Clustering Applications: Customer Usage Archetypes

June 2019
Brian Smith
Data Engineer & Analyst
Electric Power Board of Chattanooga, TN
Who is EPB?
Customer Load Profile

• 15-minute meter reads
• Average at each interval to get ‘typical day’, i.e. average kwh between 1:00 and 1:15 AM, between 1:15 and 1:30 AM, etc.
Clustering Overview
Clustering Overview
Mass Clustering Customer Load Profiles
Mass Clustering Customer Load Profiles
Mass Clustering Customer Load Profiles
Mass Clustering Customer Load Profiles
Mass Clustering Customer Load Profiles
Mass Clustering Customer Load Profiles

Cluster Load Profile

Interval [January 1, 2018]

Hour of Day

kWh Adjusted
Implications and Possibilities

Residential – Peak Shaving

Hour of Day

<table>
<thead>
<tr>
<th>Cluster</th>
<th>% Difference from Lowest</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>21%</td>
</tr>
<tr>
<td>7</td>
<td>14%</td>
</tr>
<tr>
<td>3</td>
<td>11%</td>
</tr>
<tr>
<td>4</td>
<td>11%</td>
</tr>
<tr>
<td>1</td>
<td>9%</td>
</tr>
<tr>
<td>5</td>
<td>2%</td>
</tr>
<tr>
<td>2</td>
<td>0%</td>
</tr>
</tbody>
</table>
Implications and Possibilities

Residential – Customer Insights

“Sharp Peakers”

“Round Peakers”

“Night Owls”
Implications and Possibilities
Residential – Customer Insights
Implications and Possibilities
Residential – Customer Insights


- **SHARP PEAKER**
- **ROUND PEAKER**
- **NIGHT OWL**
Implications and Possibilities

Business – Business Type Identification

kWh Adjusted

SUN  MON  TUES  WED  THURS  FRI  SAT

Reading Num
Implications and Possibilities

Business – Business Type Identification