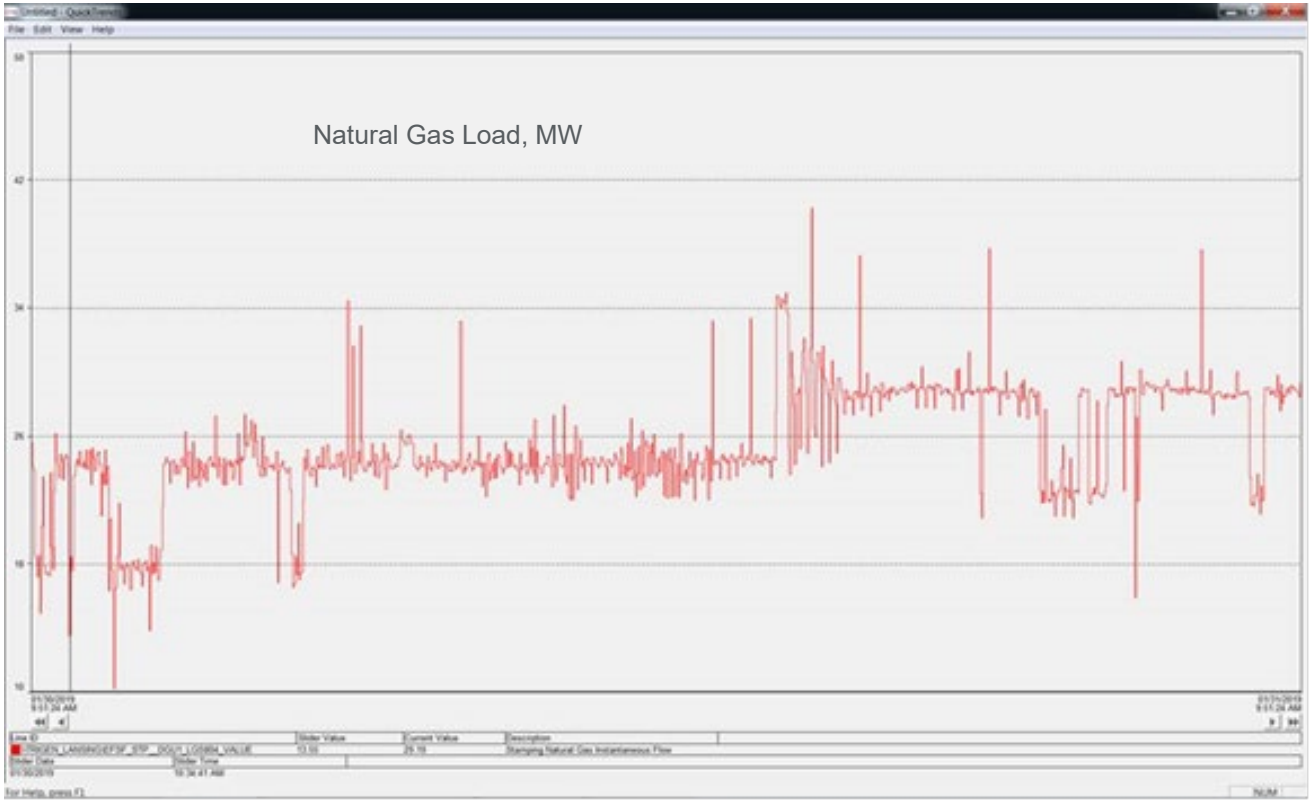
- Energy Manager communicated Power Interruption Event to Plant Operations with instructions to drop to their minimum load requirement
- Our Milford facility was one of our highest performers, having taken extreme actions due to the extreme nature of the event:
  - All testing activities were ceased. These activities make up 10 percent of the Milford load (23MW) and typically run 365 days a year.
  - Using our Flywheel Generator System at the MPG Data Center, we were able to shed 40 percent of the Milford electrical load (23MW).
  - GM ran half a dozen 6 MW diesel generators to support the curtailment effort.
- With these efforts, as well as the efforts at other GM locations, GM was able to meet the interruption requirements.
- Some sites experienced increased gas consumption as a result of losing building heat when we cut electric use, shutting down equipment that otherwise would have generated ambient heat.

OUTLINE OF JANUARY 30, 2019 POWER INTERRUPTION EVENT



Lansing Regional Stamping –
Production shutdown resulted in less internal heat gain or increase in Gas of 1.2 MW (red line in gas, MW graph) even with unoccupied setpoint temperature setting in short term during event.
Space temperatures fell from 73F to 69F (red line in temperature graph). Net result was a 0.9 MW electric drop and increase of 1.2 MW gas during the curtailment.
Space Temperatures, degrees F

OUTLINE OF JANUARY 30, 2019 POWER INTERRUPTION EVENT



FUTURE PLANNING FOR DEMAND RESPONSE

- Plant Process Reviews

  Work to support plants as they review their curtailment processes and adjust procedures for efficient reductions when called for.

- Utility Relationships

  Maintain strong relationships with utilities to ensure communication channels are open to share opportunities to improve the Demand Response program offerings to better fit an industrial profile.

MI POWER GRID

Making the Most of Michigan's Energy Future

Break

MI POWER GRID

Making the Most of Michigan's Energy Future

Panel Discussion: LMR Underperformance and Barriers Experienced in PV 2019

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Michigan Public Service Commission

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Making the Most of Michigan's Energy Future

Interruptible Tariff Overview:
Demand Response Workgroup

Dave Isakson- MPSC Staff

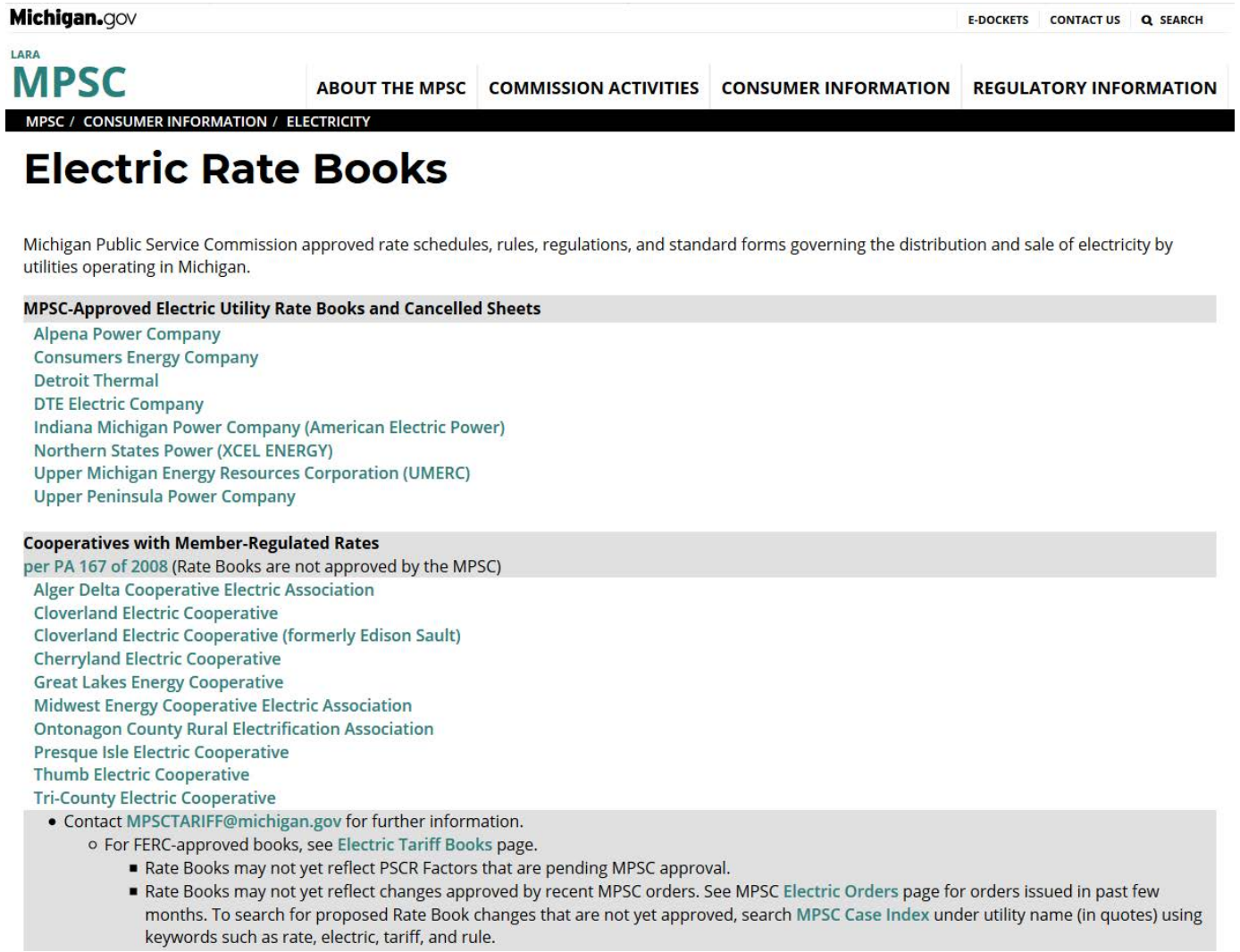
MPSC

Michigan Public Service Commission

Presentation Overview

- Background
  - What are tariffs, and why are they important?
  - Necessary components of interruptible tariffs
  - Optional components
- Foreground
  - Areas for improvement or alignment
- Next Steps

What and Where are Tariffs?



Michigan.gov E-DOCKETS CONTACT US SEARCH

LARA MPSC ABOUT THE MPSC | COMMISSION ACTIVITIES | CONSUMER INFORMATION | REGULATORY INFORMATION

MPSC / CONSUMER INFORMATION / ELECTRICITY

Electric Rate Books

Michigan Public Service Commission approved rate schedules, rules, regulations, and standard forms governing the distribution and sale of electricity by utilities operating in Michigan.

MPSC-Approved Electric Utility Rate Books and Cancelled Sheets

- Alpena Power Company
- Consumers Energy Company
- Detroit Thermal
- DTE Electric Company
- Indiana Michigan Power Company (American Electric Power)
- Northern States Power (XCEL ENERGY)
- Upper Michigan Energy Resources Corporation (UMERC)
- Upper Peninsula Power Company

Cooperatives with Member-Regulated Rates
per PA 167 of 2008 (Rate Books are not approved by the MPSC)

- Alger Delta Cooperative Electric Association
- Cloverland Electric Cooperative
- Cloverland Electric Cooperative (formerly Edison Sault)
- Cherryland Electric Cooperative
- Great Lakes Energy Cooperative
- Midwest Energy Cooperative Electric Association
- Ontonagon County Rural Electrification Association
- Presque Isle Electric Cooperative
- Thumb Electric Cooperative
- Tri-County Electric Cooperative

- Contact MPSCTARIFF@michigan.gov for further information.
  - For FERC-approved books, see Electric Tariff Books page.
    - Rate Books may not yet reflect PSCR Factors that are pending MPSC approval.
    - Rate Books may not yet reflect changes approved by recent MPSC orders. See MPSC Electric Orders page for orders issued in past few months. To search for proposed Rate Book changes that are not yet approved, search MPSC Case Index under utility name (in quotes) using keywords such as rate, electric, tariff, and rule.

[MPSC Tariff Website Link]

STANDARD CONTRACT RIDER NO. 10 **INTERRUPTIBLE SUPPLY RIDER**

AVAILABILITY OF SERVICE: Available to Primary Supply Rate (D11) customers desiring interruptible service for a total of not less than 50,000 kilowatts of contracted interruptible service at a single location. The total contracted interruptible capacity on this tariff is limited to 400,000 kilowatts. This rider is effective for service rendered on and after January 1, 1993.

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If the customer fails to curtail load as requested, the Company reserves the right to interrupt the customer's total separately metered load on this rider, or total plant if not separately metered, and the customer will be billed at the rate of $*\$50$* per kW per instance applied to contract capacity.

In addition, the interruptible contract capacity of a customer who does not interrupt shall be immediately reduced by the amount by which the customer failed to interrupt, unless the customer demonstrates that failure to interrupt was beyond its control.

CONTRACT CAPACITY: Customers shall contract for a specified capacity in kilowatts sufficient to meet the customers' maximum interruptible requirements, but not less than the minimum contract capacity amounts, specified above. Demand/Energy in excess of the contracted load level will be billed under the applicable Primary Supply Rate. The contract capacity shall not be decreased during the term of the contract and subsequent renewal periods as long as service is required unless there is a specific reduction in connected load. Capacity disconnected from service under this rider shall not be subsequently served under any other tariff during the term of this contract and subsequent renewal periods.

(Continued on Sheet No. D-91.00)

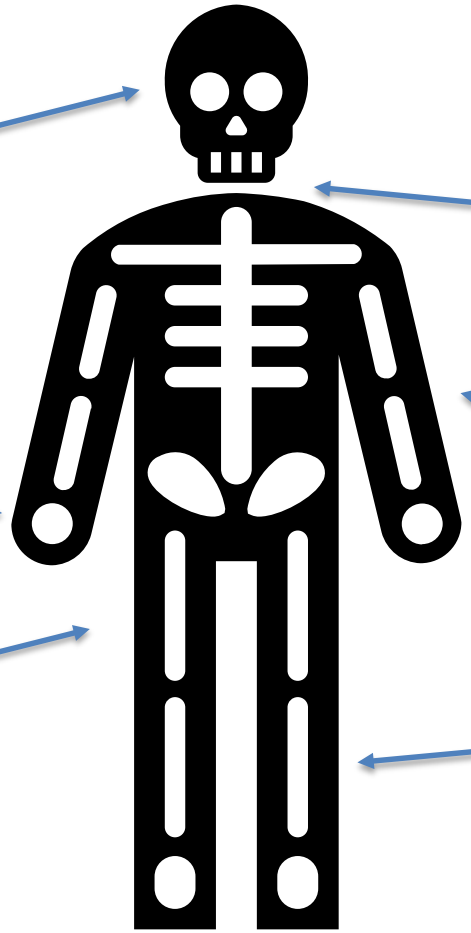
Emergency

- “Interruptions will be those necessary to maintain system integrity”
- May required by MISO or Gov. agency
- Recognizes probability of load loss by class
- Includes penalties

Economic

- “Company interruptions may include interruptions for, but not limited to, maintaining system integrity, making an emergency purchase, economic reasons, or when available system generation is insufficient to meet anticipated system load”
- May require extra incentive

Anatomy of an Interruptible Tariff



Availability

Eligibility

Notification

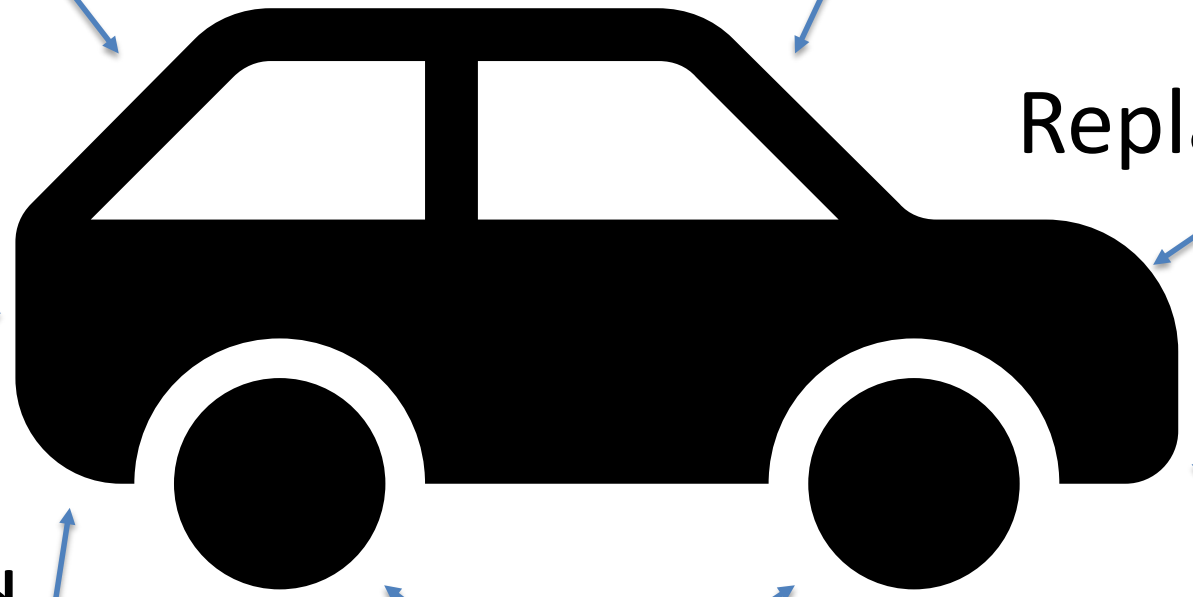
Firm Load Definition

Penalties

Discount

Contract Term

Options for Interruptible Tariff



Advanced Notification

Product Protection

Replacement Energy Penalty

Buy-through provision

Mid-Season Load Change

RTO Registration

Energy or Demand Credit

Other Interruptible Tariff Types

Metal Melting or Electric Process Heat

Programmable, Controllable Thermostats

Air Conditioner Switches

Controllable Water Heaters

Interruptible, Now Without Tariffs!

Pricing or Discount

Maximum Events/hours

Penalties

Customer Load Limits

Areas for Improvement

Consistency

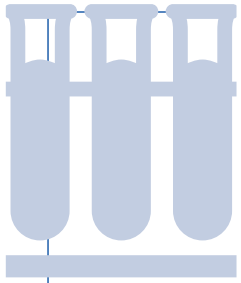
- Penalties
- Interruption Start Window

Transparency

- Notification
- Term Limits

Specificity

- Contract v. Tariff
- Availability



Testing

IRP

PROPOSED DR PLAN
- **Financials** (CapEx Only)
- **Operations** (MWs and customers enrolled)
- **Levelized & Avoided Costs**
- **Program & Pilot Descriptions**

Revenue Requirement & Plan Targets

STAFF EVALUATION
- Evaluate updated DR plans and future targets (MWs enrolled, customers enrolled, program financials, and levelized costs).
- Review historical DR program performance and prudence.
- Evaluate new DR programs for cost effectiveness (MWs, customers, financials, and avoided costs).
- Evaluate new DR pilots proposed by the utility for reasonableness.
- Establish performance metrics for the utility incentive.

Reconciliation Case

DR PERFORMANCE
- **Financials** (CapEx, O&M, Revenue Requirement)
- **Operations** (MWs and customers enrolled)
- **DR Events**
- **Evaluation studies**
- **Program & Pilot Descriptions**

Regulatory Asset/Liability & New Pilots

STAFF EVALUATION
- Review the DR performance by program (spending, MWs enrolled, customers enrolled, levelized cost and cost-effectiveness). Evaluate future targets.
- Review use of DR resources during events and customer satisfaction.
- Evaluate new DR pilots proposed by the utility for reasonableness.
- Review achievement of the performance metrics to calculate incentive.
- Calculate Regulatory Asset/Liability based on review of DR performance and incentive.
- Review historical DR program performance and prudence.
- Evaluate new DR pilots proposed by the utility for reasonableness.
- Establish performance metrics for the financial incentive.

Rate Case

PROPOSED DR PLAN
- **Financials** (CapEx, O&M, Regulatory A/L)
- **Operations** (MWs and customers enrolled)
- **Levelized & Avoided Costs**
- **Program & Pilot Descriptions**

Revenue Requirement & Plan Targets

STAFF EVALUATION
- Update DR plans with minor changes including projected costs to be included in rates and levelized cost calculations.
- Flow through the Commission ordered Regulatory Asset/Liability from the reconciliation case.
- Rate design to support programs.

Or…

Preview of Interruptible Rate Comparison Document

	Consumers	Consumers	Consumers	DTE	DTE	DTE	DTE
Availability	GPD-GI Interruptible Service Provision	GPD-GI 2 Market Price Provision	Business DR	D8 Interruptible Supply	R10 Interruptible Supply Rider	D3.3 Interruptible General Service	R12 Capacity Release
Customer Load Minimum (kW)	500	3,000		50	50,000		100
Rate Load Maximum (kW)	300,000	400,000		300,000	650,000	300 customers	N/A
Customer Load Maximum (kW)	100,000	100,000		N/A	N/A		N/A
Economic	No	No	Yes	Yes	N/A	Yes	Yes
Emergency	Yes	Yes	Yes	Yes	N/A	Yes	Yes
Penalty- Emergency	$25 per kW	$25 per kW	Per contract	$50 per kW	$50 per kW	$50 per kW	Per contract
Penalty- Economic	N/A	N/A	Per contract	$0.00576 per kWh	N/A	$50 per kW	Per contract
Discount/Credit	$7 per kW summer, $6 winter	pays LMP for non-capacity energy	Per contract	$7.63 per kW	pays LMP for non-capacity energy		Per contract
Who Interrupts?	Customer	Customer	Customer	Customer	Customer or Company	Company	Customer
Must Interrupt within	30 minutes	31 minutes	Per contract	1 hour	1 hour	N/A	Per contract
Season	Year round	Year round	Summer	Year round	Year round	Year round	Per contract
Max Events	N/A	N/A	Per contract	N/A	N/A	N/A	Per contract
Max Event Hours	N/A	N/A	Per contract	N/A	N/A	N/A	Per contract
Contract Length (years)	1	1	Per contract		52	Open	Per contract
Notification	30 minutes, by phone, with confirmation by customer	31 minutes, by phone, with confirmation by customer	Per contract	ASAP	Minimum 10 minutes		ASAP
Test	N/A	N/A		N/A	Annual	N/A	
Additional Features	Includes reference to MISO LMR registration	Includes reference to MISO LMR registration		Product Protection			
Actual MW	136.7		96.9	100	300	25	0

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(Continued on Sheet No. D-91.00)

M.P.S.C. No. 1 - Electric
DTE Electric Company
(Final Order Case No. U-18255)

Second Revised Sheet No. D-90.00
Cancels First Revised Sheet No. D-90.00

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(Continued on Sheet No. D-91.00)

Issued May 22, 2018
D. M. Stanczak
Vice President
Regulatory Affairs

Detroit, Michigan

Michigan Public Service Commission
June 18, 2018
Filed DBR

Effective for service rendered on and after May 1, 2018

Issued under authority of the Michigan Public Service Commission dated April 27, 2018 in Case No. U-18255

Enhance!

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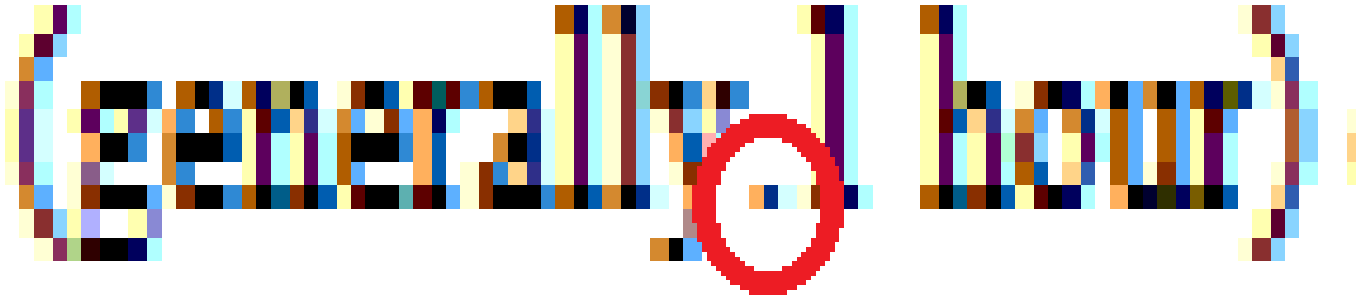

Questions?

Dave Isakson

isaksond@michigan.gov

MI POWER GRID

Making the Most of Michigan's Energy Future

Next Steps

Feedback for today

- Feedback on interruptible tariff provisions
  - Staff will develop a feedback request and send to the group
- Feedback or additions to “Solutions” document the group created today

- Both documents will be posted to website and sent out via listserv

Sneak peak of topics!

Retail/Wholesale Alignment

- March 17th
- RTO DR offerings and utility DR tariffs
  - DR products and registration
  - M&V methods and performance requirements
- Testing requirements
  - 2019 changes to LMR availability and testing
  - Utility plans for compliance
- Needed improvements?

Draft Report/DR Aggregation

- April ?
- Review components of Staff report
  - Outline of report sections
- Update on DR aggregation
  - See outcome of U-20348

Next Steps

- Staff will send out the slides and recording from today's meeting
  - Posted on DR group website
- Staff will finalize March 17th agenda and send out to listserv
- Staff will develop a Feedback Request on
  - the solutions identified during the Panel discussion
  - possible utility tariff changes
- Staff will consolidate any feedback received and update stakeholders in March
  - Feedback will not be posted, simply summarized in aggregate

Questions, Comments, or Feedback?

Contact

Katie Smith SmithK72@michigan.gov and

Erik Hanser HanserE@michigan.gov

MI POWER GRID

Making the Most of Michigan's Energy Future

Adjourn