Reactive Power: Ensuring System Reliability

Reka Holley Voelker
Legislative & Tribal Liaison &
Communications Section Manager
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MPSC
Michigan Public Service Commission

What is “VAR” and why does it matter?

- Reactive power, measured in VAR, is a type of power necessary for the operation of the electric system.
- VARs are necessary to move electricity over long distances and to maintain system voltage within reliability limits.

What is “VAR” and why does it matter?

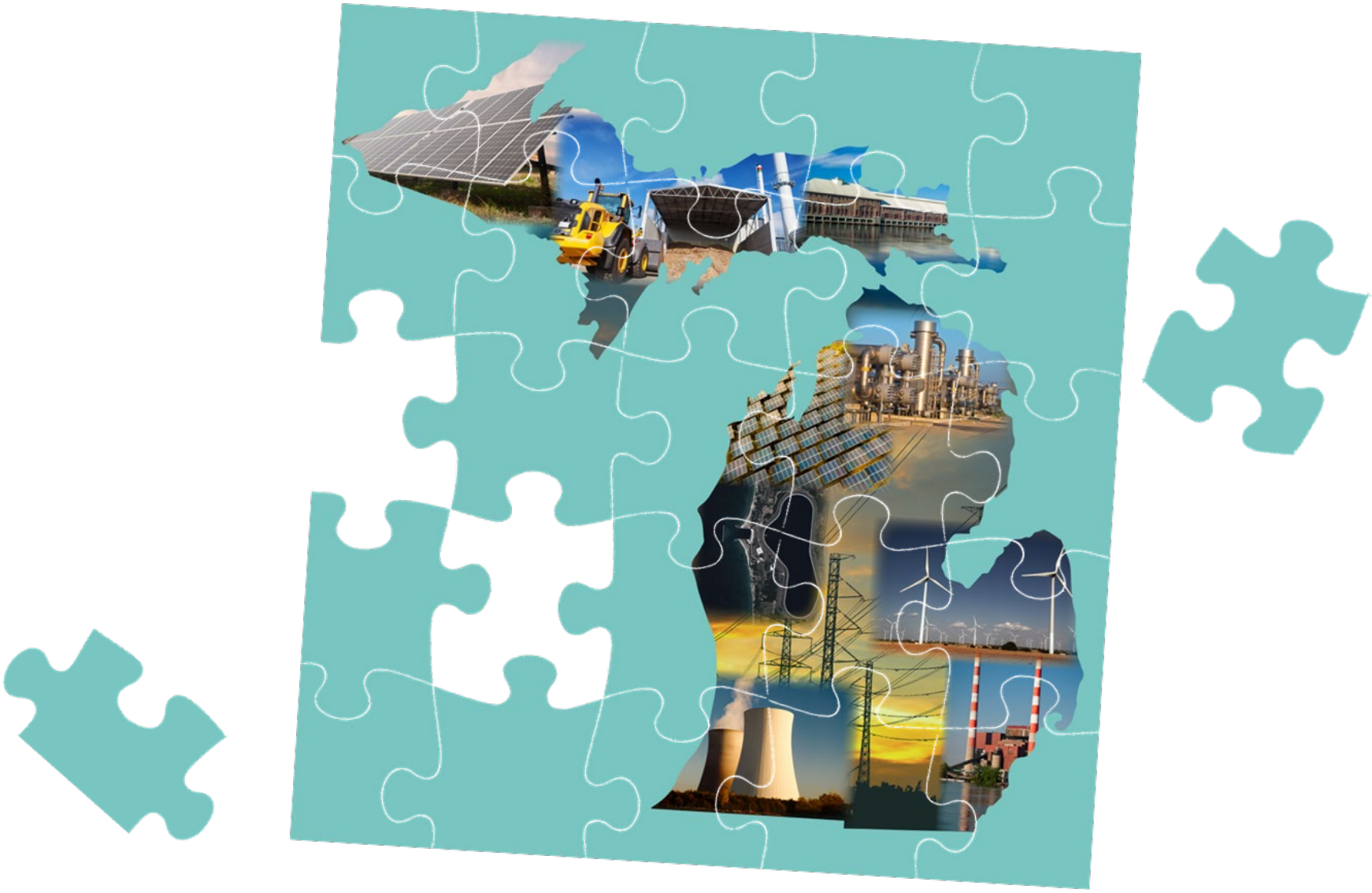
- VARs are created and managed through a number of technologies including rotating synchronous generators, inductors, capacitors, synchronous condensers, and static VAR compensators.

Via Flickr/Jeremy Thompson

Resource Adequacy and System Reliability

- Resource Adequacy
  - Is energy supply sufficient to meet peak energy demand?
- System Reliability
  - Does the system have the right power factor (Watts and VARs) and assets in the right locations to maintain operations?

System Reliability:
The right assets at the right places



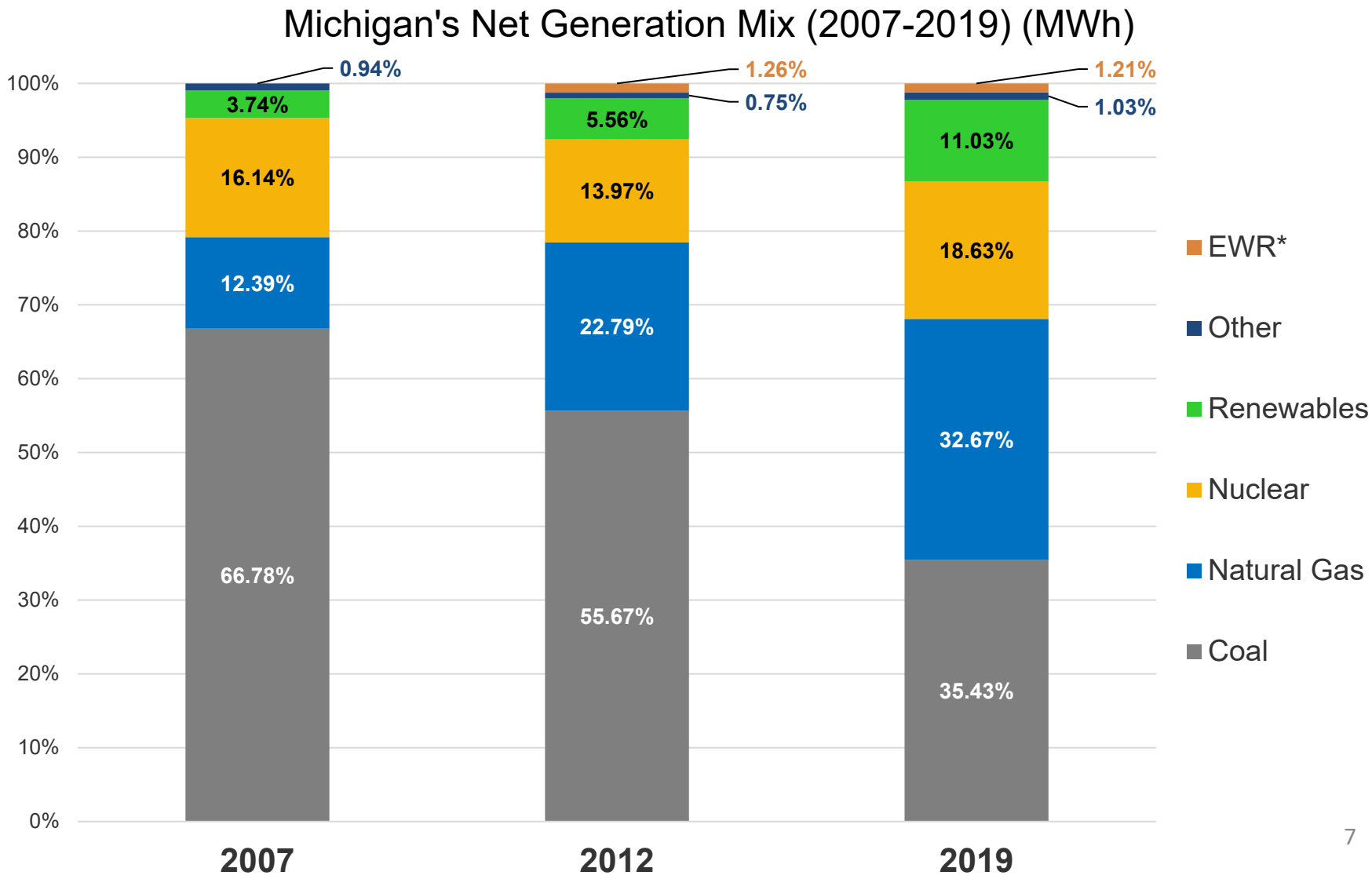
UP Energy Reliability Challenges

The Presque Isle Power Plant

UMERC RICE Units

Source: Upper Michigan Energy Resources Corporation, uppermichiganenergy.com

System Reliability and Changing Generation Supplies



Reliability Planning Mechanisms: The Integrated Resource Plan

IRP: Factors for Consideration

MCL 460.6t(8a)

- ✓ **Resource Adequacy**
- ✓ Environmental Compliance
- ✓ Competitive Pricing
- ✓ **Reliability**
- ✓ Commodity Price Risks
- ✓ **Diversity of Generation Supply**
- ✓ Cost Effectiveness of EWR and Peak Shaving
- ✓ Workforce Considerations

MISO System Reliability Processes: MISO's Transmission Expansion Planning

18-Month MTEP Process

MISO System Reliability Processes: Attachment Y Filing

- Filed with MISO at least 6 months prior to unit retirement
- MISO determines whether system upgrades are required to maintain reliability without the retiring unit
- If upgrades are required, the unit must maintain operations until the necessary upgrades are completed

System Reliability: More than Counting Watts

It bears emphasizing that reliability and resiliency issues extend beyond the counting of "ZRCs," or capacity credit, under the MISO's resource adequacy requirements and the Commission's implementation [of the State Reliability Mechanism]. ***Reliability is not just about ensuring adequate capacity*** *on the peak summer day.*

. . .

[T]he Commission observes the "power need" may also entail the need for local voltage support and other reliability benefits . . .

Case No. U-18419, DTE Bluewater Energy Center Certificate of Need Approval (April 27, 2018), pg. 114, 49.