Southeastern Federal Power
A Preference Customer Perspective

Alliance Meeting

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South Mississippi Electric Power Association

September 15, 2016

South Mississippi Electric Power (SMEPA)

- SMEPA is a Rural Electric Generation & Transmission Cooperative
- Serves 11 Distribution Member Cooperatives
  - Cumulatively serve 420,000 meters
- 2015 Peak demand – 2,385 MW
- 2015 Energy Sales – 10.1 Million MWH

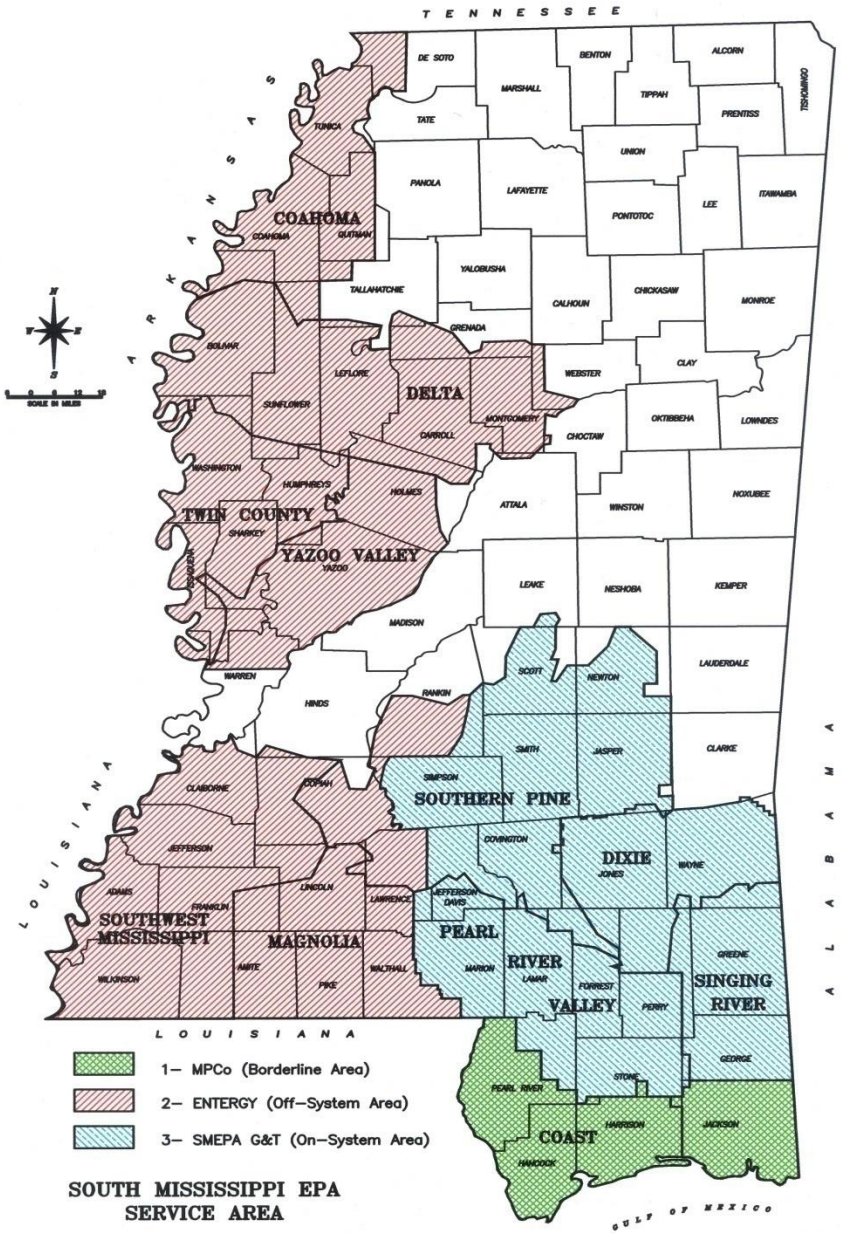
SMEPA Serves Load in 3 Transmission Areas

- On-System Area (SMEPA)
- Off-System Area (EMI)
- Borderline Area (MPC)

SMEPA owns over 1727 miles of transmission; 230kV, 161kV, 115kV, & 69kV

SMEPA has 8 interconnections with 4 neighboring utilities

SMEPA has load in Borderline Area served by MPC and SMEPA respectively



Generation Resources

R.D. Morrow, Sr. Generating Station

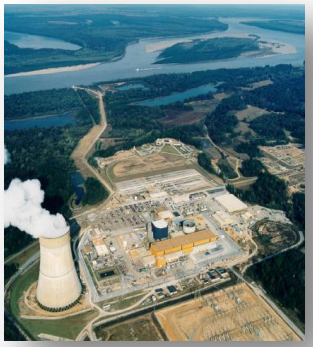
- Commercial operation 1978
- Two coal-fired units
- 400 MW
- Appalachian coal
- 98 employees

J.T. Dudley, Sr. Generation Complex

- Commercial operation 1970
- Natural gas-fired
- 516 MW
- Two combined-cycle units
- One steam unit
- Two simple-cycle gas turbines
- 54 employees

Batesville Generating Station

- Commercial operation 2000
- Three natural gas-fired units
- 837 MW
- 36 employees



Grand Gulf Nuclear Station

- Commercial operation 1985
- One nuclear unit
- Ten percent ownership interest
- 144 MW

Sylvarena Station • 141 MW
George B. Taylor Generating Station • 250 MW
Paulding Station • 20.6 MW
Benndale Station • 16.2 MW

TOTAL OWNED GENERATION – 2,324.8 MW

SMEPA Power Contracts

- Southeastern Power Administration
  - Alabama-Georgia System
    - ✓ 68 MW (Scheduled)
    - ✓ 61 MW (Credit Customers)
  - Cumberland System
    - ✓ 51 MW (Scheduled)

- All-Requirements Wholesale Power Agreement
  - Serves Load Imbedded in MPC Transmission Area

- Power Purchase Agreement – Coal Fired
  - 200 MW (Powder River Basin, WY Coal)

- Power Purchase Agreement - System Power
  - Coal and natural gas-fired units
  - 56 MW

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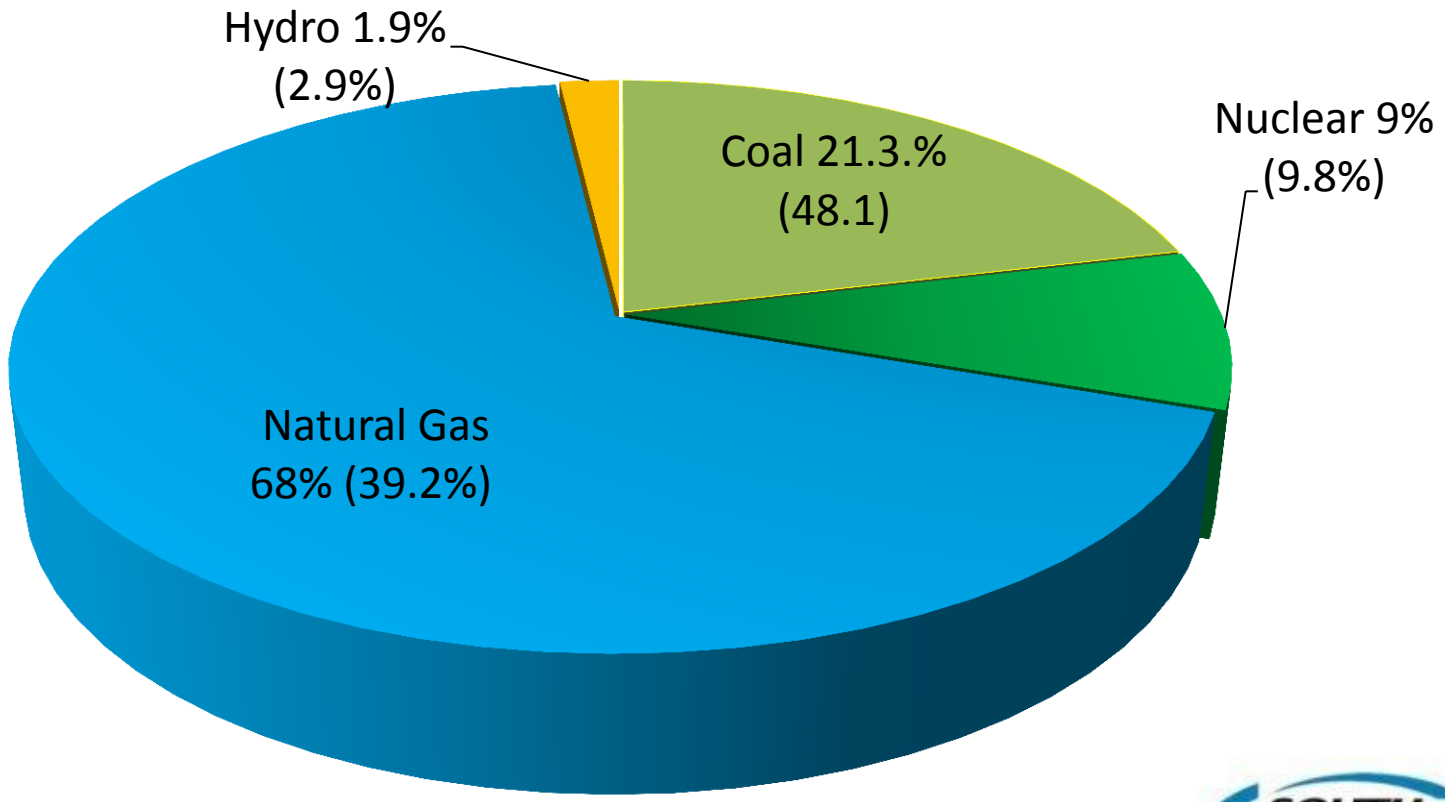
2015 Energy Supplied For Total System From All Sources by Fuel Type (2011 in Parentheses)



SMEPA Hydropower Interests

- SEPA contracts for Capacity and Energy, Transmission Service, etc.
- Legislation impacting federal hydropower
- DOE and Corps policies related to hydropower
- Corps hydropower operations, unit availability, stream flow, water in storage, etc.
- Corps Hydropower O&M and Joint Expenses
- Corps capital investments
- Water Storage Reallocation
- Competing Interests (Navigation, Water supply, recreation, etc.)

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Federal Hydropower Economics

- Economic Dispatch
- Use of SEPA Marketed Power
- Economic Comparison of SEPA Marketed Power vs. other generation resources

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Economic Dispatch

- Typically Generating Resources are Dispatched in Order of Economics; Cheapest First, Most Expensive Last.
- Economics Determined by Cost to Generate Next MWH (Operating Cost).
- Operating Cost Calculation:

  Fuel Cost ($/MMBtu) X Unit Heat Rate (Btu/kWh) +

  Variable O&M ($/kWh) = **Operating Cost** ($/MWh)

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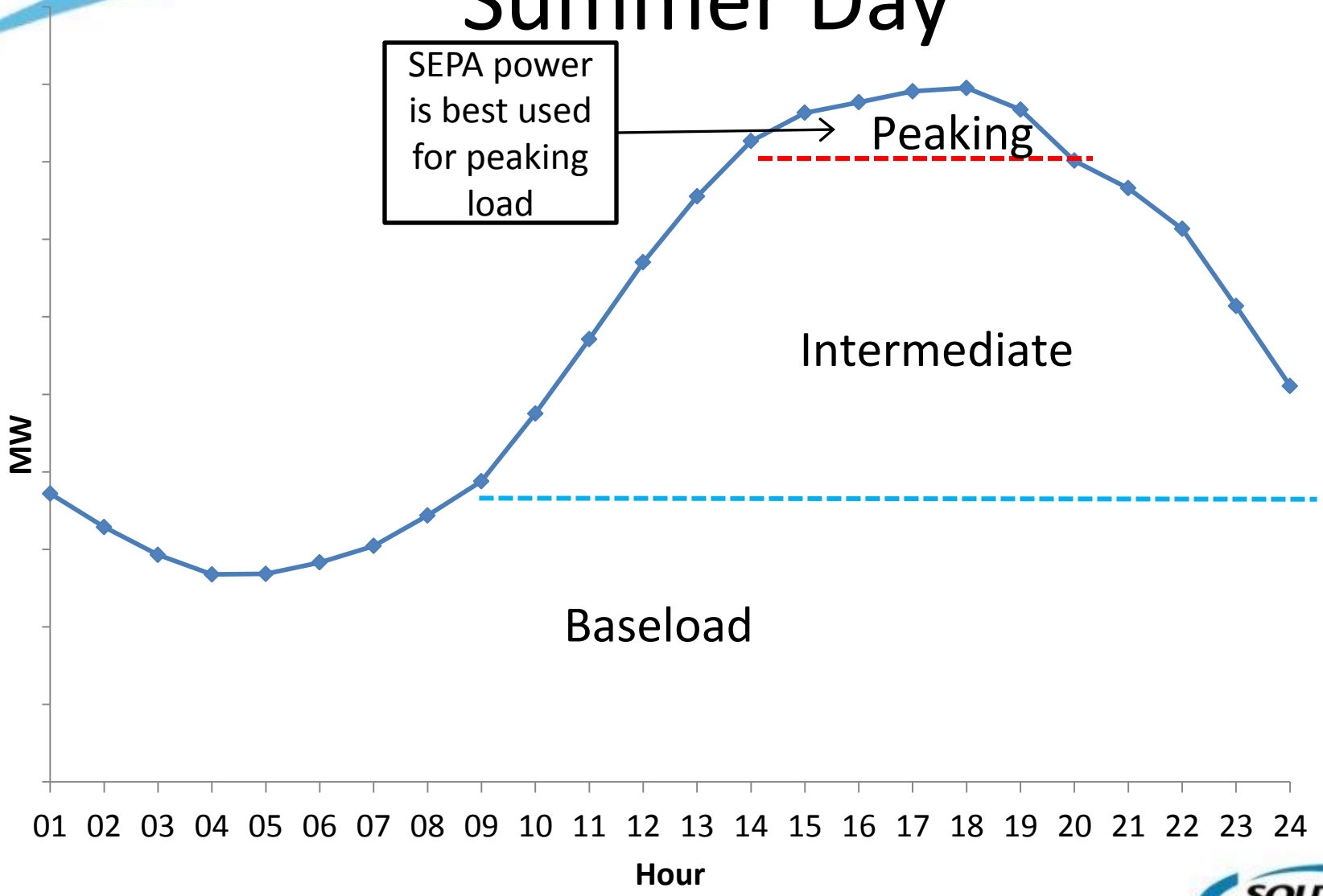
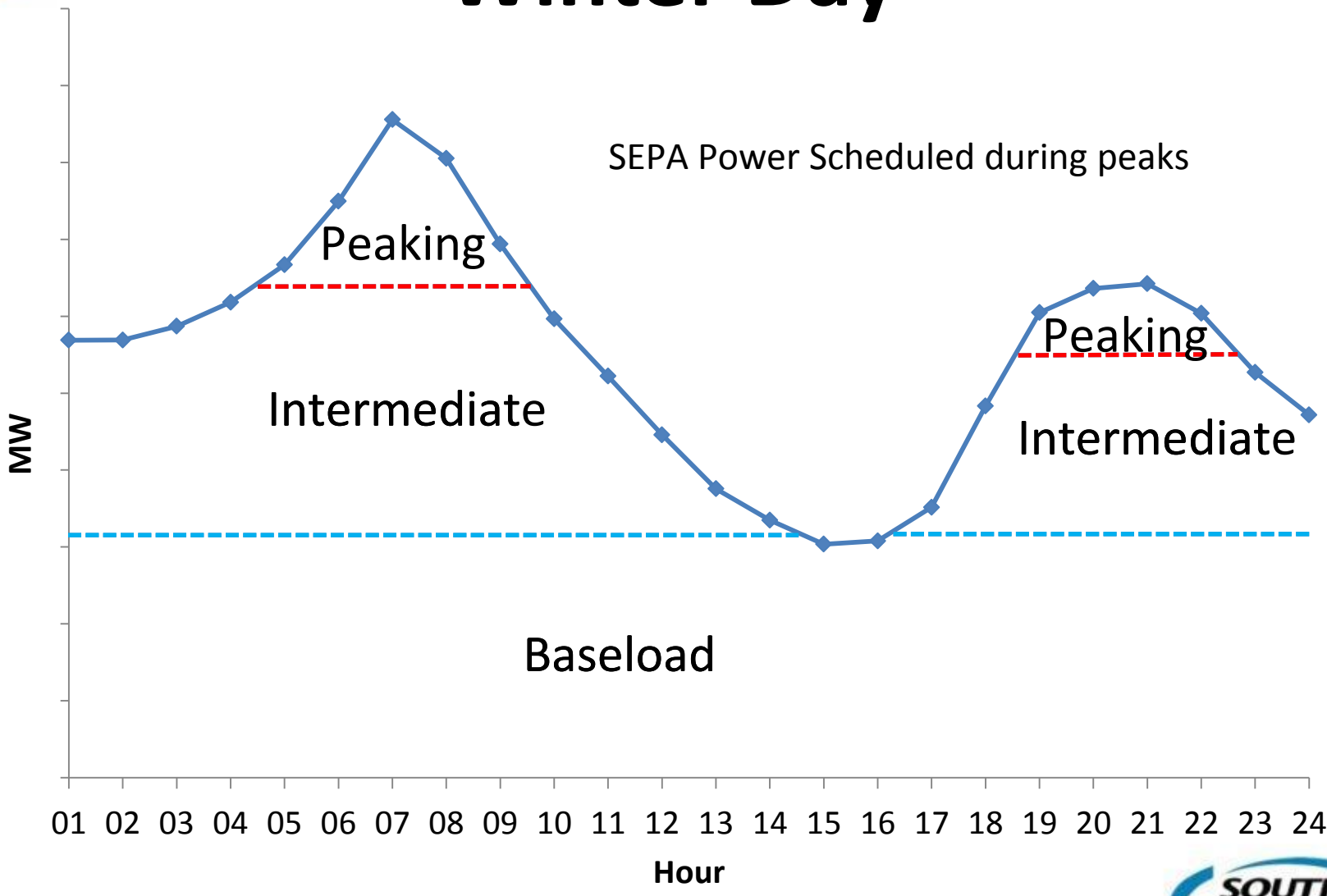
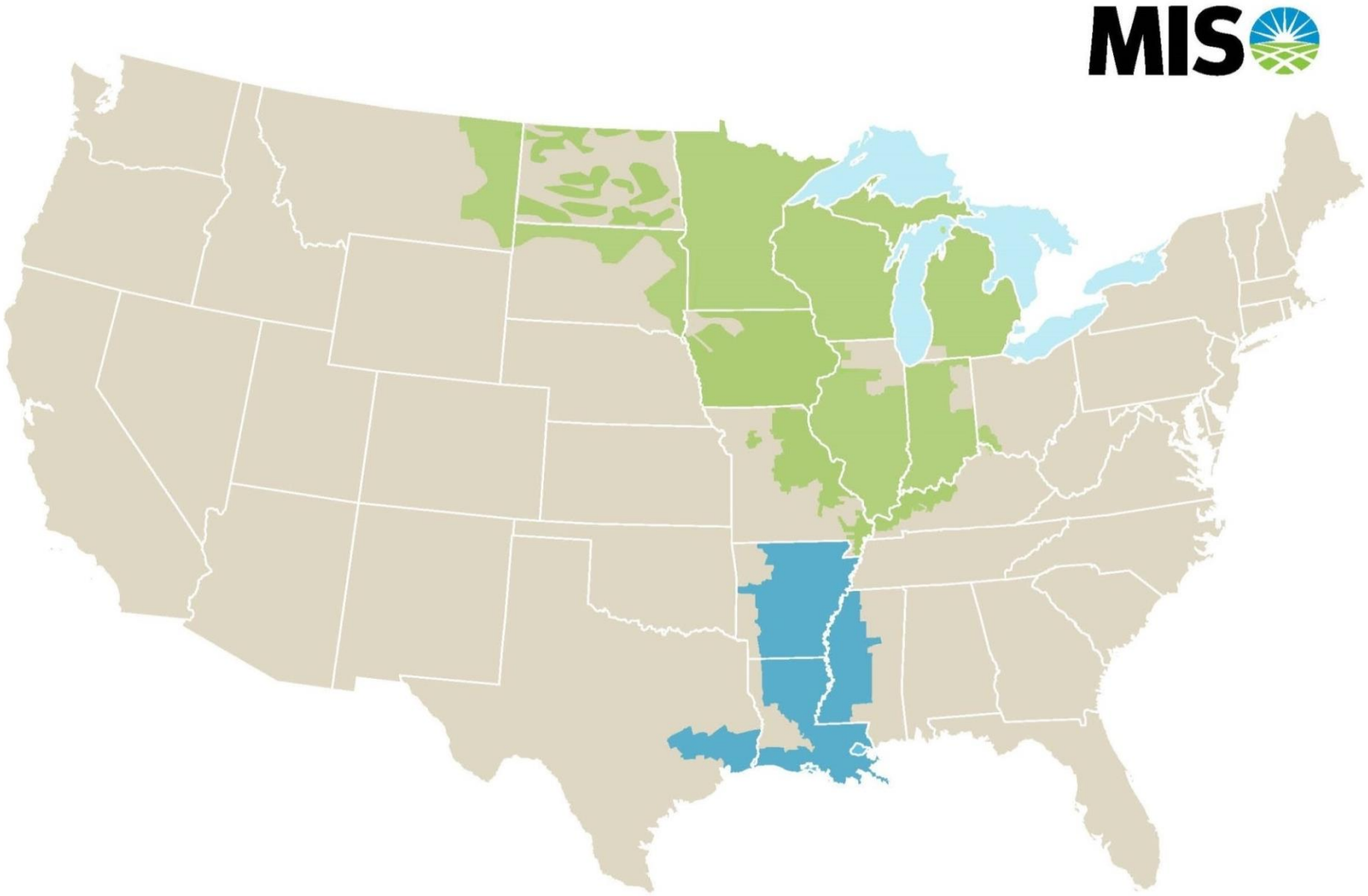
Summer Day


SEPA power is best used for peaking load
Peaking
Intermediate
Baseload
MW
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Hour

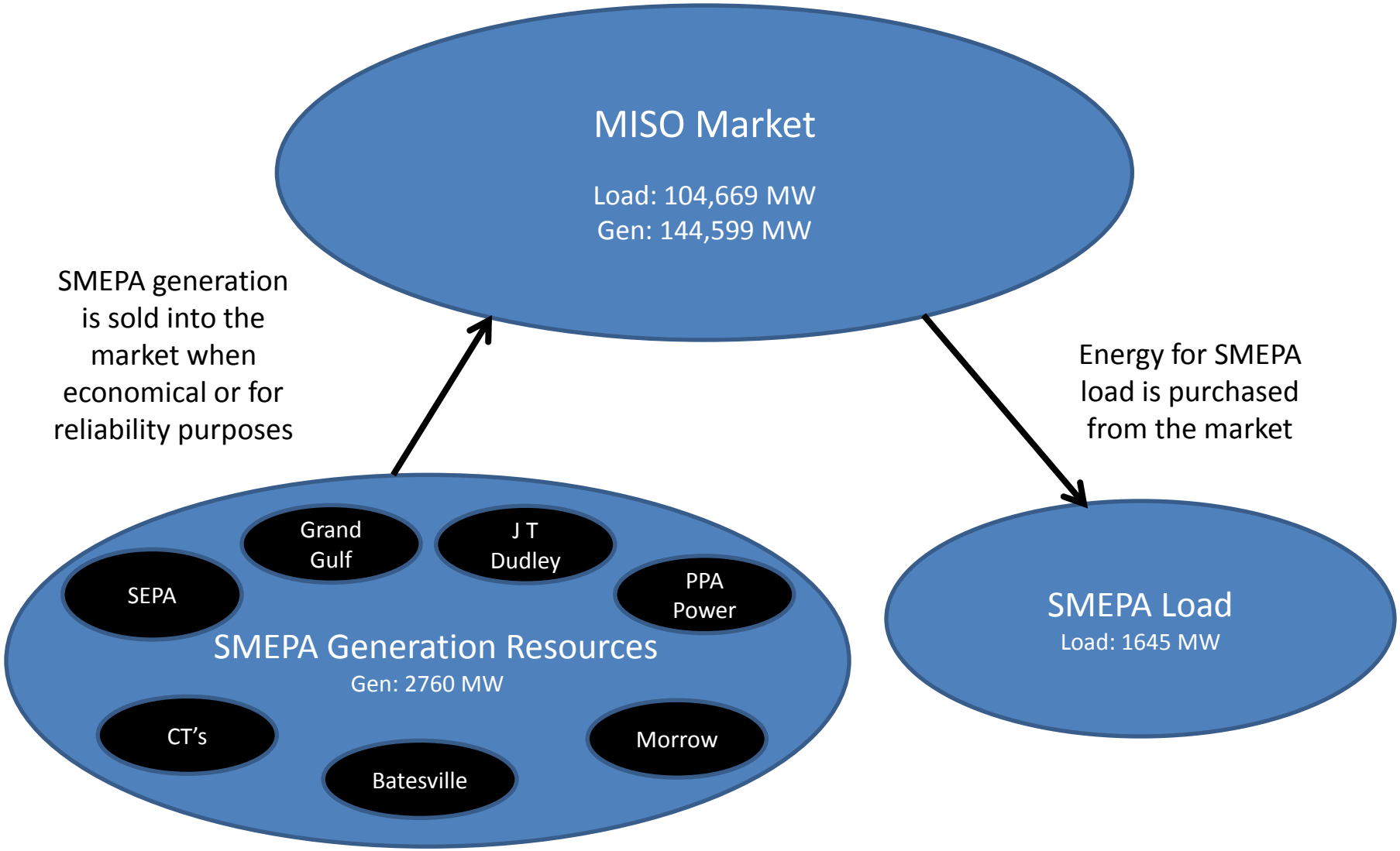
Winter Day


SEPA Power Scheduled during peaks
Peaking
Peaking
Intermediate
Intermediate
Baseload
MW
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Hour

Regional Transmission Organization



MISO Market Operations



SMEPA System Operations in MISO

- On-System (SMEPA) Area
  - SMEPA generation resources dispatched into MISO market
  - SMEPA transmission system used to serve Member load
- Off-System (EMI) Area
  - SMEPA generation resources dispatched into the MISO market
  - EMI transmission system used to serve Member load

SMEPA System Operations in MPC Area

- Borderline Area – SMEPA generation resources (including SEPA) used to serve load in the Borderline Area using the Southern Company OATT
- Borderline Area - MPC Wholesale

  All-requirements contract from MPC provides generation and transmission service for other SMEPA load located on MPC transmission system

Credit Customers - Explained

- MPC Wholesale - served by MPC All-Requirements Power Agreement
- Credit for SEPA Capacity and Energy provided on MPC Wholesale bill
- Example: SEPA power: 61 MW; energy: 500 kWh
  - Billed capacity demand is reduced by 61 MW
  - Metered energy for month is reduced by 500 kWh
- Produces “perfect” On-Peak Scheduling

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Value of SEPA Power

The Good, The Bad, & ***The Ugly***

Value of SEPA Power
Jan-July 2016

The Good:

MPC Wholesale (Credit Customers)

- GA-AL-SC Rate @ 22.5% CF: $64.89/MWh
- IOU Wholesale Rate @ 22.5% CF: 2.1 Times > SEPA Rate

The Bad:

Schedule against load

- GA-AL-SC Rate: $51.75/MWh
- Average Gas CT Energy: $20-30/MWh

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Value of SEPA Power
Jan-July 2016

The Ugly:

Sales of GA-AL-SC SEPA Energy to MISO:

- MWH Sales: 61,336 MWh
- Jan-July Average Net Gain/**Loss**: **($20.00)/MWh**

Concluding Remarks on Federal Hydropower

- SEPA Power is competing with the Energy Market - And is losing
- Reliable Capacity and Energy Resource
- Non-Variable Energy (not like Solar & Wind)
- Can Schedule against load or sell into MISO Generation Market
- Ranking of Economic Value
  - Best: when used as a “Credit” Resource
  - Good: when used to shave peaks
  - Fair: when used as Run-of-River Resource
  - Poor: when sold into MISO Generation Market

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What Next?

Take Action Now, we can't wait for gas prices to rise

1. Trim Costs where possible
2. Pay attention to details
3. Diligently seek to improve efficiencies
4. Maximize availability of peaking power
5. Be smart about capital investments
6. Reclassify expenses when appropriate

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