Grid 20/20 Focus on Energy Demand
Chad Burnett
Director of Economic Forecasting
June 3, 2014
• Long Term Sales Trends
• Shifting Demographics & Economy
• Appliance & Lighting Efficiencies
• Recent Sales Trends
• Shale Gas Load Growth
Declining Sales Trends Over Past Decade

Normalized Residential Sales Growth

Normalized Commercial Sales Growth

Industrial Sales Growth

Normalized Retail Sales Growth
Both customer growth and usage growth have been declining over the past decade.
Changing Demographics Impact Customer Growth

US Population Growth

Birth Rate by Mother's Age

Millennials Lagging in Household Formation

Weak Job Market Affecting Millennial Household Formation
Over the past 40 years, the US economy has dramatically shifted away from manufacturing towards service-based industries.

Today, the share of employment in Manufacturing is about 1/3 of what it was in 1970, while the share for Professional & Business Services has doubled and the share for Education & Health Services has tripled during the same period.

At the same time, US Manufacturers have dramatically increased their productivity through efficiency. Manufacturers today are producing more with less.
Saturation of Efficient Appliances

According to our 2013 survey, just under half of our customers replaced many of their major appliances within the last 5 years.

Most appliances that are sold in the market today are more energy efficient than they were 10-20 years ago, due to legislated standards and customer preferences.

In addition to these major appliances, lighting standards from EISA 2007 are also having an impact on lower Residential usage growth.
Impact of Efficient Lighting

- Residential usage has been declining for most of the past decade. Most of the decline is due to increased lighting efficiency due to federal standards and company sponsored EE/DSM programs.
- Usage in non-lighting end-uses has actually been trending upwards.
- Going forward, there is less efficiency to be gained in lighting and effective EE/DSM programs will have to focus on non-lighting end-uses.
Sales Trends Improving Over Past 6 Months

Normalized Residential Sales Growth

Industrial Sales Growth

Normalized Commercial Sales Growth

Normalized Retail Sales Growth
Encouraging Economic Data

AEP Sales and Non-farm Employment Growth

- Retail Sales Growth:
  - Q1-13: -1.5%
  - Q2-13: -2.7%
  - Q3-13: -1.5%
  - Q4-13: -0.8%
  - Q1-14: 1.5%

- Employment Growth:
  - Q1-13: 1.2%
  - Q2-13: 1.1%
  - Q3-13: 1.0%
  - Q4-13: 1.2%
  - Q1-14: 1.4%

GDP Growth by Geography

- US
- AEP-East
- AEP-West

Employment Growth by Quarter

- US
- AEP
Shale Activity Driving Industrial Recovery

AEP Industrial Sales Growth

- **Shale Counties**
- **Non-Shale Counties**

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Q1-13</th>
<th>Q2-13</th>
<th>Q3-13</th>
<th>Q4-13</th>
<th>Q1-14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Growth vs PY</td>
<td>-5.6%</td>
<td>-3.2%</td>
<td>-3.8%</td>
<td>-0.8%</td>
<td>-0.4%</td>
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*Excluding Ormet

Industrial Sales Growth in Shale Regions

- Eagle Ford (TX)
- Marcellus (WV)
- Permian (TX)
- Utica (OH)
- Woodford (OK)

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<tbody>
<tr>
<td>Growth vs PY</td>
<td>-20%</td>
<td>0%</td>
<td>20%</td>
<td>40%</td>
<td>60%</td>
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