

# Consumers Energy

Standby Rate Tariff Scenarios

Analysis performed by 5 Lakes Energy LLC

October 2016

# Common Example

- For the following calculations, we built off of Minnesota Power's billing simulations provided in their filing in Minnesota PUC Docket No. E-999/CI-15-115, and adapted each scenario for a General Service customer served at the Primary Distribution level.
- We have also made revisions based on comments by Consumers Energy received on October 18, 2016.

# Customer Characteristics

- We assumed a customer with 3,000 kW in standard service, 2,000 kW in reserved standby service, and that the customer was served at the primary distribution level.

# Customer Characteristics

- For purposes of calculating the customer's Standby Demand, we will rely on the highest 15 minute kW demand, and will assume that there has been no Standby Demand usage for the previous 11 months.
- The Power Factor for all scenarios is assumed to be 0.90. It is further assumed that neither the Substation Ownership Credit nor the Transmission Interconnect Credit apply.

# Peak hours/days for scenarios

- There are 9 on peak hours per weekday. Therefore, 16 on peak hours are spread in 2 days; 16 hours on/off peak happen in one day; 32 hours on peak happen in 4 days.

# Difficulty in Calculation

A customer would not be able to reasonably estimate its Standby Bill without access to an estimate or forecast of the following:

- The highest price of contracted capacity purchased by the Company in that month;
- Costs related to Transmission and Ancillaries;
- The MISO Real-Time Locational Market Price (LMP) for the Company's load node.

# Consumers Energy Summary

- No Outage = \$1440
- Scheduled Outage 16 hours on-peak: \$4784.56
- Scheduled Outage 8 hours on-peak, 8 hours off-peak: \$4331
- Scheduled Outage 32 hours on-peak: \$7973
- Unscheduled Outage 8 hours on-peak, 8 hours off-peak: \$4331

# No Outage

The Company defines “Standby Demand” as:

- *the greater of the (i) highest 15 minute kW demand the Company supplies the customer for Standby Service during the current month or (ii) highest Standby Demand from the previous 11 months. The Company shall determine the amount of monthly Standby Demand supplied to the customer based upon the total amount of power supplied to the customer, their contract Standby Capacity and generator output.*



# Minimum Charge

- In the case of no outage, the Minimum Charge would apply.
- The Company defines the Minimum Charge as:
  - *The System Access Charge included in this Rate Schedule in addition to the customer's contracted Standby Capacity multiplied by the net of any Substation Ownership Credit and Delivery Capacity Charges of this Rate Schedule.*

- The Delivery Capacity Charges for Customer Voltage Level 1 would be calculated as:
- $2,000 * 0.62 = \$1,240$

- The System Access Charge for a Generator that does not meet or exceed load is \$100/month.
- There is a \$100 generator meter charge.
- There are no Power Supply Capacity or Energy Charges in a “no outage” scenario.
- Total “No Outage” Standby Bill = **\$1440.00**

## *Scheduled Outage – 16 hours on-peak*

- Note: There is no difference between a Scheduled and Unscheduled outage under Consumers Energy's Standby Tariff.
- For this scheduled outage calculation, we assumed a complete 16-hour outage that took place during Consumer's Energy's peak window over two days in March, per comments received from the Company. The assumed peak load was 5,000 kW. We are still assuming 3,000 kW in standard service and 2,000 kW in reserved standby capacity.

- As above, the Delivery Capacity Charges for Customer Voltage Level 1 would be calculated as:
  - $2,000 * 0.62 = \$1240$
- The System Access Charge for a Generator that does not meet or exceed load is \$100/month.
- There is a \$100/month charge for the generator meter.

# Power Supply Capacity Charges

- Power Supply Capacity Charges are calculated as:
  - On Peak Capacity x (1 + Voltage 1 losses) x Standby Power Capacity Charge for the month x (# on peak days/total on peak days)
  - $2000 * 1.05448 * 11.64 * (2/22) = 2231.66$

# Power Supply Energy Charges

- Power Supply Energy Charges are based on the spreadsheet sent by Consumers Energy on 10/18:
  - In general:  $\text{Sum} [\text{On Peak Capacity} \times (1 + \text{Voltage 1 losses}) \times (\text{LMP} / 1000 + \text{Market Settlement Fee})]$
  - In this case:  $\text{Sum} [2,000 \text{ kW} \times (1 + \text{Voltage 1 losses}) \times (\text{LMP} / 1000 + \$0.002/\text{kWh})]$   
 $=1112.90$
- Total Standby Charges = **\$4784.56**

## *Scheduled Outage – 8 hours on-peak, 8 hours off-peak*

- Note: There is no difference between a Scheduled and Unscheduled outage under Consumers Energy's Standby Tariff.
- The differences in this scenario would show up in Power Supply Capacity Charges and Power Supply Energy Charges.



# Power Supply Capacity Charges

- Power Supply Capacity Charges are calculated as:
  - On Peak Capacity x (1 + Voltage 1 losses) x Standby Power Capacity Charge for the month x (# on peak days/total on peak days)
  - $2000 * 1.05448 * 11.64 * (1/22) = \$1116.00$

# Power Supply Energy Charges

- Power Supply Energy Charges are based on the spreadsheet sent by Consumers Energy on 10/18:
  - \$1775.00
- Therefore, the total for a 16-hour scheduled outage in which 8 hours were on-peak and 8 hours were off-peak, would be **\$4331**.

## *Scheduled Outage – 32 hours on-peak*

- There is no difference between a Scheduled and Unscheduled outage under Consumers Energy's Standby Tariff.
- For this scheduled outage calculation, we assumed a 32-hour outage that took place during Consumers Energy's peak window over four days in March.
- The assumed peak load was 5,000 kW. We are still assuming 3,000 kW in standard service and 2,000 kW in reserved standby capacity.

- As above, the Delivery Capacity Charges for Customer Voltage Level 1 would be calculated as:
  - $2,000 * 0.62 = \$1240$
- The System Access Charge for a Generator that does not meet or exceed load is \$100/month.
- There is also a \$100/month charge for the generator meter.

# Power Supply Capacity Charges

- Power Supply Capacity Charges are calculated as:
  - On Peak Capacity x (1 + Voltage 1 losses) x Standby Power Capacity Charge for the month x (# on peak days/total on peak days)
  - $2000 * 1.05448 * 11.64 * (4/22) = 4463.00$

# Power Supply Energy Charges

- Power Supply Energy Charges are based on the spreadsheet sent by Consumers Energy on 10/18:
  - In general:  $\text{Sum} [\text{On Peak Capacity} \times (1 + \text{Voltage 1 losses}) \times (\text{LMP} / 1000 + \text{Market Settlement Fee})]$
  - In this case:  $\text{Sum} [2,000 \text{ kW} \times (1 + \text{Voltage 1 losses}) \times (\text{LMP} / 1000 + \$0.002/\text{kWh})]$   
= \$1775.00
- Total Standby Charges = **\$7973.00**

## *Unscheduled Outage*

- There is no difference between a Scheduled and Unscheduled outage under Consumers Energy's Standby Tariff.
- Therefore, the total for a 16-hour unscheduled outage in which 8 hours were on-peak and 8 hours were off-peak, would still be **\$4331**.

# DTE Energy

Standby Rate Tariff Scenarios

Analysis performed by 5 Lakes Energy LLC

October 2016



# Common Example

- For the following calculations, we built off of Minnesota Power's billing simulations provided in their filing in Minnesota PUC Docket No. E-999/CI-15-115, and adapted each scenario for a General Service customer served at the Primary Distribution level.

- For purposes of a comparable analysis of DTE Energy's Rider No. 3, we assumed a Primary Supply Rate (Schedule D11) customer with 3,000 kW in nominated standard service, 2,000 kW in reserved Standby Service.
- For purposes of this analysis, we refer to "Standby Service" and not "Station Power Standby Service" as defined in Standard Contract Rider No. 3, Parallel Operation and Standby Service and Station Power Standby Service. "Standby Service" applies to customers with generation facilities that are located within retail service territory of DTE and are directly interconnected with DTE.

# Daily Demand Cap

- For each of the following scenarios, the Daily Demand Cap was calculated using the D11 Power Supply Demand Charge of 14.65 per kW of contracted standby capacity (2000 kW) for a total of \$29,300. The Daily On-Peak Backup Demand Charges do not exceed this maximum, so this figure does not apply.

# DTE Energy Summary

- No Outage = \$10,535.00
- Scheduled Outage 16 hours on-peak: \$18,653.24
- Scheduled Outage 8 hours on-peak, 8 hours off-peak: \$13,405.24
- Scheduled Outage 32 hours on-peak: \$30,271.48
- Unscheduled Outage 8 hours on-peak, 8 hours off-peak: \$17,545.24

## *No Outage*

- For the “no outage” calculation, we assumed an April peak load of 3,000 kW.
- With no outage and no standby service provided, the Reservation Fee would apply.
- DTE calculates the Reservation Fee as:
- Standby Reservation Rate \* standby capacity reserved (kW)
- The Standby Reservation Rate is listed as \$1.75. The Standby Capacity reserved is 2,000 kW.
- Therefore, the Reservation Fee is calculated as:
  - $1.75 * 2000 = \$3,500$

- The Delivery Service Charge is \$275/month and does not appear to be contingent on whether standby service is used.
- The Distribution Charge is applied to total standby contract capacity, do does not appear to be contingent on whether standby service is used. Therefore, the Distribution Charge in this scenario would be calculated as:
  - $3.38 * 2000 = 6760.00$
- Total “No Outage” Standby Bill = **\$10,535.00**

## *Scheduled Outage – 16 hours on-peak*

- For this scheduled outage calculation, we assumed a complete 16-hour outage that took place during DTE's peak window over two days (11 am to 7 pm) in April. The assumed peak load was 5,000 kW. We are still assuming 3,000 kW in standard nominated service and 2,000 kW in reserved standby capacity.

# Reservation Fee

As above, the Reservation Fee is calculated as:

- Standby Reservation Rate \* standby capacity reserved (kW)
- The Standby Reservation Rate is listed as \$1.75. The Standby Capacity reserved is 2,000 kW.
- Therefore, the Reservation Fee is calculated as:
  - $1.75 * 2000 = \$3,500$



- However, if total Daily On-Peak Back-Up Demand Charges are more than the Reservation Fee, the Reservation Fee is waived.
- The “maintenance” or Scheduled rate for Daily On-Peak Back-Up Demand Charges is 2.60.

- Daily On-Peak Back-Up Demand Charges are calculated as:
  - Daily On-Peak Back-Up Demand Charges Maintenance Rate \* kW of standby capacity used \* number of days of outage
- Therefore, the calculation would be:
  - $2.60 * 2000 * 2 = 10,400$

# Energy Charges

- Because Daily On-Peak Back-Up Demand Charges total more than the Reservation Fee, the Reservation Fee is waived.
- Energy charges are calculated using the Schedule D11 On-Peak Energy Charge Rate of 3.807 cents/kWh of standby power used.

- The outage lasted 16 hours and used 2,000 kW of capacity. Therefore, 32,000 kWh were used.
- Energy charges for this outage scenario would be calculated as:
  - $0.03807 * 32,000 = 1,218$

- In addition to demand and energy charges, there would be a Delivery Service Charge of \$275/month.
- Also, there would be a Distribution Charge of \$3.38/kW of standby capacity used.
  - $3.38 * 2000 = 6,760$
- Total Standby Charges = \$18,653.24

## *Scheduled Outage – 8 hours on-peak, 8 hours off-peak*

- For this scheduled outage calculation, we assumed a complete 16-hour outage, 8 hours of which took place during DTE's peak window (11 am to 7 pm) over one day in April. The assumed peak load was 5,000 kW. We are still assuming 3,000 kW in standard nominated service and 2,000 kW in reserved standby capacity.

# Reservation Fee

- As above, the Reservation Fee is calculated as:
  - Standby Reservation Rate \* standby capacity reserved (kW)
- The Standby Reservation Rate is listed as \$1.75. The Standby Capacity reserved is 2,000 kW.
- Therefore, the Reservation Fee is calculated as:
  - $1.75 * 2000 = \$3,500$

- However, if total Daily On-Peak Back-Up Demand Charges are more than the Reservation Fee, then the Reservation Fee is waived.
  - The “maintenance” or Scheduled rate for Daily On-Peak Back-Up Demand Charges is 2.60.
- Daily On-Peak Back-Up Demand Charges are calculated as:
  - Daily On-Peak Back-Up Demand Charges Maintenance Rate \* kW of standby capacity used \* number of days of outage
- Therefore, the calculation would be:
  - $2.60 * 2000 * 1 = 5,200$
- Because Daily On-Peak Back-Up Demand Charges total more than the Reservation Fee, the Reservation Fee is waived.



- Energy charges are calculated using the Schedule D11 On-Peak Energy Charge Rate of 3.807 cents/kWh and Off-Peak Energy Charge Rate of 3.507 cents/kWh of standby power used.
- The outage lasted 16 hours and used 2,000 kW of capacity; 8 hours were on-peak and 8 hours were off-peak. Therefore, 16,000 kWh were on-peak and 16,000 kWh were off-peak.

# Energy Charges

- Energy charges for this outage scenario would be calculated as:
  - $0.03807 * 16,000 = 609.12$
  - $0.03507 * 16,000 = 561.12$
- Total Energy Charges = 1,170

- In addition to demand and energy charges, there would be a Delivery Service Charge of \$275/month.
- Also, there would be a Distribution Charge of \$3.38/kW of standby capacity used.
  - $3.38 * 2000 = 6,760$
- Total Standby Charges = **\$13,405.24**

## *Scheduled Outage – 32 hours on-peak*

- For this scheduled outage calculation, we assumed a complete 32-hour outage that took place during DTE's peak window over four days (11 am to 7 pm) in April. The assumed peak load was 5,000 kW. We are still assuming 3,000 kW in standard nominated service and 2,000 kW in reserved standby capacity.

# Reservation Fee

- As above, the Reservation Fee is calculated as:
  - Standby Reservation Rate \* standby capacity reserved (kW)
- The Standby Reservation Rate is listed as \$1.75. The Standby Capacity reserved is 2,000 kW.
- Therefore, the Reservation Fee is calculated as:
  - $1.75 * 2000 = \$3,500$

- However, if total Daily On-Peak Back-Up Demand Charges are more than the Reservation Fee, the Reservation Fee is waived.
  - The “maintenance” or Scheduled rate for Daily On-Peak Back-Up Demand Charges is 2.60.
- Daily On-Peak Back-Up Demand Charges are calculated as:
  - Daily On-Peak Back-Up Demand Charges Maintenance Rate \* kW of standby capacity used \* number of days of outage
- Therefore, the calculation would be:
  - $2.60 * 2000 * 4 = 20,800$

# Energy Charges

- Because Daily On-Peak Back-Up Demand Charges total more than the Reservation Fee, the Reservation Fee is waived.
  - Energy charges are calculated using the Schedule D11 On-Peak Energy Charge Rate of 3.807 cents/kWh of standby power used.
- The outage lasted 32 hours and used 2,000 kW of capacity. Therefore, 64,000 kWh were used.
- Energy charges for this outage scenario would be calculated as:
  - $0.03807 * 64,000 = 2,436$

- In addition to demand and energy charges, there would be a Delivery Service Charge of \$275/month.
- Also, there would be a Distribution Charge of \$3.38/kW of standby capacity used.
  - $3.38 * 2000 = 6,760$
- Total Standby Charges = **\$30,271.48**



## *Unscheduled Outage*

- For this unscheduled outage calculation, we assumed a complete 16-hour outage, 8 hours of which took place during DTE's peak window (11 am to 7 pm) over one day in April. The assumed peak load was 5,000 kW. The assumed peak load was 5,000 kW. We are still assuming 3,000 kW in standard nominated service and 2,000 kW in reserved standby capacity.

# Reservation Fee

As above, the Reservation Fee is calculated as:

- Standby Reservation Rate \* standby capacity reserved (kW)
- The Standby Reservation Rate is listed as \$1.75. The Standby Capacity reserved is 2,000 kW.
- Therefore, the Reservation Fee is calculated as:
  - $1.75 * 2000 = \$3,500$

- However, if total Daily On-Peak Back-Up Demand Charges are more than the Reservation Fee, the Reservation Fee is waived.
- The non-maintenance or Unscheduled rate for Daily On-Peak Back-Up Demand Charges is 4.67.
- Daily On-Peak Back-Up Demand Charges are calculated as:
- Daily On-Peak Back-Up Demand Charges Maintenance Rate \* kW of standby capacity used \* number of days of outage
- Therefore, the calculation would be:
  - $4.67 * 2000 * 1 = 9,340$

- Because Daily On-Peak Back-Up Demand Charges total more than the Reservation Fee, the Reservation Fee is waived.
- Energy charges are calculated using the Schedule D11 On-Peak Energy Charge Rate of 3.807 cents/kWh of standby power used.
- The outage lasted 16 hours and used 2,000 kW of capacity; 8 hours were on-peak and 8 hours were off-peak. Therefore, 16,000 kWh were on-peak and 16,000 kWh were off-peak.

# Energy Charges

- Energy charges for this outage scenario would be calculated as:
  - $0.03807 * 16,000 = 609.12$
  - $0.03507 * 16,000 = 561.12$
- Total Energy Charges = 1,170

- In addition to demand and energy charges, there would be a Delivery Service Charge of \$275/month.
- Also, there would be a Distribution Charge of \$3.38/kW of standby capacity used.
  - $3.38 * 2000 = 6,760$
- Total Standby Charges = **\$17,545.24**

# Summary Comparisons

# Consumers Energy Summary

- No Outage = \$1440
- Scheduled Outage 16 hours on-peak: \$4784.56
- Scheduled Outage 8 hours on-peak, 8 hours off-peak: \$4331
- Scheduled Outage 32 hours on-peak: \$7973
- Unscheduled Outage 8 hours on-peak, 8 hours off-peak: \$4331



# DTE Energy Summary

- No Outage = \$10,535.00
- Scheduled Outage 16 hours on-peak: \$18,653.24
- Scheduled Outage 8 hours on-peak, 8 hours off-peak: \$13,405.24
- Scheduled Outage 32 hours on-peak: \$30,271.48
- Unscheduled Outage 8 hours on-peak, 8 hours off-peak: \$17,545.24

# Minnesota Power Summary

- No Outage = \$1007.00 (Standby Reservation Fee)
- Scheduled Outage 16 hours on-peak: \$2699.16
- Scheduled Outage 8 hours on-peak, 8 hours off-peak: \$2699.16
- Scheduled Outage 32 hours on-peak: \$4391.32
- Unscheduled Outage 8 hours on-peak, 8 hours off-peak: \$20,180 plus hourly incremental energy costs

# Xcel Energy Summary

- No Outage = \$4940.00 for scheduled; \$5140 for unscheduled (Standby Reservation Fee)
- Scheduled Outage 16 hours on-peak: \$5934.56
- Scheduled Outage 8 hours on-peak, 8 hours off-peak: \$5934.56
- Scheduled Outage 32 hours on-peak: \$7958.24
- Unscheduled Outage 8 hours on-peak, 8 hours off-peak: \$6134.56