

# Southeastern Federal Power A Preference Customer Perspective

Team Cumberland Meeting

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# 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



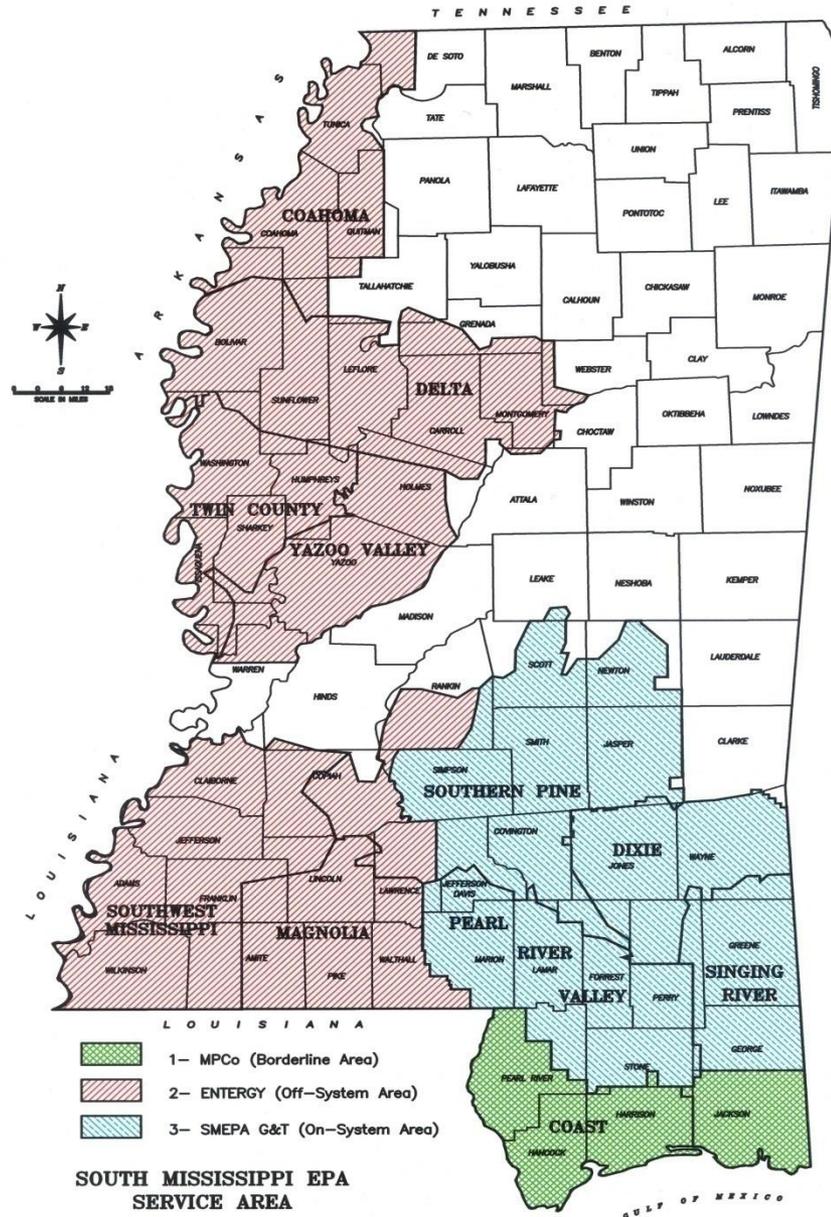
## SMEPA Serves Load in 3 Transmission Areas

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

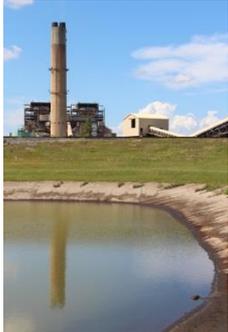
SMEPA owns over 1727 miles of transmission; 230kV, 161kV, 115kV, & 69kV

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**

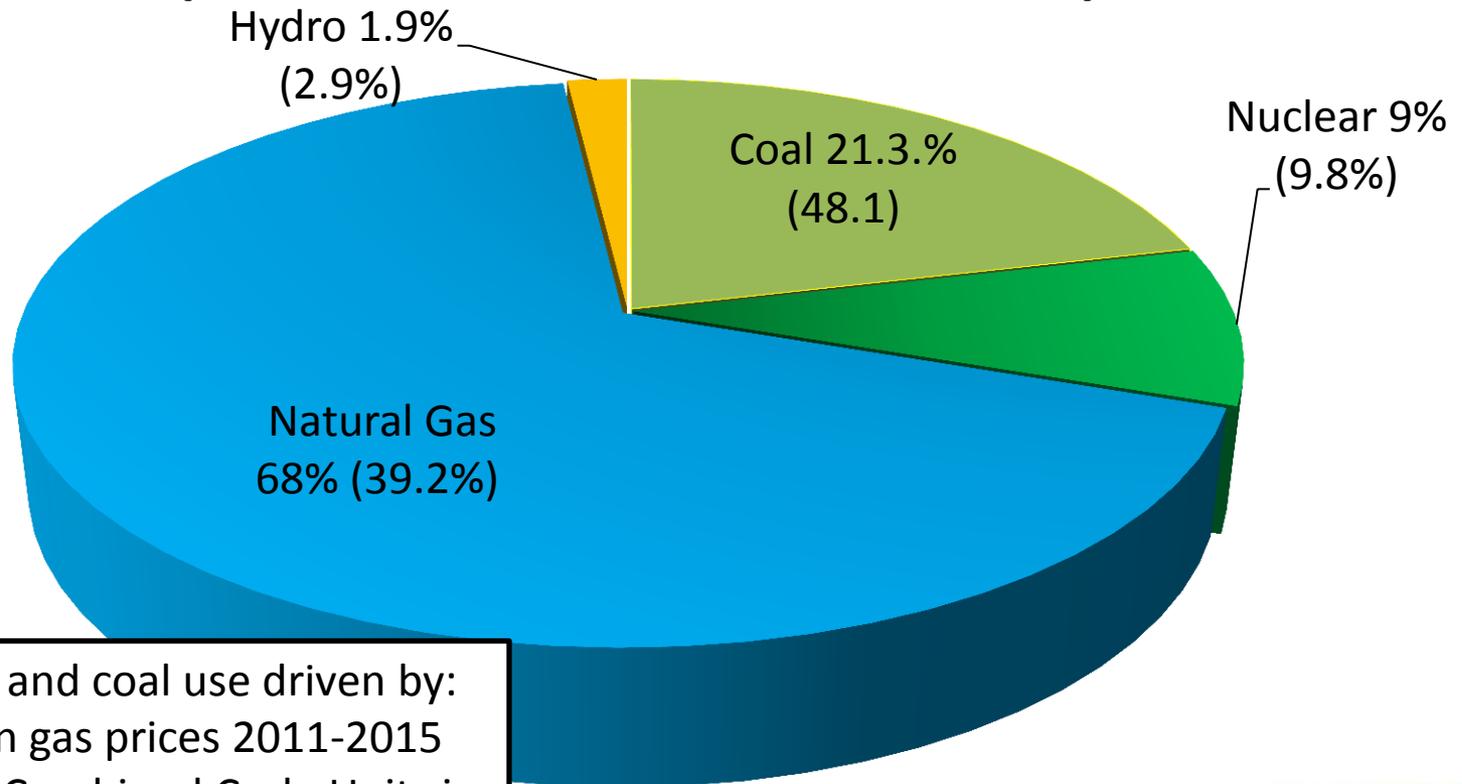


# SMEPA Power Contracts

- Southeastern Power Administration
  - Alabama-Georgia System
    - ✓ 68 MW
  - Cumberland System
    - ✓ 51 MW
- 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



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



Flip B/T gas and coal use driven by:  
Reduction in gas prices 2011-2015  
Addition of Combined Cycle Units in  
2012/2013

# SMEPA Hydropower Interests

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

# Federal Hydropower Economics

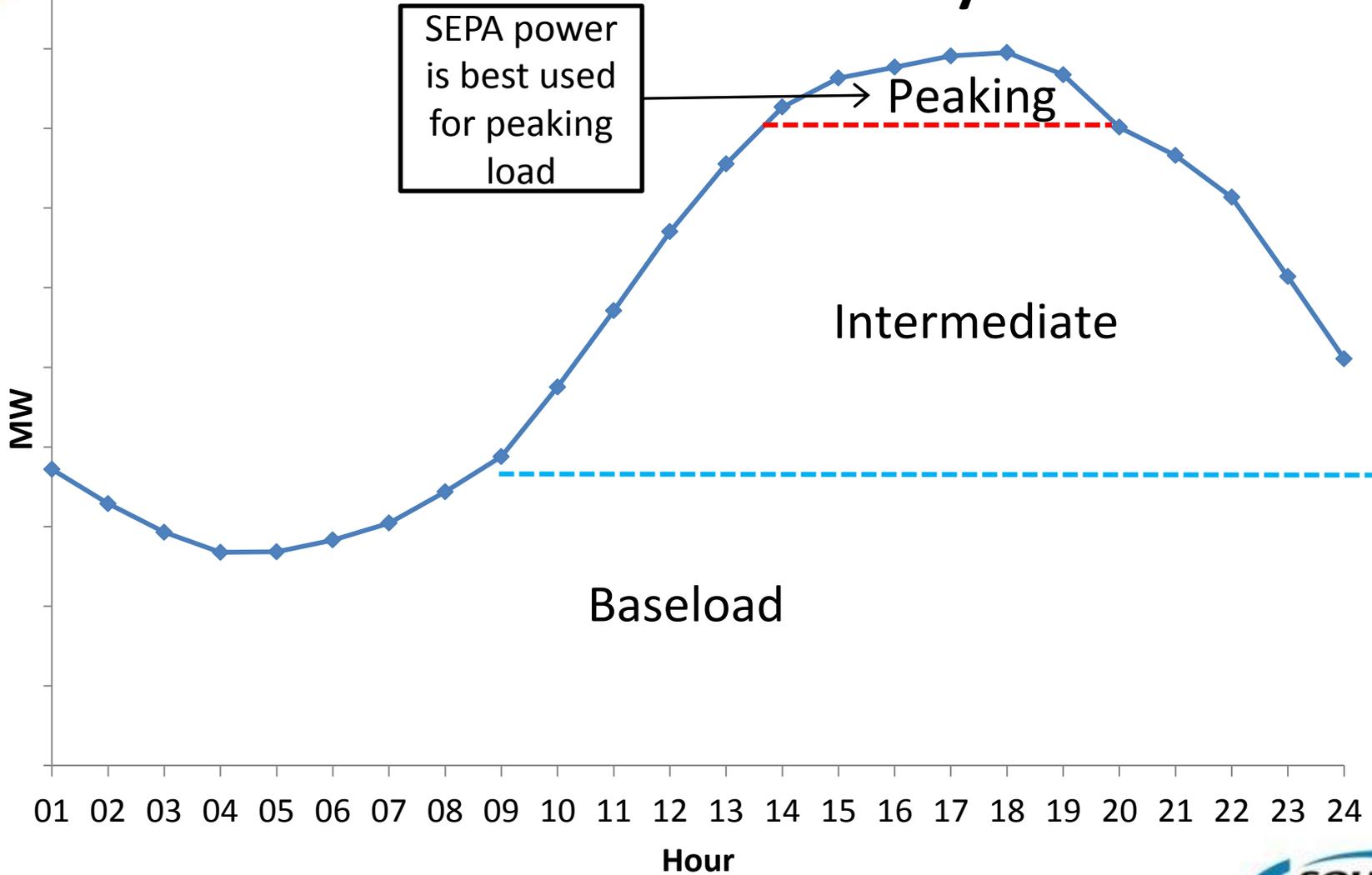
## A Customer's Perspective

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

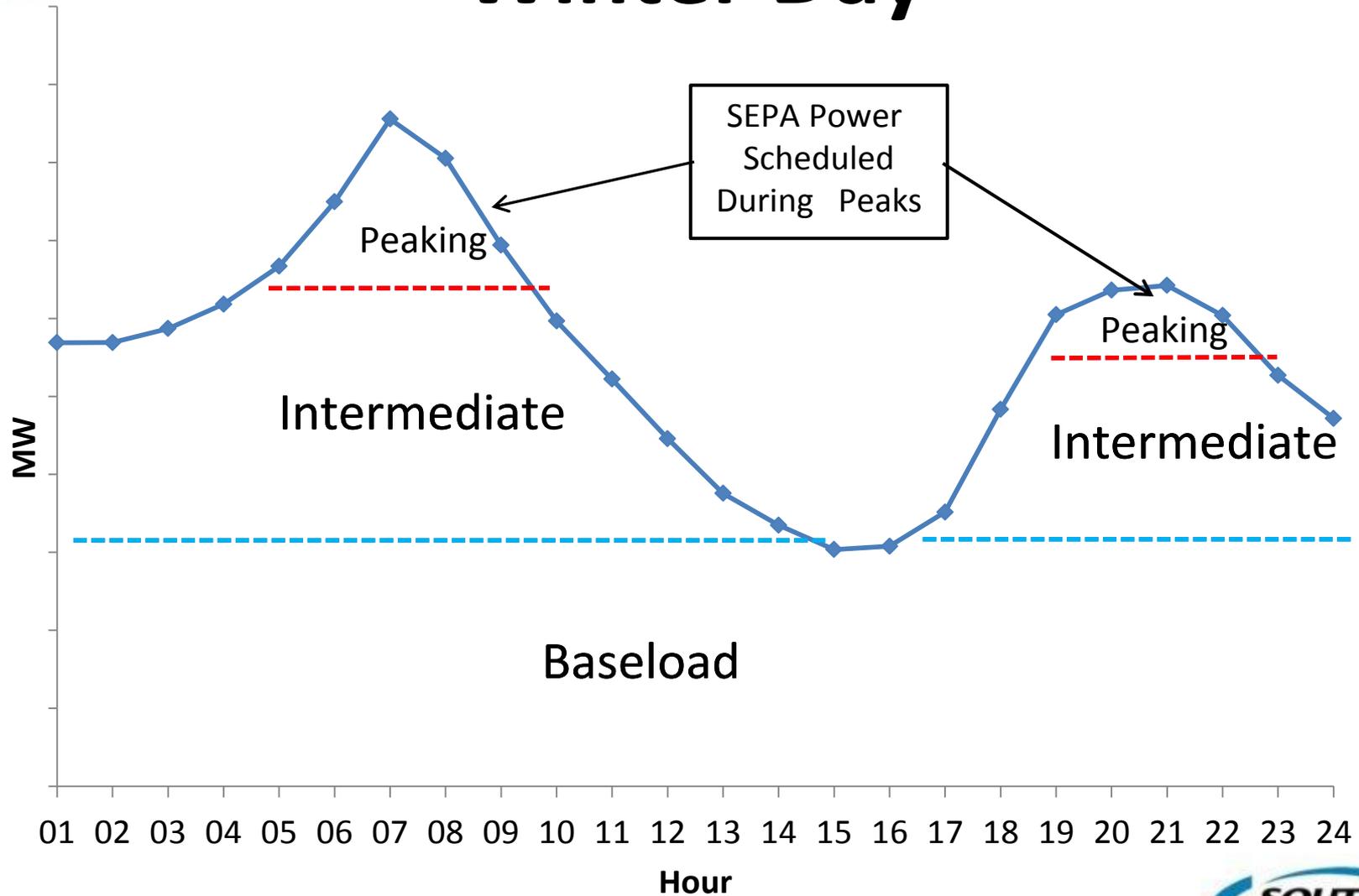
# Economic Dispatch

- 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)

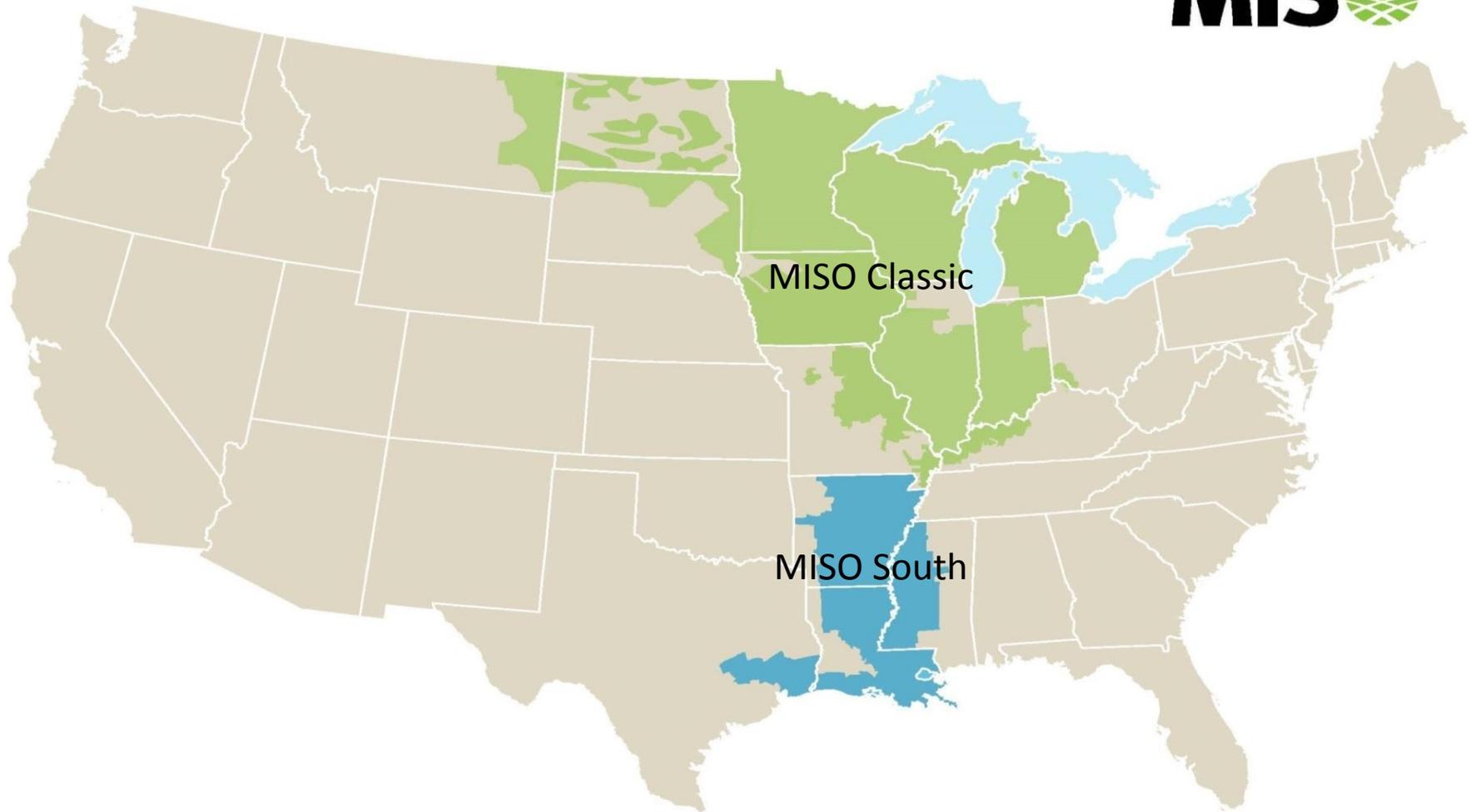
# Summer Day



# Winter Day



# REGIONAL TRANSMISSION ORGANIZATION



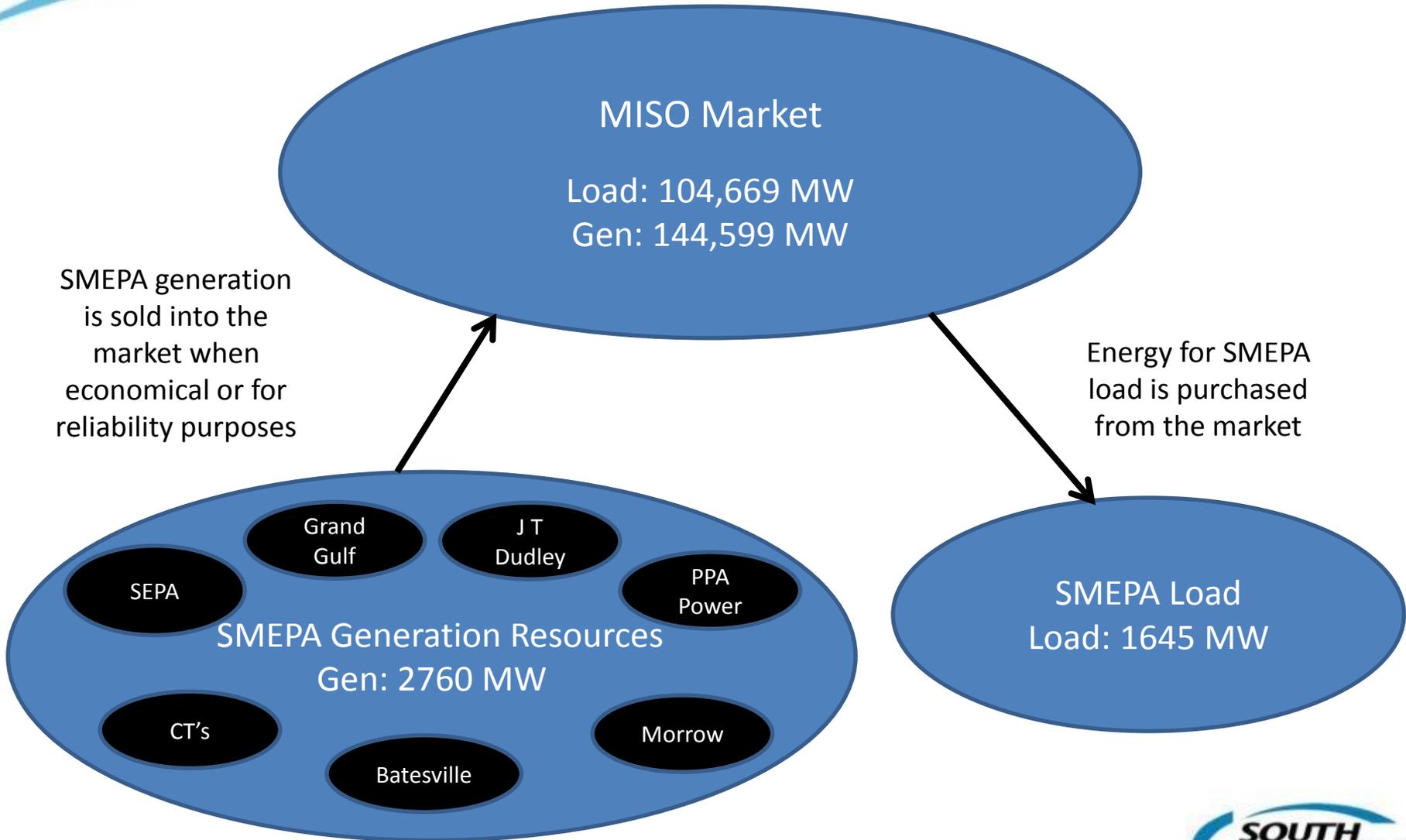
# MISO Market Operations

- Off Peak Hours: HE 2300-HE 0600  
Mon-Sat + All Day Sun & Holidays
- On-Peak Hours: HE 0700-HE 2200  
Mon-Sat
- Super Peak Hours: 4 Hrs During On-Peak  
Starting Time Depends on  
Season & Day of Week

SMEPA Schedules SEPA Energy On Super Peak Hours



# MISO MARKET OPERATIONS



# SMEPA System Operations in MISO

## – On-System (SMEPA) Area

- SMEPA generation resources bid, sold & dispatched into MISO market
- SMEPA transmission system used to deliver MISO energy purchased to serve Member load

## – Off-System (EMI) Area

- SMEPA generation resources bid, sold & dispatched into the MISO market
- EMI transmission system used to deliver MISO energy purchased to serve Member load



# Value of SEPA Power Jan-July 2016

## Sales of Cumberland Energy to MISO:

- MWH Sales to MISO 43,964 MWh
- Average Cost for SEPA Power: \$36.51/MWh
- Jan-July MISO Price Range: \$24-\$42/MWh
- Average MISO Price: \$29.97/MWh
- Jan-July Average Net Gain/**(Loss)**: **(\$6.54)/MWh**
- No. Months - Gain vs **(Loss)** 2 vs **(5)**
- Magnitude of Energy **Net Loss**: **(\$287,000)**



# Value of SEPA Power Jan-July 2016

## Capacity Sales to MISO also Provide Value

- Capacity auctioned annually
- Auction Years July 1- June 30
- If offer clears in Auction, must offer in daily energy mkt
- SEPA mostly scheduled during “Super Peak” Period
  - 4 hours: peak hour + 2 hours prior & 1 hour post
  - Typically provides best value
- Clearing prices measured in \$/MW-day
  - 2015: \$3.29/MW-day (\$0.10/kW-Mo)
  - 2016: \$2.99/MW-day (\$0.09/kW-Mo)



# Value of SEPA Power Jan-July 2016

## Capacity Sales to MISO also Provide Value

- SMEPA Original Capacity Allocation: 51 MW
- Modified RIOP Capacity Allocation: 44 MW
- Capacity Offered in Auction Jan-Jun/Jul: 20.6/13.7 MW
- Mkt Capacity Jan-Jun/Jul (\$/MW-day) 3.29/2.99
- Jan-Jun/July Capacity Value (\$/kW-Mo) 0.10/0.09
- Jan-July Capacity Value (\$) **\$12,800**

But Not Enough to Off-set Net Loss from Energy Sales

*Capacity auction \$'s + energy sales net loss = **(\$274,200)***



# Concluding Remarks on Federal Hydropower

SEPA Power is competing with the Energy  
Markets of MISO and PJM.....

***And is losing***



# Concluding Remarks on Federal Hydropower

## What's Behind the Prices in the ISO Energy & Capacity Markets?

- Low Natural Gas Prices
  - Expected to be here for a long time
- Highly efficient gas fired combined cycle units
- Efficient region-wide resource dispatching
- Excess capacity

# What Next?

## **We Must Act Now; We Can't Wait For Higher Gas Prices or a MISO Capacity Shortage**

1. Pay Close Attention to Details
2. Optimize Operations
  - a) Strategically Optimize Energy Production
    - i. Maximize Energy Production and Availability of On-Peak Energy
    - ii. Diligently Seek to Improve Efficiencies
  - b) Maximize Capacity Availability



# What Next? *(Continued)*

3. Find Ways to Trim Costs Where Possible
  - a) Transmission
    - a) TVA reduction welcome
    - b) Can more be done?
  - b) O&M
  - c) Joint
4. Be Smart About Capital Investments
5. Reclassify Expenses Where Appropriate

# SEPA Power: A Preference Customer Perspective

## QUESTIONS?

