Introduction of Demand Rates

Caribbean Utilities Company, Ltd.
October 2017
Topics for Discussion

- Introduction to demand rates
- How demand rates were calculated
- Benefits to customers
- Effective date and transition plan
- Approved rates
- Example Bill
Why Demand Rates

- The goal of demand rate billing is to allocate demand related costs into a separate component from energy costs and send the right price signal which will encourage demand management.

- Peak demand reduction does not necessarily decrease total energy consumption, but can be expected to reduce the need for investments in power plants and T&D infrastructure for meeting peak demands.
CUC KW Peak Demand History

- 1997
- 1998
- 1999
- 2000
- 2001
- 2002
- 2003
- 2004
- 2005
- 2006
- 2007
- 2008
- 2009
- 2010
- 2011
- 2012
- 2013
- 2014
- 2015
- 2016

Graph shows the trend in CUC KW peak demand from 1997 to 2016.
Which customers are affected?

- All Large Commercial (Rate L) customers
- Without DER – the new rates will be phased in over 3 years
- Future DER customers – the new rates take effect at once
Which customers are affected?

- Residential (Rate R) and Commercial (Rate C) customers that operate on-site Distributed Energy Resources (DER) outside of CUC’s CORE program.

- Distributed Energy Resources are small-scale renewable energy generation sources located on the same property where electricity is used (e.g. a home or business), to provide an alternative to or an enhancement of the traditional electric power grid.
Existing Bill Components

- Existing CUC rates consist of:
  - Facilities charge – monthly flat fee
  - Energy charge – based on kWh consumption
  - Fuel Cost charges – based on kWh
  - License and Regulatory fees – based on kWh
  - Renewable Energy – based on kWh
  - Other miscellaneous charges

- Only Base Rates impacted. “Base Rates” consist of facilities charge and energy charge – other bill components are not affected
New Rates

- Energy charge - lower rate
- New Demand charges
  - Monthly Billing Demand
  - Additional Capacity Charge
- All other components are not affected
Rate of Usage

- Peak kW measures rate of usage
  e.g. kW : speed :: kWh : miles travelled
New Demand Charges

- Monthly Billing Demand – maximum on-peak kW during the billing month
  - Peak = 11 a.m. to 9 p.m.
  - Monday to Friday, excluding defined Holidays

- Additional Capacity Charge – maximum of the Monthly Billing Demands for the last 24 billing months.
How Demand Rates were Calculated

- Cost of Service Study
  - Total cost to serve large commercial class
    - Categorized into Generation, Transmission & Distribution and other
  - Revenue neutral – new demand charges replace energy charges
How Demand Rates were Calculated

- **Step 1**: Demand charges calculated to recover generation and T&D costs
  - Monthly Billing Demand recovers
    - Base Generation
  - Additional Capacity Charge recovers
    - Reserve Generation
    - Transmission & Distribution costs
How Demand Rates were Calculated

- **Step 2:** Increased cost recovery from demand charges used to lower the energy rate
  - New rates are revenue neutral to CUC compared to existing rates & ensure costs are allocated fairly to consumers.

- **Step 3:** Rates are adjusted annually utilizing the same CPI adjustment as is used for existing rates.

- **Step 4:** Rate L is adjusted to phase-in one-third of demand rates in first year
Benefits to Customers

- Customers are better able to reduce their bills by lowering their peak usage.

- Flatter load shapes from customers will:
  - Lower costs to the utility that are passed on to all customers over the long-term
Benefits to Customers

- Increased familiarity with consumption patterns.
- Increased forecasting accuracy.
- More ways to save. Energy and Peak Demand Management.
Effective Date and Transition Plan

- Effective Date: **January 2018**
- The demand rates for Large Commercial customers will be phased in over three years.
- The calculated rates will be CPI adjusted effective June 1 each year.
- Each year during the rollout period the regulator will review the rates to ensure revenue neutrality.
- As customers install DER in the future they will utilize the Demand Rates.
### Transition Plan Rate L

<table>
<thead>
<tr>
<th>YEAR 1</th>
<th>YEAR 2</th>
<th>YEAR 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Re-evaluate demand billing units based on</td>
<td>Re-evaluate demand billing units based on</td>
</tr>
<tr>
<td></td>
<td>experience</td>
<td>experience</td>
</tr>
<tr>
<td>Calculated demand rates (as</td>
<td>Calculated demand rates (as adjusted by RCAM) x 2/3</td>
<td>Calculated demand rates (as adjusted by RCAM) x 100%</td>
</tr>
<tr>
<td>adjusted by RCAM) x 1/3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balance of costs recovered</td>
<td>Balance of costs recovered from energy rate</td>
<td>Balance of costs recovered from energy rate</td>
</tr>
<tr>
<td>from energy rate</td>
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</tbody>
</table>
Transition Plan Rate L

Transition from Energy to Demand Charges

- Year 0: 100% Energy
- Year 1: 60% Energy, 20% Monthly Demand, 20% Additional Capacity Charge
- Year 2: 40% Energy, 40% Monthly Demand, 20% Additional Capacity Charge
- Year 3: 20% Energy, 60% Monthly Demand, 20% Additional Capacity Charge

CUC
You've got the power
# Approved Rates

<table>
<thead>
<tr>
<th></th>
<th>Residential W/DER</th>
<th>General Commercial W/DER</th>
<th>Large Commercial</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EXISTING RATES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monthly Facilities Charge</td>
<td>$5.31</td>
<td>$29.35</td>
<td>$153.92</td>
</tr>
<tr>
<td>All kWh per month</td>
<td>0.1058</td>
<td>0.1183</td>
<td></td>
</tr>
<tr>
<td>First 30,000 kWh per month</td>
<td></td>
<td></td>
<td>0.1183</td>
</tr>
<tr>
<td>Over 30,000 kWh per month</td>
<td></td>
<td></td>
<td>0.0977</td>
</tr>
<tr>
<td><strong>NEW RATES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>Monthly Facilities Charge</td>
<td>$5.31</td>
<td>$29.35</td>
<td>$153.92</td>
</tr>
<tr>
<td>All kWh per month</td>
<td>0.00333</td>
<td>0.00323</td>
<td>0.00327</td>
</tr>
<tr>
<td>Monthly Billing Demand</td>
<td>8.63</td>
<td>10.60</td>
<td>9.75</td>
</tr>
<tr>
<td>Additional Capacity Charge</td>
<td>14.56</td>
<td>14.59</td>
<td>14.53</td>
</tr>
</tbody>
</table>
Sample Bills: Large Customers without onsite DER

This is an example for illustrative purposes only. The energy and demand rates will be recalculated each year. Please note the actual rates in year 3 will differ from the example.

### SUMMARY:
- **Existing Rates**: 28,461.53  28,461.53  28,461.53
- **Demand Rates Only**: 28,382.32  28,425.46  28,475.49

### CURRENT BILL FORMAT

#### EXISTING RATES:
- **Facilities charge**
  - $153.95
  - First 30,000 kWh: 0.1183 kWh = 3,549.00
  - Over 30,000 kWh: 0.0977 kWh = 8,302.06
- **Fuel charge**
  - 0.1353 kWh = 15,556.12
- **Regulatory fee**
  - 0.0079 kWh = 900.40

**TOTAL EXISTING RATES**: $28,461.53

#### NEW BILL FORMAT

**DEMAND RATES**:
- **Facilities charge**: $153.95
- **Demand Charges**:
  - Monthly Billing Demand: 3.25 kW = 975.00
  - Additional Capacity Charge: 4.84 kW = 2,906.00
  - Energy charge: 0.06997 kWh = 8,044.80
  - Fuel charge: 0.1353 kWh = 15,556.12
  - Regulatory fee: 0.0079 kWh = 900.40

**TOTAL DEMAND RATES**: $28,382.32

### Year-wise Breakdown

#### Year 1

<table>
<thead>
<tr>
<th>Billing</th>
<th>Units</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost</td>
<td></td>
<td></td>
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</tbody>
</table>

#### Year 2

<table>
<thead>
<tr>
<th>Billing</th>
<th>Units</th>
<th>Cost</th>
</tr>
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<tbody>
<tr>
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</tr>
<tr>
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<td></td>
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</tbody>
</table>

#### Year 3

<table>
<thead>
<tr>
<th>Billing</th>
<th>Units</th>
<th>Cost</th>
</tr>
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<tbody>
<tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>Cost</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Sample Bills: Customers with onsite DER

<table>
<thead>
<tr>
<th>EXISTING RATES:</th>
<th>Generator w/o Storage</th>
<th>Generator WITH Storage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Facilities charge</strong></td>
<td><strong>$ 153.92</strong></td>
<td><strong>$ 153.92</strong></td>
</tr>
<tr>
<td><strong>First 30,000 kWh</strong></td>
<td><strong>0.1183</strong></td>
<td><strong>30,000</strong></td>
</tr>
<tr>
<td></td>
<td><strong>3,549.00</strong></td>
<td><strong>3,549.00</strong></td>
</tr>
<tr>
<td><strong>Over 30,000 kWh</strong></td>
<td><strong>0.0977</strong></td>
<td><strong>60,975</strong></td>
</tr>
<tr>
<td></td>
<td><strong>5,957.26</strong></td>
<td><strong>66,975</strong></td>
</tr>
<tr>
<td><strong>Fuel charge</strong></td>
<td><strong>0.1353</strong></td>
<td><strong>90,975</strong></td>
</tr>
<tr>
<td></td>
<td><strong>12,308.92</strong></td>
<td><strong>92,775</strong></td>
</tr>
<tr>
<td><strong>Regulatory fee</strong></td>
<td><strong>0.0079</strong></td>
<td><strong>89,975</strong></td>
</tr>
<tr>
<td></td>
<td><strong>710.80</strong></td>
<td><strong>91,775</strong></td>
</tr>
<tr>
<td><strong>TOTAL EXISTING RATES</strong></td>
<td><strong>$ 22,679.90</strong></td>
<td><strong>$ 23,523.86</strong></td>
</tr>
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<td><strong>Demand Charges:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Monthly Billing Demand</strong></td>
<td><strong>9.75</strong></td>
<td><strong>200</strong></td>
</tr>
<tr>
<td><strong>Additional Capacity Charge</strong></td>
<td><strong>14.53</strong></td>
<td><strong>500</strong></td>
</tr>
<tr>
<td><strong>Energy charge</strong></td>
<td><strong>0.00327</strong></td>
<td><strong>92,775</strong></td>
</tr>
<tr>
<td><strong>Fuel charge</strong></td>
<td><strong>0.1353</strong></td>
<td><strong>92,775</strong></td>
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<tr>
<td><strong>TOTAL DEMAND RATES</strong></td>
<td><strong>$ 24,960.21</strong></td>
<td><strong>$ 22,795.85</strong></td>
</tr>
</tbody>
</table>
Tools For Consumption Tracking

WWW.CUC-CAYMAN.COM