Standby Rates as a Barrier to CHP
Electricity Consumers Resource Council (ELCON)
Sept. 14, 2017

Jennifer Kefer
Alliance for Industrial Efficiency
Executive Director
202-816-9302
Agenda

- Standby rates as a barrier
- Best practices
- Market trends and potential
- 5 Lakes Analysis
  - Michigan
  - Minnesota
  - Ohio
  - Pennsylvania
## Exposing the Hidden Fees

- Facility charge
- Delivery charge
- Monthly demand charge for non-reserved service
- Monthly customer charge
- Monthly reservation charge
- Seasonal maintenance charges
- Seasonal energy charges for non-reserved service
- Seasonal backup demand charges
- Seasonal backup energy charges
Issues Regarding Standby Rates

- Rates are not transparent
- Rates are inconsistent
  - In Minnesota, one company could pay up to 5x more
- “Captive” ratepayers
- Erodes economic benefits of CHP
- Rates assume outages occur at peak – and that all systems breakdown simultaneously
CHP Is Reliable

During Hurricane Sandy, when the grid lost power, all 24 CHP sites surveyed performed as expected.

### System Availability

<table>
<thead>
<tr>
<th>Reciprocating Engine</th>
<th>Steam Turbine</th>
<th>Gas Turbine</th>
<th>Microturbine</th>
<th>Fuel Cell</th>
</tr>
</thead>
<tbody>
<tr>
<td>96-98%</td>
<td>72-99%</td>
<td>93-96%</td>
<td>98-99%</td>
<td>&gt;95%</td>
</tr>
</tbody>
</table>

Source: EPA, 2015
Best Practices

- Transparency
- Reflect actual costs
- Eliminate “demand ratchets”
- Allow for customer choice
Standby Rates in Practice
Existing CHP Capacity (MW)

Source: DOE CHP Installation Database (U.S. installations as of December 31, 2014)
Figure III-1: On-site Technical Potential by State

Jennifer Kefer
Alliance for Industrial Efficiency
Executive Director
202-816-9302
jennifer@dgardiner.com
“Apples-to-Apples”
Standby Analysis

presentation to Electricity Consumers Resource Council
September 14, 2017
Overview

• 5 Lakes’ apples-to-apples method calculates monthly standby charges for an identical CHP customer across different utilities
  – Detailed approach enables us to compare, contrast, and evaluate specific aspects of utilities’ standby tariffs
  – Breadth of analyses (4 states so far) allows us to make educated observations and policy recommendations across states
Where did this get started?

• Minnesota Standby Proceeding
• Minnesota Power, Xcel Energy, Otter Tail Power, and Dakota Electric
Difficult to Compare

• Lack of uniformity
• Lack of transparency
• Utilities provided simulated calculations, but system sizes and other assumptions differed
• A need to highlight customer experience through estimated standby bills
Outage Scenario Comparison

- No outage
- Scheduled, 16-hour off-peak outage
- Scheduled, 16-hour ON-peak outage
- Scheduled, 8-hour ON-peak, 8 hour off-peak outage
- Scheduled, 32-hour ON-peak
- **UNscheduled**, 8-hour ON-peak, 8-hour off-peak outage
Customer Characteristics

• 3,000 kW in standard (supplemental) service
• 2,000 kW in reserved standby service
• General service, primary distribution level
• One month of standby charges
Utilities Verified

• Started with “cold read” of published tariff
• Worked with utilities to verify calculations
• Obtained necessary data
• Clarified tariff language
• Clarified interpretation and application to our scenarios
## Minnesota Power

<table>
<thead>
<tr>
<th>Outage Type</th>
<th>16 Hours Off-Peak</th>
<th>16 Hours On-Peak</th>
<th>8 Hours Off-Peak</th>
<th>8 Hours On-Peak</th>
<th>32 Hours On-Peak</th>
<th>8 Hours On-Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Outage</td>
<td>$1,007</td>
<td>$2,699</td>
<td>$2,699</td>
<td>$2,699</td>
<td>$4,391</td>
<td>$20,180</td>
</tr>
<tr>
<td>Scheduled Outage, 16 Hours Off-Peak</td>
<td>$2,699</td>
<td></td>
<td></td>
<td>$2,699</td>
<td>$4,391</td>
<td></td>
</tr>
<tr>
<td>Scheduled Outage, 16 Hours On-Peak</td>
<td></td>
<td></td>
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<tr>
<td>Scheduled Outage, 8 Hours Off-Peak</td>
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<tr>
<td>Scheduled Outage, 8 Hours On-Peak</td>
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</tr>
<tr>
<td>Scheduled Outage, 32 Hours On-Peak</td>
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<td></td>
</tr>
<tr>
<td>Unscheduled Outage, 8 Hours On-Peak</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$20,180</td>
</tr>
</tbody>
</table>
# Dakota Electric

<table>
<thead>
<tr>
<th>Outage Type</th>
<th>Duration 1 (Off-Peak)</th>
<th>Duration 2 (On-Peak)</th>
<th>Duration 3 (Off-Peak)</th>
<th>Duration 4 (On-Peak)</th>
<th>Duration 5 (On-Peak)</th>
<th>Duration 6 (Off-Peak)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Outage</td>
<td>$6,594</td>
<td><strong>$20,127</strong></td>
<td><strong>$20,127</strong></td>
<td><strong>$20,127</strong></td>
<td><strong>$22,561</strong></td>
<td><strong>$20,127</strong></td>
</tr>
<tr>
<td>Scheduled Outage, 16 Hours Off-Peak</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scheduled Outage, 16 Hours On-Peak</td>
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<tr>
<td>Scheduled Outage, 8 Hours On-Peak</td>
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<tr>
<td>Scheduled Outage, 32 Hours On-Peak</td>
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<tr>
<td>Unscheduled Outage, 8 Hours On-Peak</td>
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</table>
## MN Snapshot

<table>
<thead>
<tr>
<th></th>
<th>No Outage</th>
<th>Scheduled Outage, 16 Hours Off-Peak</th>
<th>Scheduled Outage, 16 Hours On-Peak</th>
<th>Scheduled Outage, 8 Hours On-Peak, 8 Hours Off-Peak</th>
<th>Scheduled Outage, 32 Hours On-Peak</th>
<th>Unscheduled Outage, 8 Hours On-Peak, 8 Hours Off-Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Minnesota Power</strong></td>
<td>$1,007</td>
<td>$2,699</td>
<td>$2,699</td>
<td>$2,699</td>
<td>$4,391</td>
<td><strong>$20,180</strong></td>
</tr>
<tr>
<td><strong>Xcel Energy</strong></td>
<td>$4,940</td>
<td>$5,935</td>
<td>$5,935</td>
<td>$5,935</td>
<td>$7,912</td>
<td>$6,135</td>
</tr>
<tr>
<td><strong>Otter Tail Power</strong></td>
<td>$1,632</td>
<td>$3,167</td>
<td>$4,113</td>
<td>$3,640</td>
<td>$6,594</td>
<td>$4,408</td>
</tr>
<tr>
<td><strong>Dakota Electric</strong></td>
<td>$6,594</td>
<td><strong>$20,127</strong></td>
<td>$20,127</td>
<td>$20,127</td>
<td>$22,561</td>
<td>$20,127</td>
</tr>
</tbody>
</table>
Minnesota Power Standby Reforms

• Redefine “unscheduled” to allow for maintenance during non-shoulder months
• Reconsidering unscheduled “ratchet”
• Could save customer $14,000 per unscheduled outage
• Plus additional savings from allowing more flexibility for scheduling maintenance
Dakota Electric Standby Reforms

• Dakota Electric considering reducing charges for scheduled/maintenance standby service
• Customers could save $9,000 per scheduled outage
• Assuming quarterly maintenance, this represents a savings of at least $36,000 per year
Michigan Standby Reforms

• Standby Rate Working Group
• Consumers Energy and DTE General Rate Cases
• Examining utility cost-of-service studies in light of apples-to-apples standby analyses
# Scheduled 32-hour on-peak

<table>
<thead>
<tr>
<th></th>
<th>Consumers</th>
<th>DTE</th>
<th>Xcel - MN</th>
<th>Minnesota Power</th>
<th>Otter Tail Power - MN</th>
<th>Dakota Electric - MN</th>
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</thead>
<tbody>
<tr>
<td>Service Charge</td>
<td>$200</td>
<td>$275</td>
<td>$25.75</td>
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<tr>
<td>Delivery Capacity/Distribution Charge</td>
<td>$8,100</td>
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<td>$0</td>
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<td>Reservation Fee</td>
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<td>$4,940</td>
<td>$1,007</td>
<td>$428</td>
<td>$0</td>
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<tr>
<td>Demand Charges</td>
<td>$4,463</td>
<td>$20,800</td>
<td>$983</td>
<td>$0</td>
<td>$0</td>
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<tr>
<td>Energy Charges</td>
<td>$2,070</td>
<td>$2,436</td>
<td>$1,989</td>
<td>$3,384</td>
<td>$4,961</td>
<td>$4,966</td>
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<tr>
<td>Standby Facilities Charge</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$900</td>
<td>$0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$14,833</strong></td>
<td><strong>$30,271</strong></td>
<td><strong>$7,938</strong></td>
<td><strong>$4,391</strong></td>
<td><strong>$6,594</strong></td>
<td><strong>$23,020</strong></td>
</tr>
</tbody>
</table>
## Unscheduled 8 on/8 off-peak

<table>
<thead>
<tr>
<th></th>
<th>Consumers</th>
<th>DTE</th>
<th>Xcel - MN</th>
<th>Minnesota Power</th>
<th>Otter Tail Power - MN</th>
<th>Dakota Electric - MN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Service Charge</strong></td>
<td>$200</td>
<td>$275</td>
<td>$26</td>
<td>$0</td>
<td>$304</td>
<td>$34</td>
</tr>
<tr>
<td><strong>Delivery Capacity/Distribution Charge</strong></td>
<td>$8,100</td>
<td>$6,760</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
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<tr>
<td><strong>Reservation Fee</strong></td>
<td>$0</td>
<td>$3,500</td>
<td>$5,140</td>
<td>$0</td>
<td>$428</td>
<td>$0</td>
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<tr>
<td><strong>Demand Charges</strong></td>
<td>$1,116</td>
<td>$9,340</td>
<td>$0</td>
<td>$21,180</td>
<td>$816</td>
<td>$18,020</td>
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<tr>
<td><strong>Energy Charges</strong></td>
<td>$1,775</td>
<td>$1,170</td>
<td>$995</td>
<td>hourly energy costs</td>
<td>$1,959</td>
<td>$2,483</td>
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<tr>
<td><strong>Standby Facilities Charge</strong></td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$900</td>
<td>$0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$11,191</td>
<td>$17,545</td>
<td>$6,160</td>
<td>$21,180 plus hourly</td>
<td>$4,408</td>
<td>$20,537</td>
</tr>
</tbody>
</table>
Pennsylvania

- PECO Energy and PPL Electric
- 2 MW CHP system
  - PPL - $5,200/month
  - PECO - $11,500/month
- 30 MW CHP system
  - PPL - $1,000/month
  - PECO - $65,000/month
Pennsylvania

• PECO Energy and PPL Electric
• 2 MW CHP system
  – PPL - $5,200/month
  – PECO - $11,500/month
• 30 MW CHP system
  – PPL - $1,000/month
  – PECO - $65,000/month
Ohio

- Duke, First Energy, AEP, Dayton Power & Light
- Discussed high distribution charges with PUCO
- Interest in aligning CHP Incentive Rebate Programs with better standby rate design
- Distributed generation viewed as key to grid modernization efforts
Major Takeaways re: Standby Rates

- Lack of transparency, accessibility for customers
- Lack of uniformity in language, structure
- Significant variation in charges
- High reservation fees, demand charges pose barrier to CHP
Contagion?

- Michigan responded to analysis in Minnesota
- Pennsylvania responded to Minnesota and Michigan – then Ohio
- Interest in Louisiana
- Additional analyses increase pressure on utilities to increase transparency, accessibility
- Helps regulators identify “red flags” for further inquiry/discussion
- Replicable in other states
Jamie Scripps
5 Lakes Energy LLC
(517) 897-4649
jscripps@5lakesenergy.com