Integrated Resource Planning, Declining Loads and Energy Efficiency

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Models Used in IRPs

• Generally fall into two categories, capacity expansion or production costing

• Common models include:
  – Strategist (C)
  – System Optimizer (C)
  – Planning and Risk (P)
  – Promod (P)
Model Outputs Can Tell You…

- Projected generation by unit
- System and unit emissions including CO$_2$
- Revenue requirements by plant and in total
- Off-system sales/purchases
- Much more…
What the model might hide

• Actual trend of project costs to customers
What the model might hide

• Actual trend of project costs to customers
• Underutilization of units
• Expansion plan is “forced” in
• Off-system sales justify new capacity
• Many other possibilities…
Thru the Mid 2000’s Many Utility Load Forecasts Looked Like This
But Then Suddenly This Happened....

Modeling  Load Forecasting  Energy Efficiency
But Then Suddenly This Happened....

Was it just the economy?

Modeling  Load Forecasting  Energy Efficiency
First Indication of Change...

Figure 93. U.S. electricity demand growth, 1950-2035
(percentage, 3-year moving average)

History

2010

Projections

Modeling Load Forecasting Energy Efficiency
Then in Mid-2012...

- Statements on “structural changes” in demand from executives at AEP, Southern Company and Xcel Energy
- Report from Wood Mackenzie on *A Lost Decade of Demand Growth*
- Itron and Brattle Group say that declining rate of load growth is national phenomenon
Dominion’s Reaction is Typical...

[Graph showing load forecasting for different years and models, courtesy of David Schlissel]
The Consequences: An Extreme (Hopefully) Example

Modeling  Load Forecasting  Energy Efficiency
What are the Causes?

- Utility energy efficiency programs
- Codes and standards
- Lingering economic woes
- Others?
What to Look Out For:

• Is the forecast adjusted for recently enacted codes and standards?
• Does the economic data match actuals? i.e., housing starts
• Is the economic data from Moody’s.com?
• Is the trend justified by anything other than historical relationships?
How Does Energy Efficiency Fare in this New Era?

<table>
<thead>
<tr>
<th>Utility</th>
<th>PURPA Avoided Cost (Rate per kWh)</th>
<th>IRP Model EE/DSM Benefit (Rate per kWh)</th>
<th>PURPA / Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEC (Study Period)</td>
<td>$0.055</td>
<td>$0.097</td>
<td>- 43%</td>
</tr>
<tr>
<td>PEC (Study Period)</td>
<td>$0.054</td>
<td>$0.113</td>
<td>- 52%</td>
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<tr>
<td>TVA</td>
<td>$0.035</td>
<td>$0.091</td>
<td>- 61%</td>
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<tr>
<td>Pacificorp (Utah)</td>
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<td>$0.087</td>
<td>- 26%</td>
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<tr>
<td>Avista (Washington)</td>
<td>$0.050</td>
<td>$0.088</td>
<td>- 31%</td>
</tr>
</tbody>
</table>

Courtesy: John Wilson

Rocky Mountain Power, “Response to Utah Public Service Commission October 31, 2011 Order,” Attachment B, Table 7, Docket No. 11-035-T06.
Thanks to:

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• John Wilson
• Tom Lyle
Questions?

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